63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

Draft Environmental Impact Report

Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator and associated infrastructure at the Port of Richards Bay, KwaZulu-Natal

Version – Draft for Public Review

June 2024

Applicant: Transnet National Ports Authority

GCS Project Number: 23-0807

Client Reference: TNPA/2023/06/0023/33545/RFP

DFFE Reference: 14/12/16/3/3/2/2525



GCS (Pty) Ltd. **Reg No:** 2004/000765/07 Est. 1987
Offices: **Johannesburg** (Head Office) | Durban | Gaborone | Maseru | Windhoek | Ostrava
Directors: AC Johnstone (CEO) | W Sherriff (Financial) | N Marday (HR) | H Botha

Draft Environmental Impact Report
Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, KwaZulu-Natal

Report
Version - Draft

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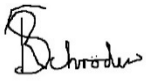
Author	Rona Schröder *EAPASA: Reg. 2020/1149* *Pri.Sci.Nat.: 120605*		June 2024
Environmental Manager	Gerda Bothma Pr. Sci. Nat: 117348		June 2024

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EXECUTIVE SUMMARY

Background and Project Description

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay (PoRB) is one of the country's largest ports in size, with total land and water surfaces of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for ensuring that the ports are economic hubs for the country while ensuring that they also comply with the South African Laws and Regulations which is governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The PoRB is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. A large area of the PoRB has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity.

This project is needed to generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or loadshedding.

This Project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- An underground transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

Scoping and Environmental Impact Report Process

A S&EIR process has two distinct phases: The Scoping Phase and the Environmental Impact Reporting Phase. The Scoping Phase has been concluded with the acceptance of the Final Scoping Report by the Competent Authority on the 06 June 2024.

This report, the Draft Environmental Impact Assessment Report (DEIR) illustrates the risk assessment undertaken of potential biophysical and socio-economic aspects and impacts of the proposed *22MW TNPA Dual Fuel Generator Project and Associated Infrastructure* on the receiving environment. This report summarises the risks and findings of various specialist studies undertaken and outlines avoidance, mitigation and management actions which will assist in minimising the impact of the project during construction and operations as far as possible.

The Environmental Impact phase starts with the Draft Environmental Impact Assessment Report (DEIR) which is made available to Interested and Affected Parties (I&APs) for review after which the comments, questions and concerns will be investigated and included in the submission of the Final Environmental Impact Assessment Report (FEIR) to the Competent Authority (CA) for consideration, thereafter the application will be assessed by the CA and decision will be communicated to the applicant.

Public Participation Process

All interested and affected parties are required to register as stakeholders to enable them to comment during the Public Participation Process (PPP) of the entire project. This PPP provides an opportunity for the public to comment and raise any concerns or suggestions in respect of the project.

All comments received during the Scoping PPP has been recorded and addressed within the Scoping Comments and Responses Report (CRR), which forms part of the Public Participation Report (PPR); and will be further addressed as needed during the EIA phase of the project. The DSR was available for comment for 30 days from 08 March 2024 until 11 April 2024.

As per the requirements of the NEMA EIA Regulations (2014, as amended), this DEIR has been issued for public participation from 25 June to 25 July 2024, as stipulated by the NEMA EIA Regulations (2014, as amended).

Environmental Impact Statement

The EAP is confident that all major impacts associated with the proposed 22MW Generator and associated infrastructure has been adequately described and mitigated. It is the opinion of the EAP that a proposed project should be authorised, provided that the proposed mitigation measures are implemented effectively and in line with the Environmental Management Programme (EMPr) and any site specific conditions outlined within the environmental authorisation. Due to the modified state of the current environment and the historic disturbances the risk for the project is low. Based on the findings of the Impact Assessment, the EAP sees no reason why the EA should not be granted for the proposed project to proceed.

Your comment on the Draft EIA Report

This DEIR is available to all registered I&APs for public review and comment from **25 June 2024** (comment period ending **25 July 2024**) as follows:

Printed Copies	
Richard's Bay Public Library (Physical Address: Kruger Road CBD, Richard's Bay)	
Electronic Copy	
Website download	https://www.gcs-sa.biz/public-documents/

Stakeholder meetings will be held on the 16th of July 2024 at 15:00 at the John Ross College to discuss the contents of the DEIR. Should you wish to attend a meeting, please register your attendance by contacting GCS to obtain details regarding the various opportunities for engagement.

Any comments on the DEIR must be submitted in writing or email (including any additional supporting material) on or before **25 July 2024** directly to GCS Environment SA (Pty) Ltd by means of the following:

Attention: Anelle Lötter / Gerda Bothma
Tel: 011 803 5726
E-mail: anellel@gcs-sa.biz / gerdab@gcs-sa.biz

PO Box 2597
Rivonia
Johannesburg
2128

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ABBREVIATIONS

Applicant	Transnet National Ports Authority (TNPA)
AQIA	Air Quality Impact Assessment
BID	Background Information Document
BPEO	Best Practical Environmental Option
BSP	Biodiversity Sector Plan
CA	Competent Authority
CBA	Critical Biodiversity Area
CMP	Coastal Management Programme
CVI	Coastal Vulnerability Index
CRR	Comments and Responses Report
DEIR	Draft Environmental Impact Report
DFFE	Department of Fisheries, Forestry and the Environment
DFO	Dust Fallout
DSR	Draft Scoping Report
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EFZ	Estuarine Functional Zone
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EKZNW	Ezemvelo KZN Wildlife
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
FEIR	Final Environmental Impact Report
FSR	Final Scoping Report
GCS	GCS Environment South Africa (Pty) Ltd
GDP	Gross Domestic Product
GNR	Government Notice Regulation
GPS	Global Positioning System
ha	hectares
I&APs	Interested and Affected Parties
IDA	Infrastructure Development Act
km	kilometre
kV	Kilo volt
KZN	Kwa-Zulu Natal Province
LNG	Liquefied Natural Gas
m	meter
MAE	Mean Annual Evaporation
MAP	Mean Annual Precipitation

masl	Meters above sea level
mm/a	millimetres per annum
MW	Mega watt
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NEM: WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NGO	Non-Governmental Organisation
NHRA	National Heritage Resources Act, (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PoRB	Port of Richards Bay
PPP	Public Participation Process
RBIDZ	Richards Bay Industrial Development Zone
S&EIR	Scoping and Environmental Impact Report
SIA	Social Impact Assessment
SIP	Strategic Integrate Projects
SOE	State Owned Enterprise
SoW	Scope of Work
TFR	Transnet Freight Rail
TNPA	Transnet National Ports Authority
TPT	Transnet Port Terminal
WMA	Water Management Area
WUL	Water Use License

STRUCTURE AND CONTENT OF THIS REPORT

The contents of an environmental impact assessment report are required to contain information as outlined in Table 0-1-1 below. These requirements are regulated under Appendix 3, Regulation 28 of GNR 326 (2014, as amended)

Table 0-1-1: Contents of an Environmental Impact Assessment Report

Regulation		Content of Environmental Impact Assessment Report (EIR)	Reference
A3 R3-1 (a)		**Details of:**	See below
	(i)	*The EAP who prepared the report; and*	Section 1.4
	(ii)	*The expertise of the EAP, including a curriculum vitae*	Section 1.4 & Appendix A & B
A3 R3-1 (b)		***The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:***	Section 1.2
	(i)	*the 21 digit Surveyor General code of each cadastral land parcel;*	
	(ii)	*where available, the physical address and farm name; and*	
	(iii)	*where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties*	
A3 R3-1 (c)		***A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—***	Section 1.2:
	(i)	*a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;*	
	(ii)	*on land where the property has not been defined, the coordinates within which the activity is to be undertaken;*	
A3 R3-1 (d)		***A description of the scope of the proposed activity, including—***	See below
	(i)	*all listed and specified activities triggered and being applied for; and*	Section 2.2
	(ii)	*a description of the associated structures and infrastructure related to the development;*	Section 4
A3 R3-1 (e)		***A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;***	Section 2.1
A3 R3-1 (f)		***A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;***	Section 3
A3 R3-1 (g)		***A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;***	Section 5.6
A3 R3-1 (h)		***A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:***	See below
	(i)	*details of the development footprint alternatives considered;*	Section 5
	(ii)	*details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*	Section 8 & Appendix C
	(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 C1-6
	(iv)	*the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*	Section 6

	(v)	*the impacts and risks identified 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 9.2
	(vi)	*the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;*	Section 9.1
	(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 9.2
	(vii)	*the possible mitigation measures that could be applied and level of residual risk;*	Section 9.2
	(ix)	*if no alternative development footprints for the activity were investigated, the motivation for not considering such; and*	Section 5
	(x)	*a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;*	Section 5.6
A3 R3-1 (i)		***A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including—***	Section 7 & 9
	(i)	*a description of all environmental issues and risks that were identified during the environmental impact assessment process; and*	
	(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;*	
A3 R3-1 (j)		***An assessment of each identified potentially significant impact and risk, including—***	Section 9 & Appendix F
	(i)	*cumulative impacts;*	
	(ii)	*the nature, significance and consequences of the impact and risk;*	
	(iii)	*the extent and duration of the impact and risk;*	
	(iv)	*the probability of the impact and risk occurring;*	
	(v)	*the degree to which the impact and risk can be reversed;*	
	(vi)	*the degree to which the impact and risk may cause irreplaceable loss of resources; and*	
	(vii)	*the degree to which the impact and risk can be mitigated;*	
A3 R3-1 (k)		***An environmental awareness plan describing the manner in which-***	Appendix G
	(i)	*The applicant intends to inform his or her employees of any environmental risk which may result from their work; and*	
	(ii)	*risks must be dealt with in order to avoid pollution or the degradation of the environment;*	
A3 R3-1 (k)		***Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;***	Section 7
A3 R3-1 (l)		***An environmental impact statement which contains—***	Section 11
	(i)	*a summary of the key findings of the environmental impact assessment:*	
	(ii)	*a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and*	

	(iii)	*a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;*	
A3 R3-1 (m)		***Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;***	Sections 7, 9 & 11
A3 R3-1 (n)		***The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;***	Section 5.6
A3 R3-1 (o)		***Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;***	Section 11.4
A3 R3-1 (p)		***A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;***	Section 10
A3 R3-1 (q)		***A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;***	Section 11.2
A3 R3-1 (r)		***Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;***	N/A Inclusive of Operational Phase
A3 R3-1 (s)		***An undertaking under oath or affirmation by the EAP in relation to—***	Section 14
	(i)	*the correctness of the information provided in the reports;*	
	(ii)	*the inclusion of comments and inputs from stakeholders and I&APs;*	
	(iii)	*the inclusion of inputs and recommendations from the specialist reports where relevant; and*	
	(iv)	*any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;*	
A3 R3-1 (t)		***Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;***	N/A
A3 R3-1 (u)		***An indication of any deviation from the approved scoping report, including the plan of study, including—***	N/A
	(i)	*any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and*	
	(ii)	*a motivation for the deviation;*	
A3 R3-1 (v)		***Any specific information that may be required by the competent authority; and***	None
A3 R3-1 (w)		***Any other matters required in terms of section 24(4)(a) and (b) of the Act.***	None
A3 R2		***Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to an environmental impact assessment report the requirements as indicated in such notice will apply.***	Noted

1 INTRODUCTION

1.1 Introduction to the Proposed TNPA 22 MW Generator Project

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay (PoRB) is one of the country's largest ports in size, with total land and water surfaces of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for the upkeep of the ports as an economic hub for the country while ensuring that it also complies with the South African Laws and Regulations which is governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The PoRB is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. Approximately half of the PoRB has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity.

This project is needed to generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or loadshedding.

This Projects entails the construction of the following infrastructure within the existing port areas:

- An installation of a dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- An underground transmission power line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the NEMA Environmental Impact Assessment (EIA) Regulations (2014, as amended), a full Scoping and Environmental Impact Report (S&EIR) Process is required for the construction of the Genset 22MW Generation Plant, fuel storage areas, the connecting powerline and the connecting LNG pipeline Project. GCS Environment South Africa (Pty) Ltd (GCS SA) was appointed to undertake the environmental assessment process to determine the biophysical, social and economic impacts associated with undertaking the proposed activities.

The table below provides a summary of the technical details associated with the proposed generator and associated infrastructure.

Table 1-1: Summary of Technical Details of the TNPA 22MW Generator Project

Component	Description / Dimensions
Generator Model	TM2500+™ G4 Mobile Gas Turbine
Power Output	22MW
Voltage	11 kV
Fuel Type	Flexible to operate on either natural gas or liquid distillate fuels
Frequency	Dual frequency – 50/60Hz quick conversion
Emissions	Low: 25ppm (gas) / 42ppm (liquid) using demineralized water injection
Generator Footprint	24m x 6.5m
Area utilised for the Generator and associated infrastructure	0.5 Ha
Length of LNG Pipeline	1.4 km
Diameter of the LNG Pipeline	6”inch
Power Line Length	340m
Security	The generator is within the Port security area. The generator will be fenced off to ensure that the components are kept safe within the parameter.

1.2 Project Location

The proposed project is located in the Port of Richards Bay within the City of uMhlathuze (CoM) Local Municipality and King Cetshwayo District Municipality (KCDM) KwaZulu Natal some 160 km north-east of Durban and 465 km south of Maputo. The project site location falls within the main Port entrance and the Employee Care Centre in the Bayvue Precinct and the property information can be found in Table 1-2. (refer to Figure 1-1 for the Locality Map)

Table 1-2: Property Information.

PROPERTY	EXTENT	TITLE DEED	REGISTERED OWNER
Erf 397 of Township Richards Bay	800.0000DUM	T3484/972	Government of the Republic of South Africa

The Global Positioning System (GPS) coordinates of the proposed 22MW Generator are provided in the table below.

Table 1-3: GPS Coordinates for the Project.

	Latitude	Longitude
Site Centre point	28°47'8.42"S	32° 1'54.45"E
Site Corner points	28°47'7.47"S 28°47'7.43"S 28°47'9.33"S 28°47'9.46"S	32° 1'52.90"E 32° 1'56.00"E 32° 1'56.10"E 32° 1'53.02"E
Power Line Start	28°47'7.45"S	32° 1'53.97"E
Power Line Middle	28°47'5.66"S	32° 1'50.70"E
Power Line End	28°47'4.35"S	32° 1'43.05"E
LNG Line Start	28°47'8.88"S	32° 1'54.18"E
LNG Line Middle	28°47'7.32"S	32° 1'37.66"E
LNG Line End	28°47'8.96"S	32° 1'24.56"E

Figure 1-2 indicates the locality of the proposed 22MW Generator and associated infrastructure within the Port of Richards Bay.

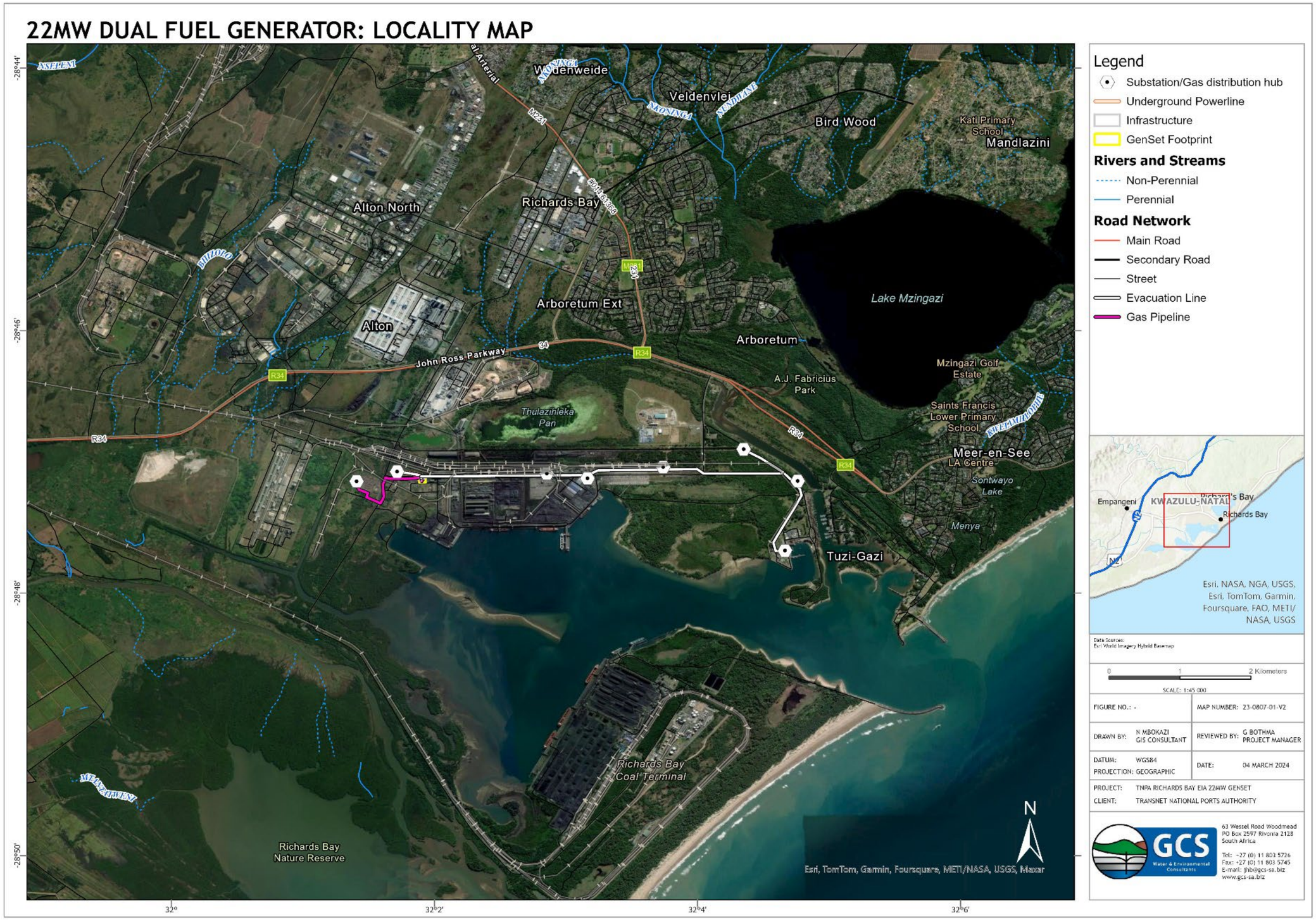


Figure 1-1: Regional Locality of the proposed generator site, LNG pipeline, powerline and the distribution network to the existing substations.

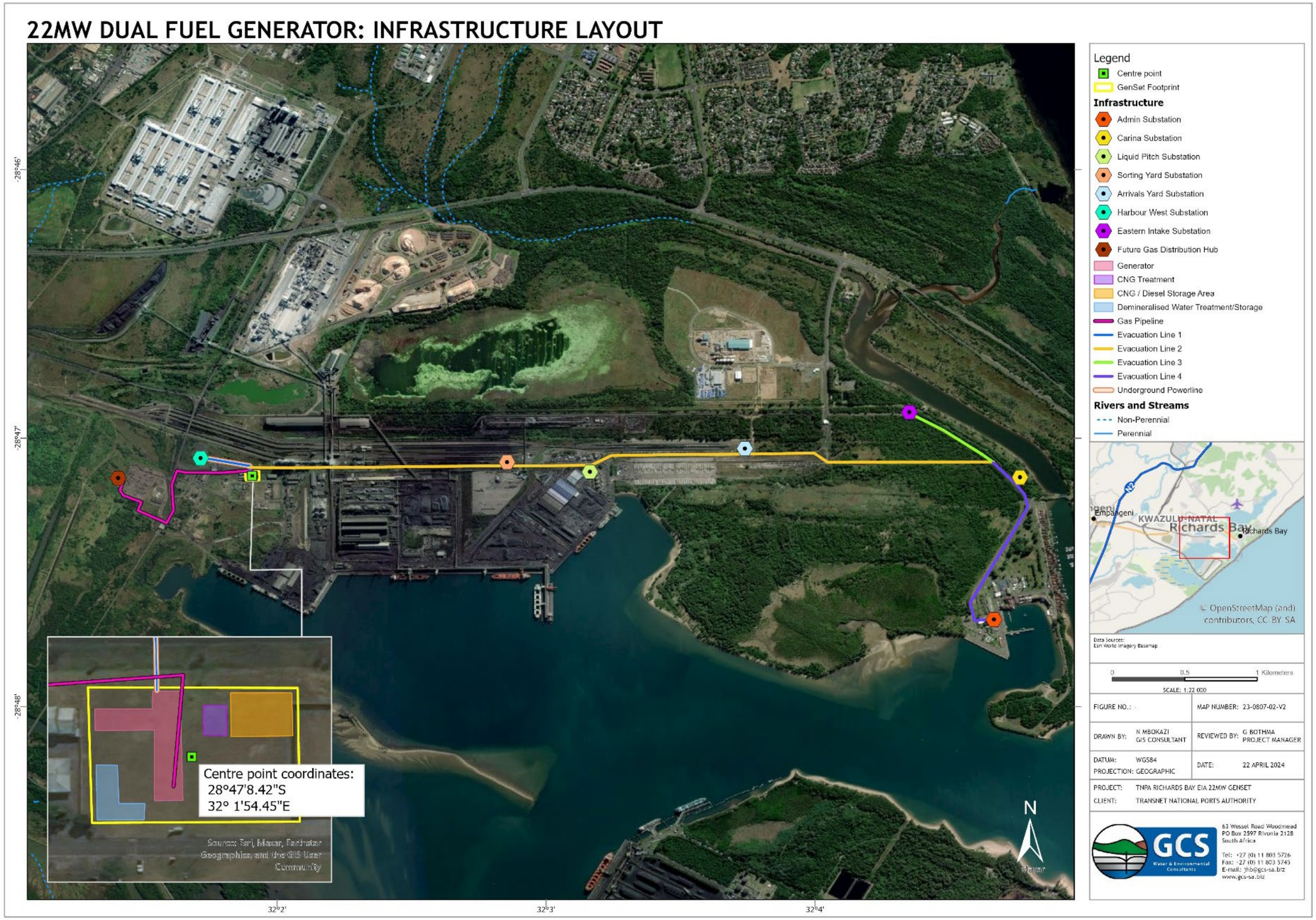


Figure 1-2: Site layout and distribution network.

1.3 Details of the Applicant

The applicant is Transnet National Ports Authority (hereafter referred to as "TNPA"). TNPA is a subsidiary of Transnet SOC Limited which is responsible for the operations of the eight National Ports located in South Africa. The details of the applicant are provided in Table 1-4.

Table 1-4: Name and Address of Applicant

ITEM	COMPANY CONTACT DETAILS
Applicant Name:	Transnet SOC Ltd
Company/ Trading name (if any)	Transnet National Ports Authority (TNPA)
Company Registration Number	1990/000900/30
Company Representative:	Nosicelo Biyana
Telephone No.:	067 367 0110
Facsimile No.:	N/A
E-mail Address:	Nosicelo.Biyana@transnet.net
Postal Address:	PO Box 181 Richards Bay 3900 TNPA Administration Building Port of Richards Bay, Alton, Richards Bay.

1.4 Details of the Environmental Assessment Practitioner (EAP)

GCS Environment SA (Pty) Ltd (GCS) have been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the environmental processes required to obtain approval for the proposed listed activities. The contact details of the EAP are provided in Table 1-5, and the details of the people who helped prepare the report are in Table 1-6.

Table 1-5: Name and address of environmental assessment practitioner.

ITEM	COMPANY CONTACT DETAILS
Company Name:	GCS Environment SA (Pty) Ltd
Company Representative	Gerda Bothma
EAP:	Rona Schröder EAPASA (Reg. 2020/1149) SACNASP (Pri.Sci.Nat. 120605)
Telephone No.:	+27 (0)11 803 5726
Facsimile No.:	+27 (0)11 803 5745
E-mail Address:	gerdab@gcs-sa.biz / ronas@gcs-sa.biz
Postal Address:	PO Box 2597, Rivonia, 2128

Table 1-6: Details and expertise of people who helped prepare the report

Name	Education qualifications	Role in the Project	Experience (years)
Gerda Bothma	BSc Hons Microbiology Pr.Sci.Nat	Technical Review, Project Management.	25+
Rona Schröder	BSc Hons Environmental Analysis and Management Pr.Sci.Nat EAPASA	Senior EAP, Report Compilation	10+

Mrs Bothma has been the Environmental Unit Manager at GCS since 2019 and has over 25 years of experience within the environmental and waste management field. Mrs Bothma has been involved in several engineering projects as the EAP as well as the Environmental Control Officer during construction, working closely with the Occupational Health and Safety Officer.

She also has been involved in projects where waste licensing and water use licensing processes formed an integral part of the services offered and has extensive experience in environmental auditing and compliance monitoring. Mrs Bothma is the Project Manager overseeing the quality control for the application processes.

Rona Schröder is an Environmental Scientist, registered as a Professional Natural Scientist (Pri. Sci. Nat. 120605) with the South African Council for Natural Scientific Professions (SACNASP). Rona is registered EAP (Reg. No. 2020/1149) with the Environmental Assessment Practitioners Association of South Africa (EAPSA).

Ms Schröder has over 10 years' experience as an EAP and environmental manager. Rona has been involved in a wide range of environmental-related projects, including environmental impact assessments; mining rights, mining permits, prospecting permit applications; water use licence applications; environmental performance auditing and working as an environmental manager in the mining sector.

GCS has no conflict of interest related to the contents of this Report. GCS has no personal financial interests in the property and/or activity being assessed in this report. GCS has no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this Report to the CA. GCS declares that the opinions expressed in this Report are independent and a true reflection of their professional expertise. As such, GCS meets the requirements of an independent EAP as per the EIA Regulations 2014.

The curriculum vitae (CV) of the relevant members of the project team can be found in Appendix A.

1.5 Objectives of the Environmental Impact Assessment Process

In accordance with the Appendix 3 Regulation 2 of GNR. 326 of the NEMA EIA Regulations (2014 as amended) the objective of the environmental impact assessment process is to, through a consultative process: -

- Identify the policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location and layout;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Discuss the nature, significant consequence, extent, duration and probability of the impacts occurring and the degree to which the impacts can be reversed, cause irreplaceable loss, and whether these can be avoided, managed or mitigated;
- Identify the most ideal location for the activity within the development footprint based on the levels of environmental sensitivity identified through various specialist studies in the assessment phase;
- Identify, assess and rank the impacts the activity will impose on the development footprint throughout its lifetime;
- Identify measures to avoid, manage or mitigate identified impacts; and
- Identify cumulative and residual risks that need to be managed and monitored.

2 PROJECT DESCRIPTION

2.1 Key Components of the proposed TNPA 22MW Generator Project

The proposed development will entail the construction of the following infrastructure within the existing port areas. The project will comprise the following main components (which are discussed in more detail below):

- An installation of a dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m3;
- The installation of a 200m3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- An underground transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will make use of the cable within the existing servitude in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site. Which is 1.4km with a diameter of 6” diameter.

2.2 Installation of a 22 MW Generator

A generator is designed by General Electric (GE Gas Power) who are the Original Equipment Manufacturer (OEM). The generator is dual fuel and can operate on either Diesel fuel or Liquified Natural Gas (LNG). The generator model is TM2500+ GEN 4, the newest generation of one of the world’s most experienced, reliable gas turbine solutions.

The gas turbine is a General Electric Model TM2500 that is ISO rated for continuous duty and configured for operation on either natural gas or liquid fuel (diesel 50 ppm). Altitude, humidity and inlet and exhaust losses will affect power output, heat rate and fuel efficiency. In addition to the inlet air filter, the engine is equipped with a stainless-steel mesh screen in the inlet air stream for "last chance" protection against foreign object damage.

An illustration of the generator can be seen below in Figure 2-1.

Figure 2-1: Generator model is TM2500+ GEN 4.

2.3 Diesel Storage Tanks

Diesel storage tanks(s) with a combined 600m^3 capacity will be installed to store the diesel used for the generator. The tanks will be in a bunded facility and drains will be in in place for possible spills.

2.4 Demineralised Water Storage

A water storage container for demineralised water will be installed to be able to store up to 200m^3 of water on site. The water is used for the generator and therefore requires demineralised water to prevent both the build-up of impurities and the reduction of the lifetime of the generator.

2.5 Substation Transmission Lines

The underground cables from the generator to the Harbour West Substation, Sorting Yard Substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed within the existing cable servitude in order to allow for backup power distribution within the port.

2.6 Auxiliary Pit

An auxiliary pit will be constructed to manage the noise emanating from the generator to mitigate the noise impacts from the generator.

2.7 Fencing

The generator area will be fenced off. There is already access control to the PoBR and the generator fence will be solely for the safe protection of the generator infrastructure, diesel storage tanks. and is required when working with high voltage equipment for safety.

2.8 Installation of the Liquid Natural Gas (LNG) Pipeline

Pipelines for Liquid Natural Gas (LNG) will be installed as a supporting fuel source for the generator. The generator can be fuel with diesel or LNG. The LNG pipeline will be installed from the planned future distribution hub and would reduce the need for diesel which is a non-renewable fuel source. The pipelines would be buried where possible to prevent vandalism and theft. The installation of the pipeline will require vegetation removal which will then be allowed to re-vegetate upon completion of construction.

3 LEGISLATIVE CONTEXT

This chapter details applicable legal provisions and aims to provide a review of relevant national and provincial legislation and regulations, and policy documents, which apply to, or have implications for, the proposed activities.

3.1 General Overview

The policy and legislative context applicable to the TNPA 22MW Generator project is summarised in Table 3-1 and penalties applicable to non-compliance to the legislation are detailed in Table 3-2.

Table 3-1: Legislation and guidelines applicable to the TNPA 22MW Generator Project

LEGISLATION/GUIDELINE	OBJECTIVE & RELEVANCE
LEGISLATION	
Constitution of the Republic of South Africa (Act 108 of 1996)	The Constitution is the supreme law governing all other legislation. Environmental legislation is shaped by the Bill of Rights set out in the Constitution. It sets out the rights for every citizen of South Africa and aims to address past social injustices. With respect to the environment, section 24 of the Constitution states that: *"Everyone has the right:* *a) To an environment that is not harmful to their health or well-being;* *b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:* *i. Prevent pollution and ecological degradation;* *ii. Promote conservation; and* *iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".* In fulfilment of its constitutional mandate to take reasonable legislative measures that give effect to Section 24, the government has promulgated several environmental laws. These laws provide a legal framework that embodies internationally recognised legal principles. The principal act governing activities that affect the environment is NEMA. The Constitution itself has no permitting requirements. However, the way the environmental right is applied implies that environmental impacts associated with developments should be considered separately and cumulatively. Furthermore, Section 24 includes the notion that justifiable economic and social development should be promoted, through using natural resources and ecologically sustainable development. ***TNPA must ensure that significant environmental impacts are avoided; and where impacts cannot altogether avoided, they must be minimised and mitigated throughout the lifecycle of the TNPA 22MW Generator Project.***
Environmental Conservation Act (73 of 1989) (ECA), as amended	The ECA has now largely been replaced by the NEMA but certain provisions remain in force.

	The national Noise Control Regulations[1] (NCR) were promulgated in terms of Section 25 of the ECA, relating to noise, vibration and shock. The NCRs were revised[2] to make it obligatory for all authorities to apply the regulations. Under the ECA, the following SANS for assessing and controlling noise include: • 10328:2008 "Methods for environmental noise impact assessments"; and • 10103:2004 "The measurement and rating of environmental noise with respect to annoyance and speech communication". ***The TNPA 22MW Generator Project is likely to increase ambient noise levels during the construction (temporary) and operational phases. Noise impacts are closely related to construction activities and increase traffic volumes and the generator noise during operation. The SANS published under ECA will be considered during the assessment phase and the EMPr will include mitigation measures relating to the mitigation of potential noise impacts.***
National Environmental Management Act (Act 107 of 1998) (NEMA), as amended.	NEMA is the framework law giving effect to the constitutional environmental right and for regulatory tools in respect of environmental impacts. Section 28(1) includes a statutory duty of care, providing that *"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment".* In terms of sections 24(2) and 24D of NEMA, the then Minister of Environmental Affairs promulgated certain listed activities that may not commence without an EA. Activities promulgated in terms of GN983 and GN9835 require a basic assessment process, while activities promulgated in terms of GN984 require that a full scoping and EIA process be conducted[3]. ***Please refer to Table 1-7 for identified listed activities applicable to the TNPA 22MW Generator Project.***
NEMA EIA Regulations, 2014 (GNR 326, as amended)	Chapter 6 of the 2014 EIA Regulations provides for the requirements for public participation, which must be carried out as part of the EA and WML application process. In terms of Regulations 21 and 23, the outcome of the PPP must be reported in the FSR and EIR submitted to the CA. The PPP, "*must give all potential or registered parties (I&APs), including the CA, a period of at least 30 days to submit comments on each of the EMPR, S&EIRs, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times*" (Regulation 40 (1)). PPP will be undertaken in accordance with chapter 6 of the EIA Regulations, 2014. It must: • provide access to all information that reasonably has or may have the potential to influence any decision regarding an application; • involve consultation with the CA, every state department that administers a law relating to the environment relevant to the application, all relevant organs of state, and all I&APs; and • provide opportunity for I&APs to comment on reports and plans prior to submission of an application and once an application has been submitted to the CA. The process must include: • notification of the application to all I&APs, as stipulated in Regulation 41;

[1] GNR 154 in Government Gazette No. 13717 dated 10 January 1992
[2] Under GN155 of 10 January 1992
[3] GNs 983, 984 and 985 are promulgated under NEMA in GG 38282 of 4 December 2014 (as amended).

	• registration of all I&APs, as required in Regulations 42 and 43; and • a CRR and records of meetings of and with I&APs, as outlined in Regulation 44.
DFFE Web-Based Screening Tool	In terms of Regulation 16(1)(b)(v), read with Regulation 21 of the 2014 EIA Regulations, it is compulsory for an EIA application to include a sensitivity report generated by the national web based environmental screening tool[4] (DFFE Screening Tool). The content of specialist reports for certain of the themes is prescribed in the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes[5] (Assessment Protocols); and Appendix 4 of the EIA Regulations will not be applicable to such themes. Two Assessment Protocols have been gazetted, in March and October 2020. ***Specialist studies are being undertaken to verify the sensitivity themes as identified in the DFFE Screening Tool. Specific requirements for the content of the EIA specialists reports for the agricultural; aquatic and terrestrial biodiversity; plant and animal species themes are included in the Assessment Protocols and these specialist reports will comply with the aforesaid for purposes of the EIA.***
National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA), as amended	The NEMWA's purpose is to: assist in regulating waste management; ensure the protection of human health; and prevent pollution and environmental degradation through sound waste management principles and guidelines. The NEMWA defines waste broadly.[6] It furthermore provides for: • national norms and standards for regulating waste management by all spheres of government; • licensing and control of waste management activities; • remediation of contaminated land; • a national waste information system; and • provision for compliance and enforcement. The NEMWA imposes a general duty upon waste holders to take reasonable measures to avoid waste generation and, where this is impossible, to: minimise the toxicity and quantities of waste generated; reuse, reduce, recycle and recover waste; and ensure that it is treated and disposed of in an environmentally sound way. Failure to do so is a criminal offence, with a maximum fine of R10 million or imprisonment of up to 10 years, or both.

[4] GN R960 of GG 42561, dated 5 July 2019
[5] In terms of in terms of sections 24(5)(a) and (h) and 44 of NEMA and GN R320 of GG 43110 on 20 March 2020 and GN R1150 of GG 43855 on 30 October 2020
[6] *(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or*
(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste—
(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;
(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;
(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or
(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

	The TNPA 22MW Generator Project will not require a Waste Management Licence under Category C storage of waste at a facility that has the capacity to store in excess of 80 m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste, but will have to comply with the norm and standards.
Regulations published under NEMWA in GN 921 of Government Gazette 37083 on 29 November 2013 (2013 WML Regulations)	It is necessary to hold a WML for defined waste management activities. The 2013 WML Regulations, provides that a WML is required for undertaking certain waste management activities ("Waste Listed Activities"). The Waste Listed Activities are separated into three categories, namely Category A, B and C. Category A and B Waste Listed Activities require a WML, for which either a basic assessment or an EIA process needs to be undertaken that complies with the 2014 EIA Regulations. Category C activities do not require a WML but must comply with *inter alia* the Norms and Standards for Storage of Waste, 2013.[7] ***The TNPA 22MW Generator Project will not require a Waste Management Licence under Category C storage of waste at a facility that has the capacity to store in excess of 80 m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste, but will have to comply with the norm and standards.***
National Waste Information Regulations[8]	These Regulations regulate the collection of data and information to fulfil the objectives of the national waste information system, as set out in section 61 of the NEMWA, and includes reporting obligations. A registered person must keep a record of the information submitted to the SAWIS or the DFFE. ***TNPA will comply with these regulations.***
National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM:AQA)	NEMAQA was promulgated to ensure the protection and regulation of air quality and provide measures that will prevent pollution and sustainability. Under NEMAQA, the Minister of Environmental Affairs, Forestry and Fisheries must identify substances in ambient air which present a threat to health, wellbeing or the environment and establish national standards for ambient air quality, including the permissible quantity or concentration of each substance in ambient air. The "Listed Activities and Associated Minimum Emission Standards"[9], list activities that could result in atmospheric emissions requiring an atmospheric emissions licence (AEL) before being undertaken. The "National Dust Control Regulations"[10], provide that an acceptable dust fallout rate for a non-residential area is considered more than 600mg/m2/day but less than 1200mg/m2/day (30-day average), with maximum allowable two exceedances per year, provided these exceedances do not take place in consecutive months. Where the dust fallout rate is exceeded, a prescribed dust fallout monitoring programme must be developed and include: • the establishment of a network of dust monitoring points, using method ASTM D1739:1970 (or an equivalent standard), sufficient in number to: establish the contribution to dust fallout in residential and non-residential areas near the premises; monitor identified or likely sensitive receptor locations; and establish the baseline dust fall for the district; and • a schedule for submitting to the air quality officer dust fallout monitoring reports annually or at more frequent intervals, if requested by the air quality officer. Greenhouse gases have been declared priority pollutants under the "Declaration of Greenhouse Gases as Priority Air Pollutants"[11].

[7] Published in GN 926 of GG 37088 on 29 November 2013
[8] Published in GN 625 of GG 35583 on 13 August 2012
[9] Published in GN 893 of GG 37054 on 22 November 2013
[10] Published in GN 827 of GG 36974 on 1 November 2013
[11] Published in GN 710 of GG 40996 on 21 July 2017

	An AEL may be required for the TNPA 22MW Generator Project. The air quality specialist will undertake the necessary investigations and submit an AEL application with the relevant competent authority, should it be required.
National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA)	In line with the Convention on Biological Diversity, NEMBA aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. NEMBA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and identification of biodiversity hotspots and bioregions, which may then be given legal recognition. It imposes obligations on landowners (state or private) regarding alien invasive species (AIS). NEMBA requires that provision be made by a site developer to remove any aliens which have been introduced to the site or are present on the site. The NEMBA also provides for listing of threatened or protected ecosystems in one of four categories: critically endangered, endangered, vulnerable or protected. Threatened ecosystems are listed to reduce the rate of ecosystem and species extinction, by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value. Section 53 of NEM:BA provides that: *"(1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process.* *(2) A threatening process identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the NEMA and a listed ecosystem must be regarded as an area identified for the purpose of that section."* No notices have been published yet under this section. Picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species is a restricted activity under NEMBA. A permit is required for a restricted activity involving a listed threatened or protected (TOPS) species without a permit. Chapter 7 of the NEMBA regulates the process for application of a permit under NEMBA. The following notices have been published in terms of section 56(1) of NEMBA: • National List of Ecosystems that are Threatened and in need of protection (TOPS List),[12] which contains the National List of Ecosystems that are threatened and in need of protection. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems and preserving witness sites of exceptionally high conservation value. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. • Lists of Critically Endangered, Endangered, Vulnerable and Protected Species;[13] and • Threatened and Protected Species Regulations.[14] Chapter 5 of NEMBA pertains to AIS and provides that a person may not carry out a restricted activity involving a specimen of an AIS without a permit issued in terms of Chapter 7 of NEMBA. Such permit can only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out. Applicable, and exempted AIS are contained within the Alien and Invasive Species List

[12] Published under GN1002 in GG34809 of 9 December 2012
[13] Published under GNR151 in GG 29567 of 23 February 2007
[14] Published under GNR152 in GG 29657 of 23 February 2007

	2020.[15] The NEMBA Alien and Invasive Species Regulations[16] categorises the different types of alien and invasive plant and animal species and how they should be managed. The Revised National Biodiversity Framework 2019 – 2024 was recently published.[17] ***The TNPA 22MW Generator Project is located within a CBA. However, the generator infrastructure area is within an already disturbed area and care will be taken when vegetation is removed for the pipelines*** ***TNPA must control and eradicate AIS in line with the NEMBA Alien and Invasive Species Regulations.***
Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA)	In terms of CARA, landowners are legally responsible for the control of weeds and alien vegetation. CARA makes provision for three categories of AIP: • Category 1a: must immediately be removed and destroyed; • Category 1b: need to be immediately removed and contained; • Category 2: requires a permit to retain the species on site and it must be ensured that they do not spread. All category 2 plants in riparian zones need to be removed; and • Category 3: require a permit to retain these species. All category 3 plants in the riparian zone need to be removed. CARA also regulates the conservation of soil and states that degradation of the agricultural potential is illegal. It furthermore requires the protection of land against soil erosion and the prevention of water logging and associated salinization. Permissions / permits are required under CARA for the 'cultivation' of 'virgin soil'; cultivation and/or draining vlei(s), marshes or water sponges; and cultivation of an area within a watercourse's flood area. ***TNPA will comply with CARA in relation to AIP control and soil conservation.*** ***No permit under CARA is required for the TNPA 22MW Generator Project.***
National Forests Act, No 84 of 1998 (NFA)	In terms of section 15(3) of the NFA, the Minister published a list of protected tree species.[18] The effect thereof is that no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. ***Should TNPA require any licence to disturb a protected tree, it will be duly applied for.***
National Heritage Resources Act (Act No. 25 of 1999) (NHRA)	The protection and management of South Africa's heritage resources are controlled by the NHRA. The national enforcing authority for the NHRA is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features, such as graves, archaeology and fossil beds, are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. In terms of section 38 of the NHRA, a permit is required for certain categories of development as follows: *"(1) (a): The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;* *(c): Any development or other activity which will change the character of a site -*

[15] Published under GNR 1003 in GG 43726 of 18 September 2020
[16] Published under GNR1020 dated 25 September 2020
[17] In terms of GN 2423 of 26 August 2022,
[18] GN 536 of GG 41887 on of 7 September 2018

	i. exceeding 5 000 m² in extent; *ii. involving three or more existing erven or subdivisions thereof;* *iii. involving three or more erven or divisions thereof which have been consolidated within the past 5 years; or* *iv. the costs of which will exceed a sum in terms of regulations by SAHRA or a provincial heritage resource authority."* In terms of Section 38(8) of the NHRA, section 38(1) approval from SAHRA is not required where an environmental impact assessment is undertaken under NEMA, including a HIA, and SAHRA's requirements are considered by the CA when granting the EA. Section 38(8) of the NHRA provides that: *"The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the ECA, or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent."* Accordingly, provision is made for the assessment of heritage impacts as part of an environmental assessment process and, if such an assessment complies with the NHRA and SAHRA's requirements and the CA considers heritage impacts when granting the EA, a separate application for consent under the NHRA is not required. ***An application has been submitted to SAHRA and AMAFA through the online SAHRIS System. Comments will be incorporated into the FEIR.***
Hazardous Substance Act (Act No. 15 of 1973) (HSA)	The HSA aims to control the production, import, use, handling and disposal of hazardous substances. Under the HSA, hazardous substances are defined as substances that are toxic, corrosive, irritant, strongly sensitising, flammable and pressure generating under certain circumstances and may injure, cause ill-health or even death in humans. Where hazardous substances from any of the 4 groups below are to be used, (see below) care must be taken that they are sourced, transported, handled and disposed of in compliance with HSA. • Group I: industrial chemicals (IA) and pesticides (IB); • Group II: 9 classes of wastes excluding Class 1: explosives and class 7: radioactive substances; • Group III: electronic products and group; and • Group IV: radioactive substances. The HSA provides for the: • Control of certain electronic products; • Division of such substances or products into the groups above in relation to the degree of danger, with licensing requirements for certain activities undertaken in respect of Groups I and III; • Prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products; and • Matters connected therewith.

	Hazardous substances may be stored, handled or transported as part of the proposed projects and include diesel and other liquid fuel, oil and hydraulic fluid, cement, etc. TNPA will comply with the HSA for its Diesel storage tanks and other hazardous substances, as required.
National Water Act 36 of 1998 (NWA)	The NWA is the primary legislation controlling and managing the use of water resources and pollution thereof. It provides for fundamental reformation of legislation relating to water resource use. The NWA's preamble recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that water resources quality protection is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The NWA's purpose is stated in section 2 and enforced by the DWS. The NWA presents strategies to facilitate sound management of water resources; provides for the protection of water resources; and regulates use of water by means of Catchment Management Agencies (CMA), Water User Associations, Advisory Committees and International Water Management. As the NWA is founded on the principle of trusteeship, the government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. Industry (including mines) can therefore only be entitled to use water if the use is permissible under the NWA. Section 19 of the NWA provides for pollution prevention and requires that a person who owns, controls, occupies or uses the land in question, is responsible for taking reasonable measures to prevent pollution of water resources. A CMA may take action to prevent or remedy the pollution and recover all reasonable costs from the responsible party. Under Section 21 of the NWA, certain consumptive and non-consumptive water uses are identified and can only commence once authorised. Water use is broadly defined in the NWA and includes taking and storing water; activities which reduce stream flow; waste discharges and disposals; controlled activities; altering a watercourse; removing water found underground for certain purposes; and recreation. Consumptive water uses include taking water from a water resource (section 21(a) of NWA) and storing water (section 21(b)). Non-consumptive water uses include impeding or diverting a watercourse's flow (section 21(c)); altering a watercourse's bed, banks, course or characteristic or impeding the flow of a watercourse (sections 21 (c) and (i)); and disposal of waste in a matter that may detrimentally impact on a watercourse (section 21(g)). Where a water use constitutes a Scheduled 1 Use (permissible use without an authorisation requirement); permissible water uses in terms of section 22 of the NWA; or is authorised in terms of a General Authorisation (GA).[19] ***Consultation has been completed with the Department of Water and Sanitation. It has been confirmed that a General Authorisation process will be followed to obtain a General Authorisation for Section 21(b) and (j) water uses for storage of water to dewater construction areas whilst laying the power lines and pipelines.***
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA)	TNPA is committed to complying with the OHSA on their sites.
Compensation for Occupational Injuries and	Under COIDA, employers are not held liable for compensation for injuries sustained by employees or compensation to dependants due to the death of an employee which occurred during the course and scope of their employment. Compensation is paid out of a statutory

[19] Various GAs have been published under the NWA, including for Sections 21(c),(i),(g), and (a) water uses. In respect of sections 21(c) and (i) water uses, activities can be conducted within 100m of a watercourse and 500m of a wetland without a WUL if the impacts to the watercourse / wetland are low. Water uses that will be conducted under a GA need to be registered with the DWS.

Diseases Act (Act No. 130 of 1993) (COIDA)	fund, administered by the Compensation Commissioner ("CC") (appointed under COIDA), which is set in accordance with a tariff prescribed in COIDA. The fund is a trust fund that is controlled by the CC, which the employer contributes to. The CC is appointed to administer the fund and approve claims lodged by employees or their dependants. The CC compensates the employee or their dependants directly. ***TNPA will take cognisance of the requirements of the COIDA as part of daily operations should incidents occur.***
Marine Living Resources Act (Act No. 18 of 1989) (MLRA)	The Marine Living Resources Act 18 of 1998 intends to provide for the conservation of the marine ecosystem, the long-term sustainable utilisation of marine living resources and the orderly access to exploitation, utilisation and protection of certain marine living resources; and for these purposes to provide for the exercise of control over marine living resources in a fair and equitable manner to the benefit of all the citizens of South Africa; and to provide for matters connected therewith. ***This act is not applicable to the project.***
National Estuarine Management Protocol (GN No. 341 of 10 May 2013)	This document presents guidelines for the development and implementation of individual Estuarine Management Plans as required by the National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008), as amended by the National Environmental Management: Integrated Coastal Management Amendment Act (Act No. 36 of 2014) (hereafter referred to as the ICMA) and in accordance with the National Estuarine Management Protocol (Protocol). An estuarine management framework is provided, based on the minimum requirements stipulated in the Protocol, structured in term of the three main phases, namely the Scoping phase, Objective setting phase and the Implementation phase.
KZN Heritage Act (Act No. 04 of 2008) (KZN HA)	To provide for the conservation, protection and administration of both the physical and the living or intangible heritage resources of the Province of KwaZulu-Natal;
KZN Nature Conservation Management Act (Act No. 9 of 1997) (KZN NCMA)	To provide institutional structures for nature conservation in KwaZulu Natal and to establish control and monitoring bodies and mechanisms, and to provide for matters incidental thereto.
Other National Legislation and Policy	Other policies, legislation and associated regulations (where applicable) considered as part of the application process include: • National Ports Act (Act No. 12 of 2005). • Disaster Management Act (Act No. 57 of 2002). • Integrated Resource Plan 2019. • Local Government: Municipal Systems Act, No 32 of 2000. • National Development Plan 2030. • Protection of Personal Information Act, No. 4 of 2013. • Water Services Act 108 of 1997. • Promotion of Access to Information Act 2 of 2000 • Promotion of Access to Justice Act 3 of 2000 • Basic Conditions of Employment Act 75 of 1997; • Labour Relations Act 66 of 1995

Provincial / Municipal Legislation and Policy	Provincial / Municipal policies, legislation and associated regulations (where applicable) considered as part of the application process include: • KZN Heritage Act (Act No. 04 of 2008) (KZN HA) • KZN Nature Conservation Management Act (Act No. 9 of 1997) (KZN NCMA) • King Cetshwayo District Municipality (KCDM) Environmental Management Framework (EMF) • CoM Integrated Development Plan (IDP) for 2022/2027 • CoM Spatial Development Framework (SDF) for 2022/2023 – 2026/2027 • Strategic Infrastructure Projects (SIPs)
OTHER STANDARDS AND GUIDELINES	

Standards and Guidelines	In addition to the abovementioned Acts and their associated Regulations, the following guidelines and reports have been taken cognisance of during the application process:
	• Guidelines for consultation with communities and interested and affected parties issued by the DMRE.
	• NEMA Implementation Guidelines: Sector Guidelines for EIA Regulation[20]
	• Department of Environmental Affairs (DEA) (2011): A user friendly guide to the National Environmental Management: Waste Act, 2008. South Africa, Pretoria.
	• Department of Environmental Affairs and Tourism (2004): Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11.
	• DFFE Integrated Environmental Management Guideline on Need and Desirability, 2017.
	• Guideline for Implementation: Public Participation in the EIA Process.[21]
	• Publication of Public Participation Guideline (GN 807 of 10 October 2012 GG No. 35769).
	• Mining and Biodiversity Guideline: mainstreaming biodiversity into the mining sector
	• Department of Water and Forestry ("DWAF"), 2006. Groundwater Assessment II
	• DWS, 2011 The Groundwater Dictionary – A comprehensive reference of groundwater related terminology, 2nd ed
	• DWS, 2016 New Water management Areas, South Africa: Government Gazette No 40279
	• South African Water Quality Guidelines (DWAF):
	  ○ South African Water Quality Guidelines (2nd Edition). Volume 4: Agricultural Use: Irrigation (1996a);
	  ○ Water Quality Guidelines - Volume 1: Domestic Use (1996b);
	  ○ South African Water Quality Guidelines (2nd Edition). Volume 5: Livestock Watering (1996c);
	  ○ Water Quality Guidelines Volume 7: Aquatic Ecosystems (1996d);
	  ○ Water Quality Guidelines Volume 2: Recreational Use (1996e); and
	  ○ Water Quality Guidelines Volume 3: Industrial Use (1996f).

[20] Published under GN 654 in GG 3333 of 29 June 2010

[21] Published in under GN 807 in GG 35769 of 10 October 2012

	• Best Practice Guidelines (DWAF):
	  ○ G3: Water Monitoring Systems (2007);
	  ○ A5: Water Management for Surface Mines (2008b); and
	  ○ G4: Impact Prediction (2008)
	• SANS 10103 of 2008: The measurement and rating of environmental noise with respect to annoyance and to speech communication[22]
	• SANS 10210 of 2004: Calculating and predicting road traffic noise.
	• SANS 10357: 2004: The calculation of sound propagation by the Concave method.

Table 3-2: Penalties applicable to non-compliances under the legislation tabulated above

LEGISLATION	SECTION	FINE
NEMA	Section 49A (1) (a), (b), (c), (d), (e), (f) and (g)	Fine not exceeding R 10 million or imprisonment for a period not exceeding 10 years, or both such fine and such imprisonment.
	Section 49A (1) (i), (j) or (k)	Fine not exceeding R 5 million, or imprisonment for a period not exceeding 5 years. In the case of a second or subsequent conviction: fine not exceeding R 10 million, or to imprisonment for a period not exceeding 10 years. Or in both instances to both such fine and such imprisonment.
	Section 49A (1) (h), (l), (m), (n) (o) or (p)	Fine or imprisonment for a period not exceeding one year, or to both a fine and such imprisonment.
NWA	Section 15 and Item 31 of Schedule 4	First conviction: Fine or imprisonment for a period not exceeding 5 years, or both a fine and such imprisonment. Second or subsequent conviction: Fine or imprisonment for a period not exceeding 10 years, or both a fine and such imprisonment.

[22] Published under GN 718 in Government Gazette No. 18022

3.2 NEMA (as amended) Requirements

The NEMA is South Africa's overarching framework for environmental legislation. Regulations promulgated under NEMA include the EIA Regulations (2014) published under Government Notice Regulation (GNR) 982, as amended (EIA Regulations), and the associated Listing Notices Listing Notice 1, 2 and 3. Section 24(5) of NEMA stipulates that certain "listed activities" require environmental authorisation by way of either a Basic Assessment (BA) or a full Scoping and Environmental Impact Assessment (S&EIR), as defined in the Listing Notices. Activities listed under Listing Notice 1 and 3 require a BA process to be undertaken, while those listed under Listing Notice 2 require a full Scoping and S&EIR process.

Regulations published under NEMA in GN 960 of GG 42561 of 5 July 2019 prescribe that in an environmental authorisation (EA), a sensitivity report is to be generated through the Department of Forestry, Fisheries and the Environment's (DFEE) national web based environmental screening tool (DFFE Screening Tool). The DFEE Screening Tool ranks the sensitivities of a series of themes and identifies required procedures for the "Assessment and Minimum Criteria for Reporting on Identified Environmental Themes" in terms of Sections 24(5)(a) and (h) and 44 of NEMA (Assessment Procedures), which contains certain procedures and prescribed report content.

3.2.1 Screening and Initial Site Sensitivity Verification

The DFFE Screening Tool allows the applicant to identify potential environmental sensitivities of a proposed development site, identify specific zones or plans such as industrial development zones or Environmental Management Frameworks that may apply to the proposed development site, and it acts as a guideline as to which specialist assessments may need to be undertaken as part of the environmental assessment process.

For themes included in the Assessment Procedures, an Initial Site Sensitivity Verification must be undertaken by an EAP or a registered specialist with expertise in the relevant environmental theme being considered. The Initial Site Sensitivity Verification must be undertaken through the use of:

- A desktop analysis, using satellite imagery; and
- A preliminary on-site inspection to identify if there are any discrepancies with the current land use and environmental status quo versus the environmental sensitivity. as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.

The outcome of the Initial Site Sensitivity Verification must be recorded in the form of a report that-

- Confirms or disputes the current use of the land and environmental sensitivity as identified by the DFFE Screening Tool;
- Contains motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity; and
- Is submitted together with the relevant assessment report prepared following the requirements of the EIA Regulations.

The EAP generated a DFEE Screening Tool (14 December 2023) for the proposed project. It noted several sensitivities and associated reporting requirements, as shown in Table 3-3.

Table 3-3: DFFE Screening - Environmental Sensitivities

THEME	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture	X			
Animal Species		X		
Aquatic Biodiversity	X			
Archaeological and Cultural Heritage				X
Civil Aviation	X			
Defence				X
Palaeontology			X	
Plant Species				X
Terrestrial Biodiversity	X			

The DFFE Screening Tool generated by the EAP confirmed that the agricultural, aquatic and terrestrial biodiversity were flagged as very high and animal species, civil aviation, and palaeontology flagged medium to high.

All the themes which flagged as medium – very high, are themes included in the Assessment Procedures, as such, the specialist investigations undertaken will need to include the minimum content criteria prescribed in these Procedures.

In accordance with the requirements of the protocols, the EAP compiled a detailed Site Sensitivity Verification Report (refer to Appendix F) in order to confirm the extent of specialist investigation requirements.

Based on the above, the following specialist investigations were identified to be undertaken for this project:

- Ecological- & Estuarine Investigations (including flora, fauna, aquatic & wetlands).
- Soil, Land-Use- & Agricultural Impact Assessment.

- Surface- & Groundwater Baseline Investigation.
- Air Quality Assessment.
- Heritage & Paleontological Assessment.

3.2.2 Listed and Specified Activities

The TNPA 22MW Generator project triggers listed activities in terms of the NEMA, as contained in the amended 2014 EIA Regulations (as amended). The activities which trigger this application are detailed in Table 3-4**Error! Reference source not found.**. and require that a S&EIR process is followed in order to obtain the necessary EA in terms of the NEMA.

Table 3-4: NEMA Listed Activities triggered by the TNPA 22MW Generator project

LISTING NOTICE	ACTIVITY NO	ACTIVITY DESCRIPTION	PROJECT ACTIVITY WHICH TRIGGERS THE LISTED ACTIVITY:
2	2	The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.	For the installation of the 22MW energy output generator for electricity generation.
2	4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	For the installation of fuel tanks with a storage capacity of 600m^3 which will be the fuel used for the generator.
2	6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent	The 22MW generator will require an Atmospheric Emissions Licence (AEL) under the National Environmental Management: Air Quality Act 39 of 2004 for the emissions from the generator.
3	10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres - (d) KwaZulu-Natal (vi) within 500m of an estuarine functional zone; (ix) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	For the installation of fuel tanks with a storage capacity of 600m^3 used for the generator within a CBA area and located approximately 400m from the estuarine functional zone.
3	12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. (d) KwaZulu-Natal (v) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	For the construction of the LNG pipeline supply to the generator which will exceed 2km and the clearance for the linear activity will result in over 300m^2 of vegetation removal within areas that has been identified in an irreplaceable Critical Biodiversity Area (CBA).

4 PROJECT MOTIVATION NEED AND DESIRABILITY

4.1 Project Motivation

The severity of the power cuts shows a higher strain on the electricity national grid with Eskom hitting 100 full days of the rolling blackout (load-shedding) in 2022 and power disruptions throughout the country, private electricity generation is becoming more feasible to ensure continuous power supply to TNPA customers in the Port of Richards Bay. Alternative and renewable power generation has been investigated and is still being investigated. Due to the urgency of the continuous power supply demand an immediate solution is required. Placing a ready-to-use generator on site provides a short term solution while other alternatives such as solar power generation is investigated for viability as the approval and construction process is lengthy. It is therefore proposed to put up a generator plant to be able to generate the required electricity for the Port to ensure that operations can continue during grid power outages.

4.2 Need and Desirability

Eskom has a nominal generation capacity of over 45 000 Megawatt (MW); however, the power utility is challenged to supply the country's contracted demand of 22 500 MW. The ever-growing electricity demand with the lower generation capabilities has resulted in rolling power cuts that have severely affected business and port operations. It becomes imperative for TNPA to provide reliable utility services such as electricity in a cost-effective and consistent manner.

The current electricity crisis could result in TNPA not fulfilling its responsibility of ensuring that the regulated services are provided and the shortage of electricity supply in the port can affect other basic services such as water supply and sewer. The Port of Richards Bay shows a significant future electricity demand requirement and in alignment with the Port Regulator's assertion that TNPA shall build capacity before demand, this would be necessary for guaranteed business continuity. Thus, it is appropriate that an interim solution be implemented to reduce the impact caused by load shedding and power shortages.

The current electricity demand for the Port of Richards Bay is 11 MW and in line with short term port planning it is anticipated that the future demand will be 17.9 MW. The Port of Richard's Bay has approximately 10% of current available back-up and/or standby supply for current electricity demand, which is mainly used for offices and not operations, leaving a shortage of 90% of unsecured power and exposure of operational stand still during load shedding. The South African power utility's strategy of increased levels of planned maintenance to improve reliability is putting additional strain on plants availability and this strategy has not yielded visible benefits to date. The loss over a period of load shedding when the port is on a stand still have ripple effects on the Chrome, Ferro alloys, Magnetite,

Alumina, Export Coal, Woodchips, Sulphur, and import Coal lines. Thus, this will have an impact on both internal and external stakeholders such as leasing tenants, Transnet Freight Rail (TFR) and Transnet Port Terminal (TPT). TNPA needs to secure electricity supply to its operations and stakeholders in the face of escalating scheduled power outages due to declining supply availability as well as the increasing unreliability from both Eskom and the Municipal electricity supply networks.

TNPA is accelerating the introduction of renewable energy into the port systems, however there is a need for an immediate solution to be deployed within the 2023/24 Financial Year to avert the current Eskom risks and crisis that could cost TNPA billions of in income per annum. The crisis does not only affect the business revenue but has a negative reputational impact and poses a safety concern due to lack of visibility as the ports' operations are 24-hour. Due to the electricity challenges faced by the port, the strategic interim solution implemented by TNPA is to procure and install a 22MW output generator to necessitate port operations. The Installation of the generator in the Port of Richards Bay project is registered under the Strategic Integrate Projects (SIP) of the Infrastructure Development Act (IDA), Act 23 of 2014. The SIP's Oil & Gas National Program 20f is comprised of two mobile dual fuel diesel and Liquefied Natural Gas (LNG) generators with a capacity of 22 MW energy output for Port of Richards Bay.

4.3 Ecological Sustainable Development and use of natural resources

To determine the possible impacts on the ecological sustainability and use of natural resources, there were certain questions developed to provide and indication of the severity. Table 4-1 provides an assessment of the ecological sustainability and use of natural resources for this project.

Table 4-1: Assessment of the TNPA 22MW Generator Project in terms of securing ecological sustainable development and use of natural resources

HOW WILL THIS DEVELOPMENT (AND ITS SEPARATE ELEMENTS/ASPECTS) IMPACT ON THE ECOLOGICAL INTEGRITY OF THE AREA?		
No.	**Question**	**Answer**
1.1	How were the following considerations taken into account: • Threatened ecosystems; • Sensitive, vulnerable, highly dynamic or stressed ecosystems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure; • CBAs and ESAs; • Conservation targets; • Ecological drivers of the ecosystem; • Environmental Management Framework; • Spatial Development Framework; and • Global and international responsibilities relating to the environment.	The EIA process included estuary and wetland studies, which took into account all ecological and environmental considerations. Taking care to stay out of sensitive areas was considered when deciding on locating the generator plant within the existing footprint area.
1.2	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	This development will take place in an area within the existing disturbed footprint area of the Port of Richards Bay. Placing the infrastructure within the existing footprint areas reduces the impacts on the biological diversity. Implementation of the EMPr will ensure that negative impacts are avoided, managed, and mitigated as far as possible.
1.3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The development will not result in in the disturbance of a large biophysical environment as the area is situated within a disturbed area. The small areas where the pipelines will be situated will be buried within the existing servitudes as well. Alternatives were explored for this development, with the proposed preferred alternative being the best strategy.-Implementation of the EMPr will ensure that negative impacts are avoided, managed, and mitigated as far as possible.
1.4	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Waste generated during the construction phase will be mainly packaging, general construction and domestic waste; however, the majority of waste produced during operation is lubrication materials, domestic waste and hydrocarbon contaminated materials. As the TNPA already have contractors removing waste from site, the generated waste will be included in the collections. Waste generated on-site will be sorted and separated into appropriate containers and or prepared areas. All waste will be collected and transported to licensed waste disposal sites through contracts with registered waste companies. The waste may not necessarily be stored on site during the operational phase.
1.5	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what	Due to the existing large structures located within the Port of Richards Bay, the smaller stature of the generator complex would not have a significant visual impact.

HOW WILL THIS DEVELOPMENT (AND ITS SEPARATE ELEMENTS/ASPECTS) IMPACT ON THE ECOLOGICAL INTEGRITY OF THE AREA?		
No.	**Question**	**Answer**
	measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	No cultural heritage impacts are expected for the site as the site is located within the existing developed and disturbed Port of Richards Bay.
1.6	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Due to size, weather, capacity and location constraints preventing the port from implementing renewable energy sources, TNPA has opted for a dual fuel generator that would be able to make use of both diesel and LNG. The use of the generator would only be required when there are power outages from the National power grid.
1.7	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? • Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life); • Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?); • Do the proposed location, type and scale of development promote a reduced dependency on resources?	Please refer to Question 1.6 the above.
1.8	How were a risk-averse and cautious approach applied in terms of ecological impacts? • What are the limits of current knowledge? • What is the level of risk associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The ecological impacts has been investigated, and as the development would take place within an existing industrial footprint area on a historically disturbed area the impacts would be limited. It is unlikely that any gaps/limitations/assumptions will result in a large increase in the risk.
1.9	How will the ecological impacts resulting from this development impact on people's environmental right in terms following:	Specialist studies have been completed to determine the possible impacts on the water, air and noise. No serious negative impacts have been determined for this

HOW WILL THIS DEVELOPMENT (AND ITS SEPARATE ELEMENTS/ASPECTS) IMPACT ON THE ECOLOGICAL INTEGRITY OF THE AREA?		
No.	**Question**	**Answer**
	• Negative impacts: e.g. access to resources, opportunity costs, loss of amenity, air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? • Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	project. Measures set out in the Environmental Management Programme will be implemented.
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Human wellbeing in the area is mainly linked to air quality and water quality. Should the development negatively impact either of these factors, this may result in linked socio-economic impacts. However, the development is located within an existing industrial area and the impacts from the generator complex would not affect livelihoods on an environmental scale. Economically the generator plant would have a possible impacts on the jobs and opportunities as the Port would be able to operate during power outages resulting in full operating hours.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	It is anticipated that the proposed development will have limited negative *impacts as the development would be located within an existing disturbed area within an industrial complex*.
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	The site was selected as it is an existing disturbed area, within the existing footprint area and conveniently located to connect to existing transmission lines. This reduces the impacts on the ecological integrity and the surrounding environment.
1.13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Positive: • Economic benefit as the Port is a major contributor to importing and exporting for the country. • Completing the Strategic Infrastructure Projects (SIP) identified for the country. Negative: • Based on predicted cumulative concentrations, construction impacts from the 22MW Generator Project are likely to be minimal, as the impacts are transient, and operational impacts are limited to predominantly minimal noise and air quality impacts.

Table 4-2: Assessment of the TNPA 22MW Generator Project in terms of promoting justifiable economic and social development

No.	Question	Answer
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations: • The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, • Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.), • Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and • Municipal Economic Development Strategy ("LED Strategy").	The Port is a major contributor to the economic activities of the Local and District Municipalities, as well as a contributor to the National GDP with importing and exporting of goods. The generator plant is a Strategic Infrastructure Project (SIP) which has been identified for the National Government to ensure the sustainability of the port.
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? • Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The development of the 22MW Generator at the Port of Richards Bay was identified by the National Government as a SIP which also contributes to the local socio-economic contact.
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	As the project is for the benefit of the port and its operations, the community contributions will only be in terms of the community members working for the port directly and indirectly. The port provides opportunities for informal traders outside the port to sell food and beverages to truck drivers and workers. The generator would not affect the current community involvement but rather ensure that there would be constant operations.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The development will likely require minimal additional staff due to the nature of the operational requirements of the development, thus the impacts will be minimal.
2.5	In terms of location, describe how the placement of the proposed development will: • result in the creation of residential and employment opportunities in close proximity to or integrated with each other, • reduce the need for transport of people and goods, • result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), • compliment other uses in the area, • be in line with the planning for the area, • for urban related development, make use of underutilised land available with the urban edge, • optimise the use of existing resources and infrastructure, • opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	Due to the specific nature and scale of the development, it is likely that the potential impacts (negative or positive) to the socio-economic character of the area, will be minimal. Limited, temporary employment opportunities would be available during the construction and operational phases of the development. The project will occur within the port footprint and thus will have negligible impacts on the layout of any settlements or developments nearby.

No.	Question	Answer
	• discourage "urban sprawl" and contribute to compaction/densification, • contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, • encourage environmentally sustainable land development practices and processes, • take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), • the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), • impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and • in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	
2.6	How were a risk-averse and cautious approach applied in terms of socio-economic impacts? • What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? • What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Additional risk is minimal due to the nature and scale of the development.
2.7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: • Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? • Positive impacts. What measures were taken to enhance positive impacts?	Positive impacts on the social environment related to the construction phase are anticipated to include limited and temporary job creation and associated restricted local economic growth. As an SOE, TNPA does have a procurement process they have to follow for the appointment of any contractors. The negative impact of the development would be low for socio-economic aspects as the construction workers that would be on site during construction would not increase the daily traffic and influx into the port in such a manner that it would affect day to day operations. Implementation of the EMPr will however ensure that negative impacts are avoided, managed and mitigated as far as possible.
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	Due to the nature and scale of the development, no resulting ecological impacts are envisaged.
2.9	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Various alternatives, as required in terms of the 2014 EIA Regulations, were investigated prior to the commencement of the application process. Please refer to Section 5.

No.	Question	Answer
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	An extensive public participation process guided the development of the Environmental Impact Report and EMPr. All relevant stakeholders were invited to provide comments and suggestions. The evaluation of alternatives culminated in the best practicable environmental option for the proposed development, no further alternatives need to be investigated.
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	An extensive public participation process guided the development of the Environmental Impact Report and EMPr. All relevant impacted communities were invited to provide comments and suggestions.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The EIA process and EMPr take all stages of the development's life cycle into account and impacts specific to each phase are addressed accordingly.
2.13	What measures were taken to: • ensure the participation of all interested and affected parties, • provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, • ensure participation by vulnerable and disadvantaged persons, • promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, • ensure openness and transparency, and access to information in terms of the process, • ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and • ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein was promoted?	An extensive public participation process was undertaken as part of the EIA process. All interested or affected stakeholders were invited to provide comments and suggestions. Notices of the development were relayed in several different formats. Refer to Section 8.
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Due to the localised nature and extent of the proposed development, intricate opportunities for different community sectors are not envisaged.
2.15	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	The proponent will undertake all activities under the guidance of the country's labour, employment and health/safety laws. The EMPr will further provide guidance for various measures that must be implemented to ensure that employees are not subjected to adverse health conditions or dangers without the correct training, equipment and supervision.

No.	Question	Answer
2.16	Describe how the development will impact on job creation in terms of, amongst other aspects: • the number of temporary versus permanent jobs that will be created, • whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), • the distance from where labourers will have to travel, • the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and • the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	These aspects have been taken into consideration in the detailed economic development strategy in line with the procurement strategy of the project.
2.17	What measures were taken to ensure: • that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and • that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	The public participation process invited comment and input from all levels of governance relevant to the development- including local municipalities and relevant government departments.
2.18	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	An intensive environmental impact process has been undertaken, including investigation into biophysical, socio-economic and human well-being factors, to ensure that the environment is protected as far as possible.
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The EMPr includes implementable and realistic mitigation measures which will allow for impacts to be mitigated and managed as far as possible. The generator facility will remain in place for the foreseeable future, however, rehabilitation measures will ensure that the legacy is minimised as far as possible.
2.20	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The proponent will make financial provision based on its duty of care in accordance with accepted financial reporting and accounting standards.
2.21	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The Site Selection report considered all relevant factors when assessing the various options available for the project. Refer to Section 5 for the alternative identification process followed for the EIA process.
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Cumulative impacts include: • The continuous provision of electricity to the port operations would result in uninterrupted operations and maximum potential for the port operations and clients. • The cumulative noise impact from the surrounding port results in the negligibility of the noise impact from the generator on the surrounding receptors.

5 PROJECT ALTERNATIVES

According to the requirements and content in an impact assessment report stipulated in NEMA Act 107 of 1998 and the supporting EIA Regulations, it is required that various alternatives be investigated when considering a development which may impact significantly on the environment in order to implement the best practicable environmental option. This means that the options will be assessed in such a manner that the alternative which has the most benefit or causes the least environmental damage to the natural environment is chosen. This option also needs to be of such a nature that the capital and social costs incurred will be acceptable to society. Biophysical and socio-economic aspects are considered when investigating alternatives.

An alternative can be defined as an option that will meet the general purpose and requirements of the activity, which may include alternatives to:

a) The property on which, or location where it is proposed to undertake the activity;

b) The type of activity to be undertaken;

c) The design or layout to be used in the activity;

d) The technology to be used in the activity; and

e) The operational aspects of the activity.

The “No-Go” alternative must also be assessed.

For this project, a Scoping level assessment was undertaken by the Professional Team, and following on from the above, the alternatives identified as applicable to assess in this Project are as follows:

1. Property/Site Alternatives
2. Activity Alternative
3. Design and/or Layout Alternatives
4. Technology/Operational Alternatives
5. “No-Go” Alternative (this is a mandatory option)

Based on the contextual information presented above, and described in detail below, there is no evidence to suggest that other alternatives should be investigated for the proposed activity.

5.1 The “Property/Site” Alternative

Since the PoRB footprint area has already been determined and approved, and large portions of the surrounding areas are undisturbed areas, the placement of a generator complex would be required to fall within the existing PoRB. The locations of the existing substations are also taken into consideration as the generated power needs to feed into existing distribution line. The proposed location is therefore considered ideal as the generator complex will connect to the nearby substation, the area belongs to TNPA, in close proximity of the offices and already within the PoRB footprint.

5.2 The “Activity” Alternative

Where the “activity” is the generation of electricity, possible reasonable and feasible activity alternatives for the proposed site are extremely limited. Due to the small footprint area the possibility of renewable power generation is not feasible. The selected footprint area is too small to erect a sufficient amount of solar panels to generate the amount electricity required for the PoRB. The size of the available area along with the fact that the airspace is often utilised, excludes the possibility of wind turbine energy generation. And the surrounding water bodies are considered as critical biodiversity areas and sensitive habitats which also rules out the possible of hydropower generation. Renewable options are being investigated as long term solutions.

5.3 The “Design/Layout” Alternative

The layout for the site was determined by the size of the property and the size of the generator.

5.4 The “Technology” Alternative

A generator is designed by General Electric (GE Gas Power) who are the Original Equipment Manufacturer (OEM). The generator is dual fuel and can operate on either Diesel fuel or Liquified Natural Gas (LNG). The generator model is TM2500+ GEN 4, the newest generation of one of the world’s most experienced, reliable gas turbine solutions.

The gas turbine is a General Electric Model TM2500 that is ISO rated for continuous duty and configured for operation on either natural gas or liquid fuel (diesel 50 ppm). Altitude, humidity and inlet and exhaust losses will affect power output, heat rate and fuel efficiency. In addition to the inlet air filter, the engine is equipped with a stainless-steel mesh screen in the inlet air stream for "last chance" protection against foreign object damage.

The possibility to use LNG as well as diesel ensures that there will be available resources to generate power even when there is a delay or problem sourcing one of the materials. There is an existing LNG distribution line situated in the Richards Bay Industrial Development Zone (RBIDZ) to which a pipeline will be connected.

Based on the above, and the requirements associated with this particular power generation project, the use of dual fuel generator is the preferred option for the project and, **no other technology alternatives were investigated for this impact assessment.**

5.5 No-Go Option

The NEMA EIA Regulations (2014, as amended) require that all development alternatives be included in the investigation process. The no-go option will be comparatively assessed against the above-mentioned alternatives during the environmental impact assessment phase and will act as a baseline against which all the other development alternatives are measured.

The “no-go” option would result in the proposed activity not being implemented and the status quo on the property remaining. Due to the current strain of the National Energy Provider which has not been able to provide constant and reliable energy it is critical to have an alternative power supply to ensure that the power disruptions and loadshedding does not affect the functioning and operations of the PoRB. The PoRB is an economic hub for the country and loss of power prevents the PoRB from operating optimally. Power outages is also a security risk as security systems could go down and communication is also affected. Power is also required to ensure that the logistical aspects are managed sufficiently and that activities at the Port are not disrupted resulting in huge costing delays for ships and owners and the PoRB. This Project is also a Strategic Infrastructure Project (SIP) as identified by the Government of South Africa. Therefore, the “no-go” alternative is not currently the preferred alternative.

5.6 Concluding Statement of Preferred Alternative

This chapter has been compiled in the above sections under Appendix 2 of GNR 326, of the NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended). The Scoping Phase of the project is to enable the specialists and the EAP to identify the Best Practical Environmental Option (BPEO) for the development footprint and to identify studies required during the EIA Phase of the project.

Appendix 2 of GNR 326, NEMA EIA Regulations, 2014 (as amended) states the following in respect of the assessment of alternatives:

1. The objective of the scoping process is to, through a consultative process –

b) Motivate, the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

c) Identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;

d) Identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographic, physical, biological, social, economic and cultural aspects of the environment;

Considering the above, the following will be taken forward into the EIR Phase:

- No-go Alternative
  - The no-go alternative assumes that the proposed development will not go ahead. This alternative would result in no environmental impacts on the site or surrounding local area, as a result of the facility. It will provide a baseline against which other alternatives will be compared and considered during the EIR Phase.
- Property/Site Alternative
  - The location of the preferred site alternative is located within close proximity of the existing substation. It is within the port boundary and conveniently locates next to administration buildings.
- Activity Alternative
  - No other activity alternatives were deemed to be appropriate for the site and therefore they will not be further assessed during the EIR Phase. The development of a generator complex at the proposed project site is crucial for the functioning, managing and development of the PoRB.
- Design/Layout Alternative
  - No alternative layout would fit into the property size and access.
- Technology Alternative
  - Making use of a dual fuel system optimised the functioning and availability of fuel for the generator and is therefore the preferred option at this stage. The final technology that will be used will however be determined during the detailed engineering phase after receipt of an EA.

6 BASELINE ENVIRONMENTAL DESCRIPTION

The baseline environment, i.e., the environmental, social and economic context within which the proposed project is located, is described within this chapter. The baseline environment provides a status against which to assess the proposed project activities and potential impacts. It is necessary to understand this context in order to accurately assess the risks associated with the TNPA 22MW Generator Project and associated infrastructure. The environmental components which could influence the site planning have been included.

6.1 Geology

The Richards Bay area lies on-top of the unconsolidated Cenzonic Era sediments of the Maputaland Lithological Group that stretch along the Maputaland coastal plain into Mozambique. According to the 1:250 000 geological series (2732 St. Lucia), the site is typically underlain by Quaternary sand, silt, and clay (alluvium) overlying siltstone and sandstone of the Ecca Group, of the Karoo Sequence The area has further been built up by an engineered fill of reclaimed and reworked sands.

The Land Type classification with the original soil form being associated with an old estuarine area and therefore having pedogenetically young soils. However, the construction of the Port in the 1970s has drastically changed the soils and this area must now be classified in terms of an anthropogenic classification and thus belongs to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Anthrosols and Technosols are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied. Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form).

6.2 Topography

The Richards Bay Port are characterised by three distinct topographical features namely the flood plain consisting mainly of water bodies (lakes, estuary, river channels), sand plains rising above the flood plain and coastal dunes. At least 75% of the port area is already transformed and the remaining surface area is outside of the operations area.

6.3 Climate

6.3.1 Regional Climate

Richards Bay is characterised by a subtropical climate with warm wet summers and mild moist to dry winters, which are frost-free. The town has an average annual rainfall of 1,228 millimetres. The average annual temperature is 21.5 °C, with daytime maxima peaking from January to March at 29 °C, and the minimum is 21 °C , dropping to daytime highs from June to August of 23 °C and a minimum of 12 °C.

6.3.2 Rainfall

The Mean Annual Precipitation (MAP) is 1 228 mm and most of the rainfall occurs in the summer months (from October to March)(Figure 6-1). Early summer rainfall is derived mainly from deep convective showers and thunderstorm with occasional hailstorms. Late summer rainfall is less severe with more widespread convective activity associated with sub-tropical easterly circulation patterns. The annual average rainfall for the region is 1228 mm per year. Rain peaks in late to mid-summer, in January and February, but is also likely to receive rain all year round.

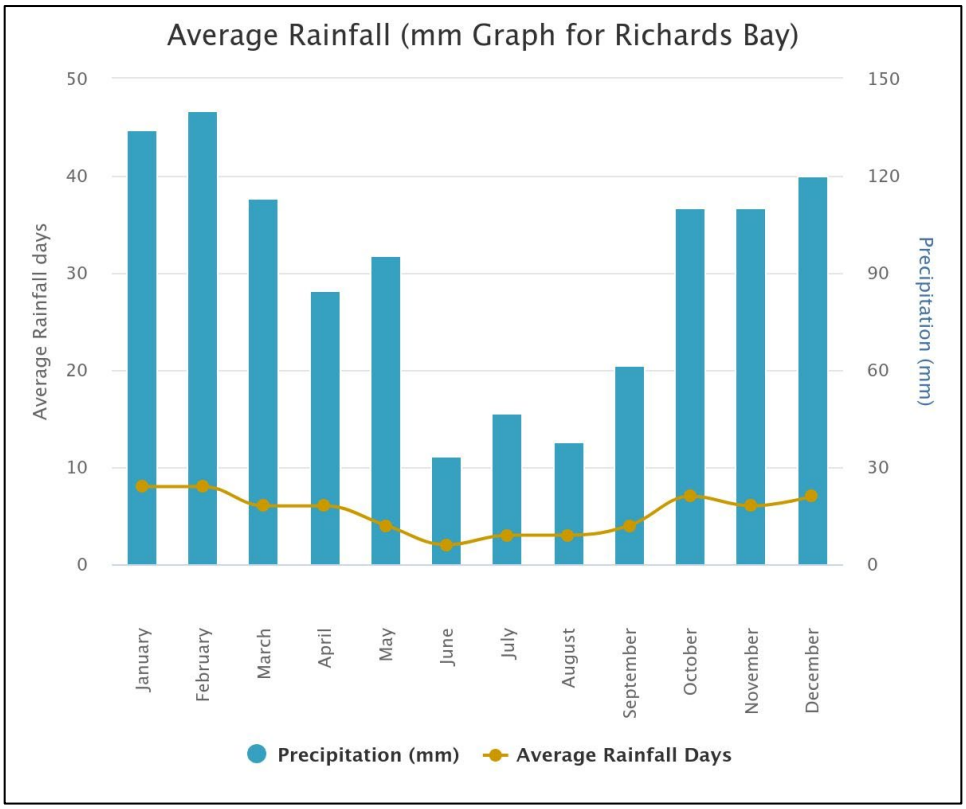


Figure 6-1: Richards Bay monthly rainfall (World Weather Online, 2024)

6.3.3 Evaporation

The project area falls within evaporation zone 22A, of which Mean Annual Evaporation (MAE) ranges from 1 300 to 1 400 mm/yr. The MAE far exceeds the MAP for the site, which implies greater evaporative losses when compared to incident rainfall.

6.3.4 Wind

Winds are predominantly north easterly or south westerly during the day with a combined frequency of occurrence of 24%. The north easterly (thermal) wind is associated with high pressure systems and fine weather and the south westerly winds that are associated with westerly waves are cold, frontal weather. There is a decrease in the frequency of north easterly winds at night when the southerly winds increase in frequency and occurring 19% of the time as part of the land-sea. More calm conditions (winds less than 1 m/s) occur at night than during the day. The diurnal variation in airflow over the region is influenced by the land sea breeze circulation and topographically induced effects winds.

6.4 Land Use

The current land use of the site is modified land that has been transformed for the establishment of the Richards Bay Port.

The project area is situated within a Critical Biodiversity (CBA) as indicated in the national database, see Figure 6-2.

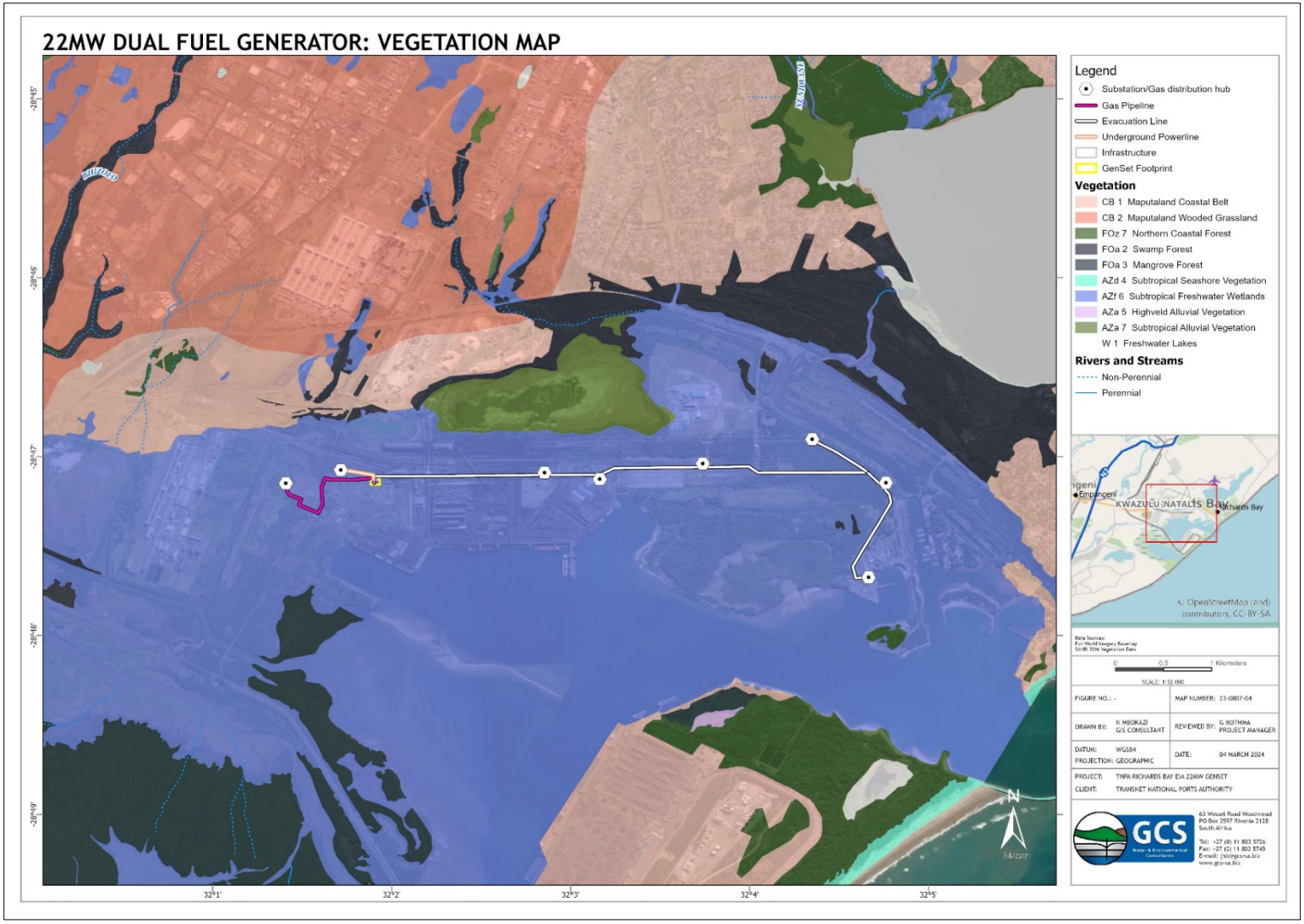


Figure 6-2: Vegetation Cover in the project area.

6.5 Hydrology

6.5.1 Water Management Area

The project falls within the W12F Quaternary Catchment with the Pongola-Mtanvuna Water Management Area (WMA) of South Africa. (South Africa. Dept. of Water and Sanitation, 2016). Elevations for the site area range from 5 to 20 metres above mean sea level (mamsl). The mean annual precipitation (MAP) for the area is in the order of 1071 mm/yr with mean annual evaporation (MAE) exceeding 1300 mm/yr.

6.5.2 Surface Water Hydrology

There are no surface water receptors associated with the project site and no recognised rivers/streams fall within proximity of the generator site and evacuation lines.

6.6 Ecology

6.6.1 Wetlands and Watercourses

No wetland has been identified or delineated within the project area.

No aquatic features were identified within the study site. No such features will therefore be impacted upon by the development of the project. As such, no further aquatic investigations or assessments are required.

6.6.2 Vegetation

As the entire project site is located within the boundaries of the Port of Richards Bay, the vegetation associated with the project consists of vegetation that has been heavily transformed by the current land use. A fine scale vegetation classification based on the site assessment has identified three vegetation types, these are:

- Managed Grassland;
- Transformed Scattered Woodland; and
- Transformed Alluvial Grassland.

The location and extent of these vegetation types is shown in Figure 6-3.

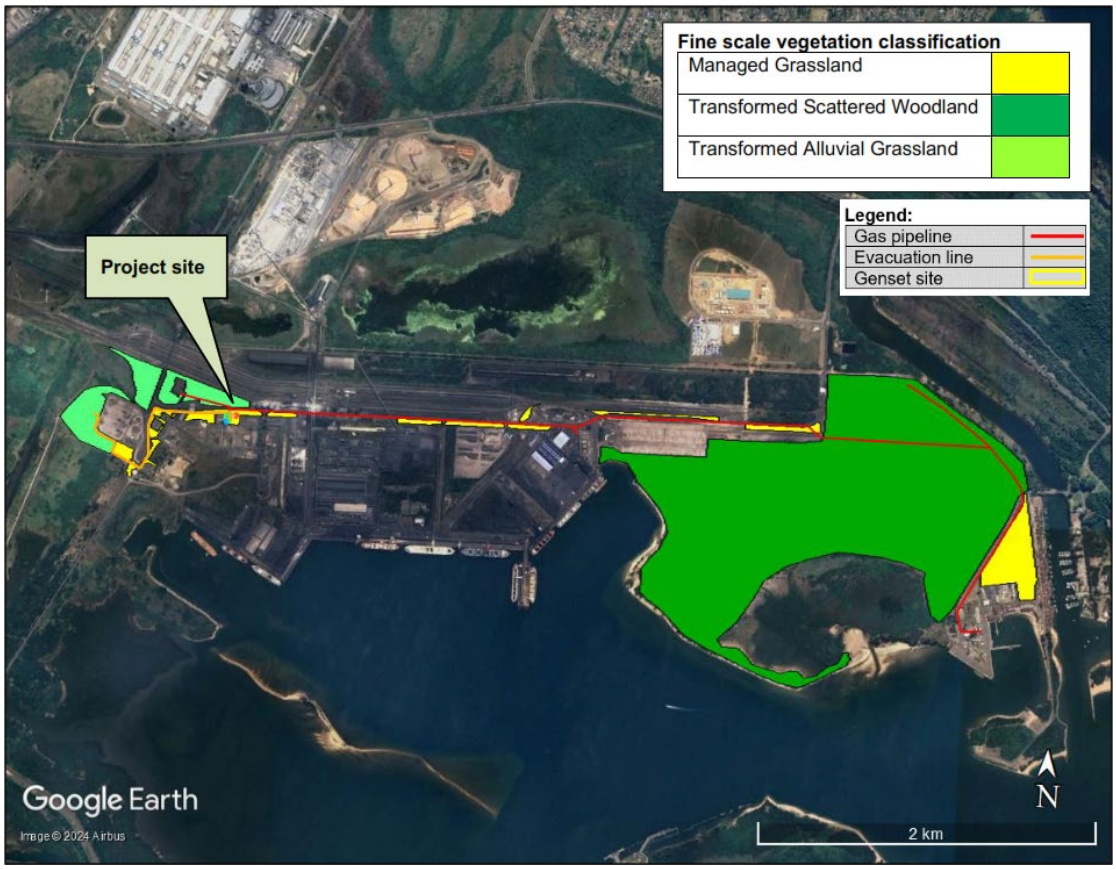


Figure 6-3: Location and extent of the fine-scale vegetation classification associated with the project site

The Managed Grassland is located in and around the infrastructure associated with the Port of Richards Bay infrastructure.

The vegetation type is activity managed through mowing and cleared where necessary. The infrastructure associated with the project is primarily located within this transformed grassland. This includes genset site (and associated infrastructure), the powerlines to the existing substations and the LNG pipeline from the future LNG Distribution Hub. The vegetation type is dominated by managed *Stenotaphrum secundatum* (Buffalo Grass).

The location and extent of the vegetation type is shown in Figure 6-4.

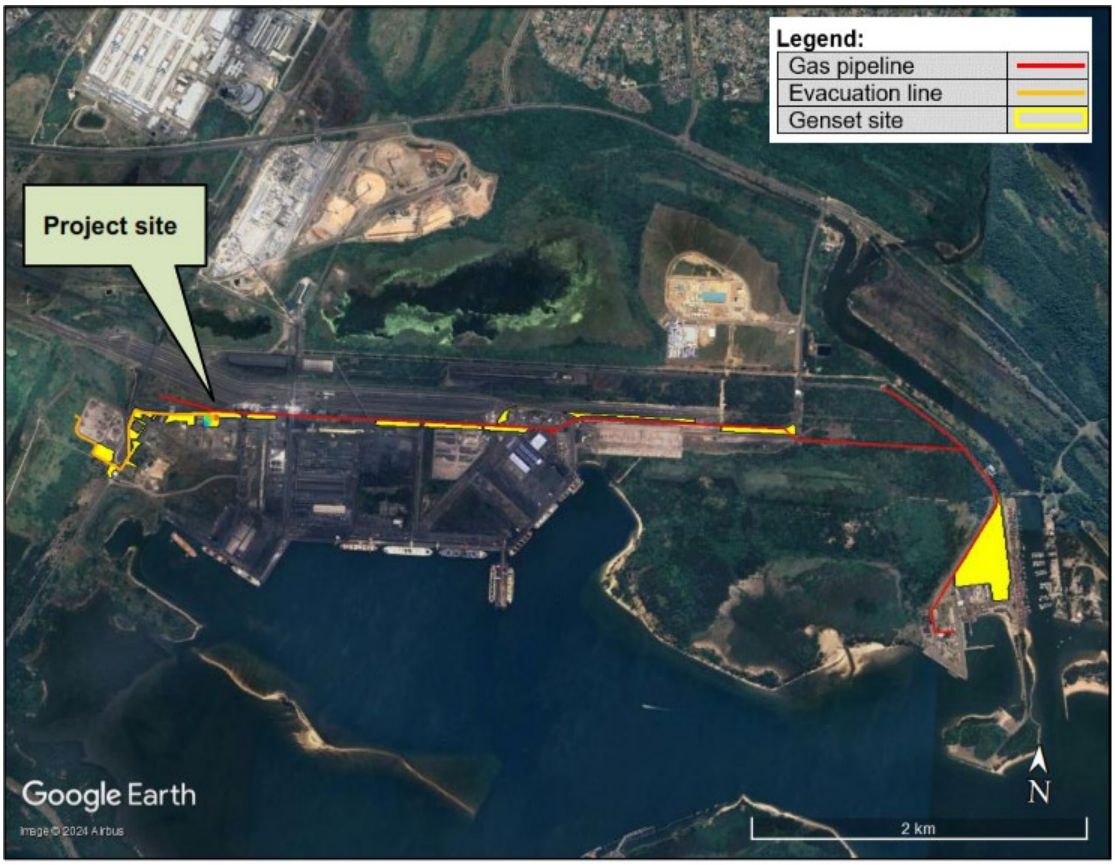


Figure 6-4: Location and extent of the Managed Grassland vegetation type associated with the project site

The Transformed Scattered Woodland is predominantly located towards the western portion of the project site and will contain the powerline connecting 22MW Genset with the various substations within the Port. The vegetation was historically disturbed for the development of the Port of Richards Bay and have been left naturally recover. As such, the tree component of the vegetation type consists of indigenous pioneer species (Vachellia species) and alien invasive species (Cyperus and Acacia species). The grass component is dominated by *Stenotaphrum secundatum* (Buffalo Grass).

The location and extent of the vegetation type is shown in Figure 6-5.

Figure 6-5: Location and extent of the Transformed Scattered Woodland vegetation type associated with the project site

The Transformed Alluvial Grassland is predominantly located towards the eastern extent of the project site and will contain the evacuation line from the 22MW Genset to the substation as well as the future LNG Distribution Hub. The vegetation shows clear signs of disturbance as a result of the establishment of infrastructure such as pipelines, roads, substation, access control gates, parking areas, etc. associated with the development of the Port of Richards Bay. The dominant vegetation in these areas consists of *Stenotaphrum secundatum* (Buffalo Grass) and small common pioneering Vachellia species and Trema orientalis (Pigeon Wood).

The location and extent of the vegetation type is shown in Figure 6-6.

Figure 6-6: Location and extent of the Transformed Alluvial Grassland vegetation type associated with the project site

Important plant species

As a result of the historic and long term impact to the vegetation in the area due to the development and continuous presence of the Port of Richards Bay, the vegetation associated with the 22MW Genset project has been highly transformed. As such, no plant species of special concern has been identified that will be impacted by the establishment or operations of the project.

No suitable pristine habitat is present on the development site and as such, no species identified in the DFFE Online Screening Tool is present on the site.

6.6.3 Faunal communities

The high levels of transformation of the habitat associated with the project site is likely to limit the number of faunal species that occur on the site.

Information sourced from The Biodiversity and Development Institute administered and hosted by The FitzPatrick Institute of African Ornithology at the Department of Biological Sciences, University of Cape Town, has indicated that a variety of faunal species occur in the QDS 2833CC. The information indicated that 358 bird, 23 mammals, 32 reptile and 37 amphibian species are known to occur in the QDS.

6.6.4 Mammals

As previously indicated, the habitat on the project site has been significantly transformed for the establishment and operation of the Port of Richards Bay. This highly transformed habitat as well as the active operations on and around the site has resulted in no mammal species being observed during the site assessment.

6.6.5 Avifauna

The study site is not located in an Important Bird Area (IBA) as classified by the SANBI, however, the Richards Bay Game Reserve IBA is located approximately 2.5km to the southwest of the project site. No bird species were observed during the site assessment. This is a reflection of the highly transformed nature of the habitat on the project site.

6.6.6 Reptiles

No reptile species were identified during the site assessment. It must be noted that only one species, Crocodylus niloticus (Nile Crocodile) has a Red Data List classification other than "Least Concern". Crocodylus niloticus (Nile Crocodile) is listed as being "Vulnerable". It must be further noted that no appropriate habitat for this species is present on the development site.

6.6.7 Amphibians

No amphibian species were observed during the site assessment. This is ascribed to the absence of any suitable habitat on the project site.

6.7 Ambient Air Quality

6.7.1 Long term trends

The Richards Bay Clean Air Association (RBCAA, http://www.rbcaa.org.za/) has undertaken ambient air quality monitoring in the area since 2004, measuring SO2 and PM10. Okello et al. (2018) used the RBCAA data to describe air quality in the Richards Bay area over the period 2004 to 2017. Findings from this comprehensive analysis are highlighted here.

PM10 monitoring data indicates a downward trend at 4 stations (Brakenham, CBD, Esikhaleni and Felixton) (Figure 6-7). Mtunzini and St. Lucia, the reference sites, had upward trends. The CBD and Brakenham have higher PM_{10} values compared to the other stations. All measurements were within the stipulated NAAQS annual average limit of 50 µg/m3.

Esikhaleni is a highly populated area with mostly low income households and fewer industries compared to areas around the CBD. The source of PM_{10} are different and are likely to be indoor compared to outdoor. St. Lucia and Mtunzini were the reference site with PM_{10} levels averaging at 20.8 µg/m3 and 22.3 µg/m3 respectively. This is deemed to be a good indication of the background PM10 concentration of the whole study area as both sites are relatively unaffected by local sources. The background in both cases is above the WHO guideline value indicating the potential contribution of other sources such as pollen and sea salts.

SO2 measurements in all seven monitoring stations where data was available was within the NAAQS of 50 µg/m3 (Figure 6-8). Downward trends were observed in Arboretum, Brakenham, CBD and Felixton. Harbour West had no observable trend. Esikhaleni showed an upward trend although with ambient concentrations well below the annual limit value. Scorpio had the least favourable SO2 trends attributable to their close vicinity to industry.

Data taken over the long term (1997 to 2017) for SO2 indicate a slightly upward trend. From 2013 to 2017 however, a significant downward trend is observed. The Scorpio and Harbour West Stations have consistently been above the 20-year average. This can be attributed mostly to emissions from the surrounding industry. The CBD had SO2 annual average ambient concentration just below the 20-year regional annual average. Measurement from residential areas such as Arboretum, Mtunzini and Esikhaleni showed low concentrations of SO_2.

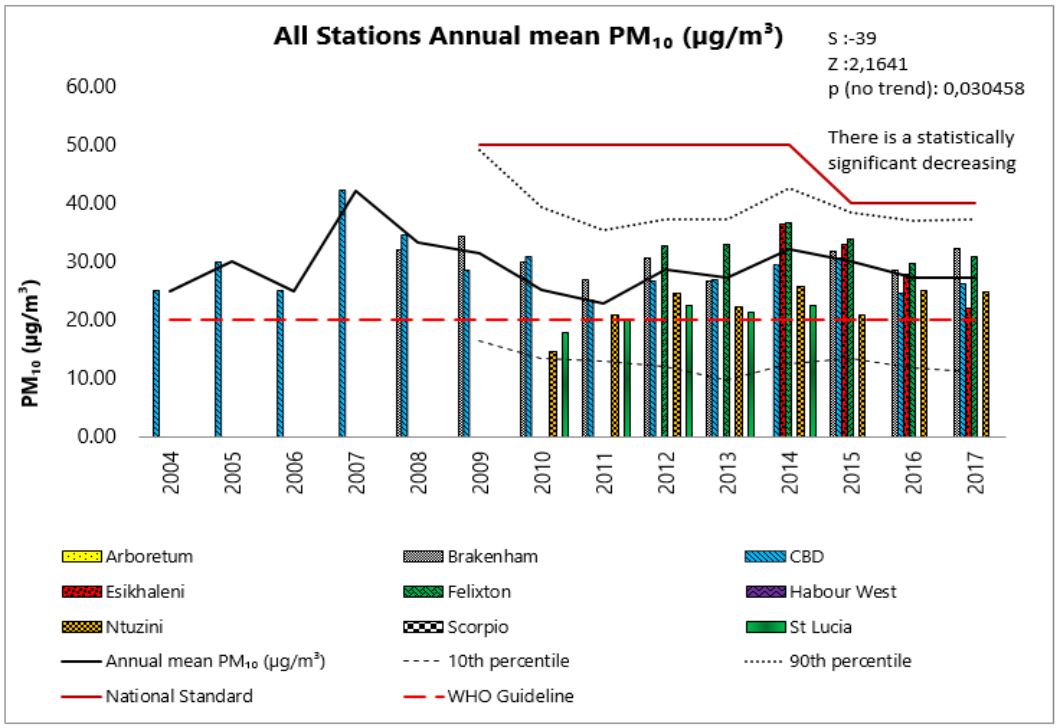


Figure 6-7: Annual average PM10 monitored concentrations (Okello ¬et al., 2018)

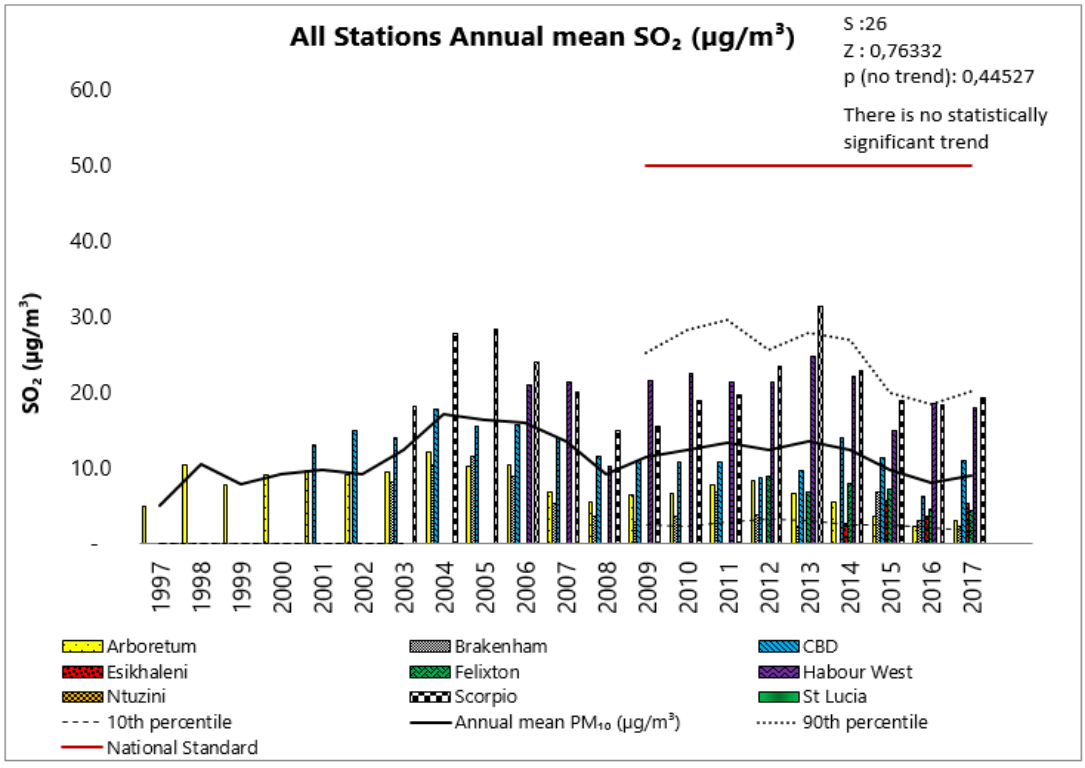


Figure 6-8: Annual average SO2 monitored concentrations (Okello ¬et al., 2018)

6.7.2 Ambient monitoring data from 2021-2023

Ambient air quality monitoring is undertaken in Richards Bay by the City of uMhlathuze and the RBCAA . Ambient air quality is generally influenced by a number of air pollution sources. Some of the local air pollution sources within the study area include emissions from industrial activities, vehicles exhaust, dust from mining activities, forest burning and coal dust from coal stockpiles. Numerous complaints have been reported between 2021-2023.

The current ambient air quality conditions were evaluated using the available air quality monitoring data from air quality monitoring stations (AQMS) in the area. Ambient data was only available for SO2, PM10 and PM2.5. Available hourly data was downloaded from the South African Air Quality Information System (SAAQIS) (http://saaqis.environment.co.za). SO2 data was obtained from the Harbour AQMS, located close to the proposed project site. PM10 data was obtained from the CBD AQMS, approximately 5 km north of the proposed project site. PM2.5 was obtained from the Brackenham AQMS, approximately 6.6 km north of the study site.

On average, data capture for 2021-2023 is 91% (Table 6 1) and thus may be considered representative for the baseline air quality conditions in the study area.

Table 6-1: Data Capture for data obtained from respective monitoring stations between 2021-2023

Pollutant	Data Capture (%)	Station
SO_2	96	Harbour
PM_{10}	92	CBD
$PM_{2.5}$	84	Brackenham
Average	91	

6.8 Socio-Economic Environment

The City of uMhlathuze is the third most important primary manufacturing area in KwaZulu-Natal in terms of economic production. Several of the world's industrial giants are located in uMhlathuze. The significant industrial concentrations are supported by the output and activities of several important development nodes. Most of the industrial and commercial activities are vested in Richards Bay, Empangeni and Felixton (specifically the industrial development nodes of the City of uMhlathuze).

The area is the third most important in KwaZulu-Natal in terms of economic production, contributing 7.6% of the total gross geographic product and 5.5% of total formal employment. Development of the port facilities through the years has initiated and promoted the development of manufacturing activity. The area's port and RBIDZ are important assets that

can successfully exploit opportunities to export produce to the vast markets of the world. Policies have been designed to promote industrial growth and encourage investment, with projects prioritised on the basis on the contribution made to job creation.

6.9 Visual Aspects

The surrounding developments and port infrastructure creates a barrier for the generator plant which will reduce the possible visual impacts from the generator on the surrounding receptors. Large infrastructure such as silos and administration buildings can be seen next to the generator site (see Figure 6-9and Figure 6-10)

Figure 6-9: Silos located opposite the generator project area.

Figure 6-10: Buildings located next to the generator project site.

7 SUMMARY OF SPECIALIST INVESTIGATIONS

This section provides an overview of the specialist studies undertaken for the project, including the following information regarding each study:

- The details of the specialist who prepared the report;
- An overview of the scope of each study; and
- An overview of each specialist's findings and the implications of those on the project.

7.1 Air Quality Impact Assessment

7.1.1 Specialist Details

An Air Quality Impact Assessment (AQIA) assessing the construction and operational impacts associated with the proposed TNPA 22MW Generator Plant has been undertaken by uMoya-NILU Consulting (Pty) Ltd (C/O Atham Raghunandan, dated 13 June 2024). This report is included in Appendix E-1.

7.1.2 Scope of Work

The scope of work performed in fulfilment of the requirements of the AQIA is provided below:

- Prepare a Plan of Study report to provide an overview of the assessment process and submit this to the Licensing Authority for comment and input.
- Use available data and information to describe of current state of the receiving atmospheric environment. This description will consider meteorology, air quality and the surrounding land use. Data will be sourced from relevant authorities via the South African Air Quality Information System (SAAQIS), the Richards Bay Clean Air
- Association (RBCAA), and the South African Weather Service (SAWS).
- Provide an overview of the legal requirements including regulations under the NEM:AQA and the requirements for an Atmospheric Emission License from the licensing authority.
- Develop an atmospheric emission inventory for the proposed project. Compounds that are regulated will be included in the emission inventory. These include sulphur dioxide (SO2), oxides of nitrogen (NOX), PM10, carbon monoxide (CO), total volatile organic compounds, including benzene, toluene, ethylbenzene and xylene (BTEX).
- The emission inventory and the estimation of emissions for the 22 MW Dual Fuel generator will be based on the process and plant design, fuel type, fuel consumption, emission factors and efficiency of the emission control devices. The US-EPA TANKS emission model will be used to estimate emissions from fuel storage.

- Predict ambient concentrations of the pollutants resulting from the emissions using the US-EPA approved and DEA recommended CALPUFF dispersion model and working according to the DEA guideline for dispersion modelling (DEA, 2012).
- Assess potential air quality impacts of emissions resulting from the proposed project and the implications for human health by evaluating model predicted ambient concentrations of the listed air pollutants with National Ambient Air Quality Standard (NAAQS) and/or internationally accepted air quality guidelines and standards. Impact assessment criteria provided by GCS will be used in the assessment.
- Assess cumulative impacts of the proposed project by considering existing ambient concentrations of air pollutants (available measured data) and the predicted concentrations (model results), i.e. the added effect of the proposed project to air quality currently experienced in the area.
- Prepare and submit a draft AIR to GCS for review with TNPA.
- Finalise the AIR.

7.1.3 Findings

The following points are noteworthy:

- Emissions of SO2, NOX, PM10 and CO from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects will result in an increase in ambient concentrations of SO2, NO2, PM10 and CO.
- The significance of impact relating to emissions from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects is predicted to be medium (negative) for SO2 because of predicted exceedances of ambient SO2 concentrations when diesel is used as an emergency back-up fuel on the Richards Bay CCPP Project and low (negative) for NO2, PM10 and CO.

Dust emissions were not estimated for the construction and decommissioning/closure phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during the construction and decommissioning/closure phase is therefore qualitative. The findings for both phases are similar.

- Dust generated in both phases are generally coarse and impacts manifest as a nuisance rather than a health issue.
- The magnitude of the impact is considered to be low.
- Activities are likely to endure for a maximum of 6-12 months and impacts may only occur during this period. The duration is therefore short-term.

- Dust emissions are released close to ground level with little or no buoyancy. This implies that their dispersion is limited and the extent of potential impacts will be limited to the proposed site.
- There is a low probability of potential impacts occurring as a result of the activities.
- The significance of the impact for the construction and decommissioning/closure phase on air quality is low (negative).

7.1.4 Recommendations

The following recommendations are provided to minimise air quality impacts during construction activities:

Mitigation measures to control dust

- A few general recommendations to minimise the emission of dust from decommissioning activities are proposed below:
- Strict enforcement of speed limits on all site roads
- Routine water spraying of site roads and denuded/disturbed areas (more frequent spraying may be necessary during dry, windy conditions)
- Removal of vegetation only if necessary
- Revegetation of disturbed areas once decommissioning activities are complete.

No further dust control or mitigation is deemed necessary as these measures will be adequate to control dust emissions.

Air quality management interventions in the form of the control of emission have been considered in all aspects of design and operation. Further emission reduction interventions are deemed to be unnecessary considering the low impact of the proposed project on air quality. From an air quality perspective, it is the reasonable opinion of the authors that the proposed TNPA Power Generation Project should be authorised considering the findings of this AIR.

7.2 Wetland Assessment

7.2.1 Specialist Details

The Wetland Assessment has been undertaken by Land Matters Environmental Consulting (Pty) Ltd (C/O Dr. Rowena Harrison, May 2024) for the proposed TNPA 22MW Generator Project in accordance with the requirements for specialist assessments as outlined within the 2014 EIA Regulations (as amended). This report is included in Appendix E-5.

7.2.2 Scope of Work

The Scope of Work to achieve the requirements of the 2014 EIA Regulations (as amended) is in brief, as follows:

- To determine if any wetlands occur within the study site according to the Department of Water Affairs and Forestry[23] "Practical field procedure for the identification and delineation of wetlands and riparian areas".
- To determine if any wetlands occur within the 500m regulated area around the proposed infrastructure as defined in GN509 of 2016 in terms of water uses as listed in Section 21c and 21i of the NWA.
- To classify any identified wetland habitats in accordance with the latest approach; 'Classification System for Wetlands and other Aquatic Ecosystems in South Africa' (Ollis et al., 2013).
- To provide a comment on the findings of the investigation into the presence of wetland systems and the acceptability of the proposed project proceeding.

7.2.3 Findings

Taking into account the findings of the desktop and field assessment, the author has identified that there are no wetlands located within the proposed infrastructure site as well as the 500 m regulated area as defined in GN509 of 2016 in terms of water uses as listed in Section 21c and 21i of the NWA. Historic and current aerial imagery show the complete transformation of the Port area in the 1970s and the diversion of the Mhlathuze River away from the Port. The development of the Port has further led to the presence of hardened surfaces, changes to the soil profiles, changes to the topography of the site and changes to the vegetation. No hydric soils or hydrophytic vegetation were furthermore identified.

Considering the above factors this Wetland Comment has reclassified the very high sensitivity classification of the site for an aquatic biodiversity (wetland) perspective to a low classification. It is therefore the author's opinion that no wetland systems will be impacted by the proposed infrastructure and the proposed project be authorised from a wetland's perspective. Best Practice Guidelines for the construction and operation of the infrastructure must be adhered to in order to minimise impacts to the receiving environment.

Based on the findings there are no wetlands located within the project area or 500m from the area.

[23] Department of Water Affairs and Forestry (DWAF) is now named the Department of Water and Sanitation (DWS).

7.3 Soil and Agricultural Potential Assessment

7.3.1 Specialist Details

A Soil and Agricultural Potential Specialist Assessment has been undertaken Land Matters Environmental Consulting (Pty) Ltd (C/O Dr. Rowena Harrison, May 2024) for the proposed TNPA 22MW Generator Project in accordance with the requirements for specialist assessments as outlined within the 2014 EIA Regulations (as amended). This report is included in Appendix E-3.

7.3.2 Scope of Work

The scope of work was performed in fulfilment of the requirements of the assessment is provided below:

- Conduct a soil survey and mapping exercise of the study site.
- Describe the physical properties of the soils sampled at each sampling location.
- Describe the slope and climate of the site.
- Describe the agricultural potential of the site based on the information attained from the soils identified within the site; slope; climatic data, rockiness, surface crusting and wetness.
- Confirm or dispute the project site's current environmental sensitivity classification of very high for agricultural production as identified by the screening tool (Department of Forestry, Fisheries, and the Environment).
- Identify current and possible negative impacts of the proposed project on the soil and land capability of the site.
- Recommend mitigation measures to lessen these impacts within the study site and the implementation of suitable rehabilitation measures if necessary.

7.3.3 Findings

In field data collection was taken on the 08th of May 2024. Soil sampling was conducted throughout the site using a standard hand-held auger with a depth of 1200 mm. At each sampling point the soil was described to form level according to Soil Classification: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018).

7.3.3.1 Land Type Data

Land type data for the site was obtained from the Agricultural Research Council (ARC). The land type data is presented at a scale of 1:250 000 and entails the division of land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System. The soil data was interpreted and reclassified according to the Taxonomic System (Land Type Survey Staff, 1972-2006).

The study site is situated in the Ia74 land type as defined in the relevant Land Type Map (2830 Richards Bay). (Figure 7-1). The Ia land type represents land where at least 60% of the area is pedologically youthful, deep, and unconsolidated. Common soil forms include Oakleaf, Dundee, and Namib soils. These soil forms are not generally associated with high agricultural potential with the exception of the Oakleaf soil form which can be very productive under the correct management.

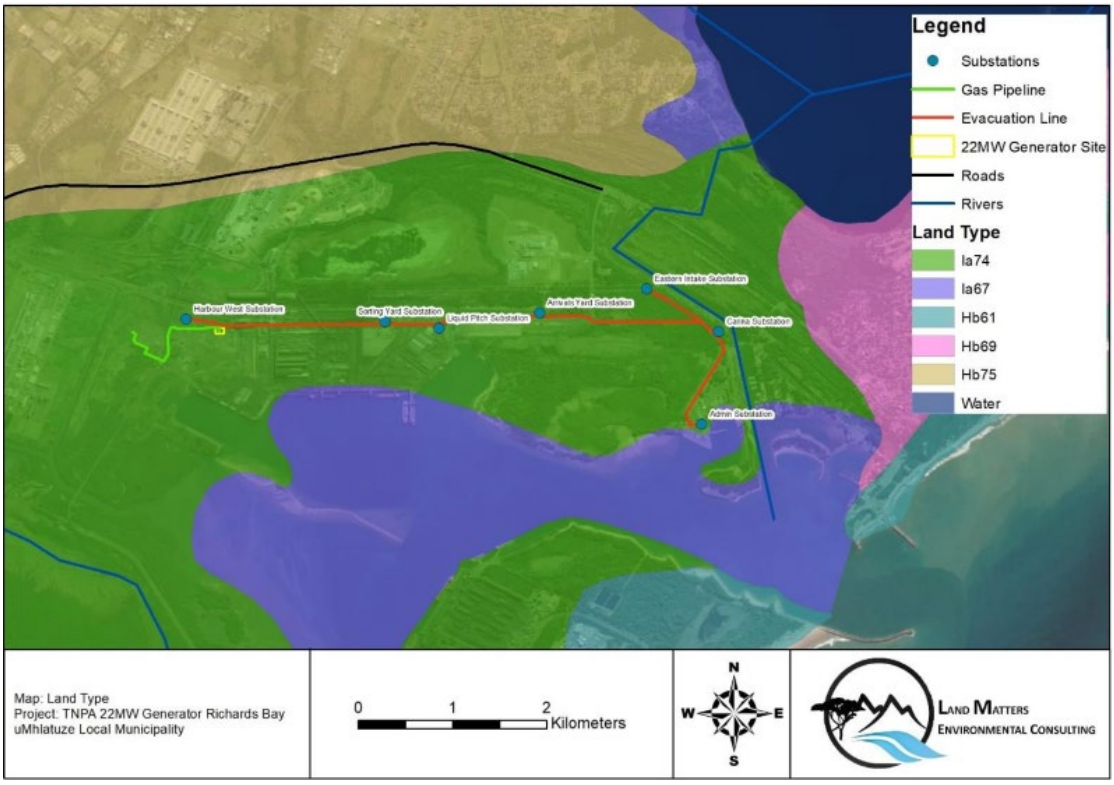


Figure 7-1: Land type data for the study site (Land Matters Environmental Consultants, 2024)

7.3.3.2 Historic and Current Land Use

An investigation into historic aerial imagery of the site was undertaken. Aerial imagery from 1957 (Figure 7-2) shows the proposed infrastructure site was located within the Mhlathuze River mouth site before the Richards Bay Port was constructed. The site is associated with a single, large, relatively undistrubed estuarine system. However in 1972, construction for the Richards Bay Port was started, with the construction of a berm, or causeway and canal system that divided the estuarine system into two zones (1) the Mhlathuze River mouth and (2) the Richards Bay Harbour and Port. The northern section has been developed into South Africa's largest shipping harbour (Richards Bay Port) whilst the southern area was designated as a nature sanctuary (Mhlathuze Estuary) (Weerts and Cyprus, 2002).

Historic aerial imagery from 1977 (Figure 7-3) shows the newly constructed Port and the diversion of the Mhlathuze River away from construction area. The site where the proposed

infrastructure is to be constructed is now located in a developed area that is anthropogenically modified.

Figure 7-2: Historic aerial imagery from 1957 (Land Matters Environmental Consultants, 2024)

Figure 7-3: Historic aerial imagery from 1977 (Land Matters Environmental Consultants, 2024)

Imagery from 1983 shows the continued development of the study site (Figure 7-4) and thus the continued modification to the soils of the site. These impacts reduce the viability of the area for any agricultural activities (cultivation of livestock grazing) both currently as well as in the future.

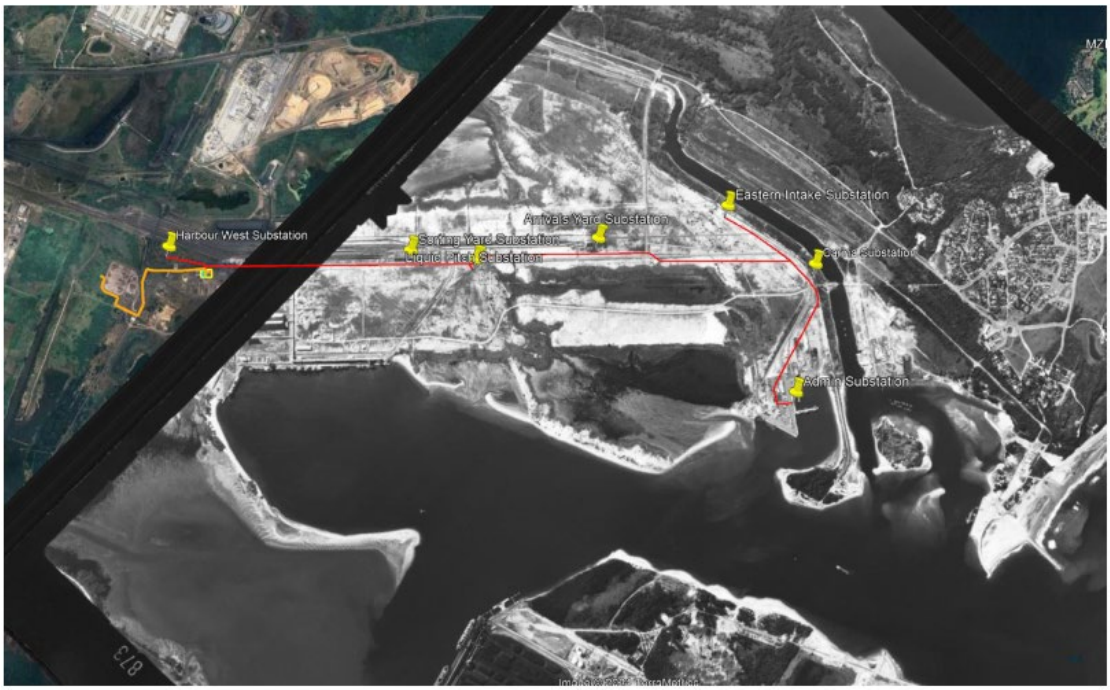


Figure 7-4: Historic aerial imagery from 1983 showing the Richards Bay Harbour and the proposed infrastructure site in an area that has already been developed

In most recent aerial imagery available (2024) (Figure 7-5), one can see the full development of the Port and the completely changed area in which the infrastructure is proposed to be located. Changes include, topography, the presence of hardened surfaces and the mixing, transport, and pollution of the original soil profiles within the area.

Figure 7-5: Current aerial imagery from 2024

7.3.3.3 Field Survey – Soil Assessment

Soil augur sample points were taken throughout the study site (Figure 7-8). This was to determine the extent of soil types and this information was then utilised to create a soil map for the study site (Figure 7-9, Figure 7-9, Figure 7-10, and Figure 7-11).

The study site conforms to the Land Type classification with the original soil form being associated with an old estuarine area and therefore having pedogenetically young soils. However, the construction of the Port in the 1970s has drastically changed the soils and this area must now be classified in terms of an anthropogenic classification and thus belongs to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Anthrosols and Technosols are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied. Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form). This is as a result of the intentional deposition of soil material over the original estuarine site to create the Port as well as the polluted nature of a large majority of the soils from settled coal dust and other chemicals (Figure 7-6, Figure 7-7). This soil is not suitable for agricultural production as there is no intention to rehabilitate it and it cannot be remediated to being agriculturally productive within one life span.

Figure 7-6: Soils identified in the infrastructure site including (A) the Witbank soil which includes deposited material on top of (B) the original estuarine soils. Pictures were taken during the site visit on 8th of May 2024.

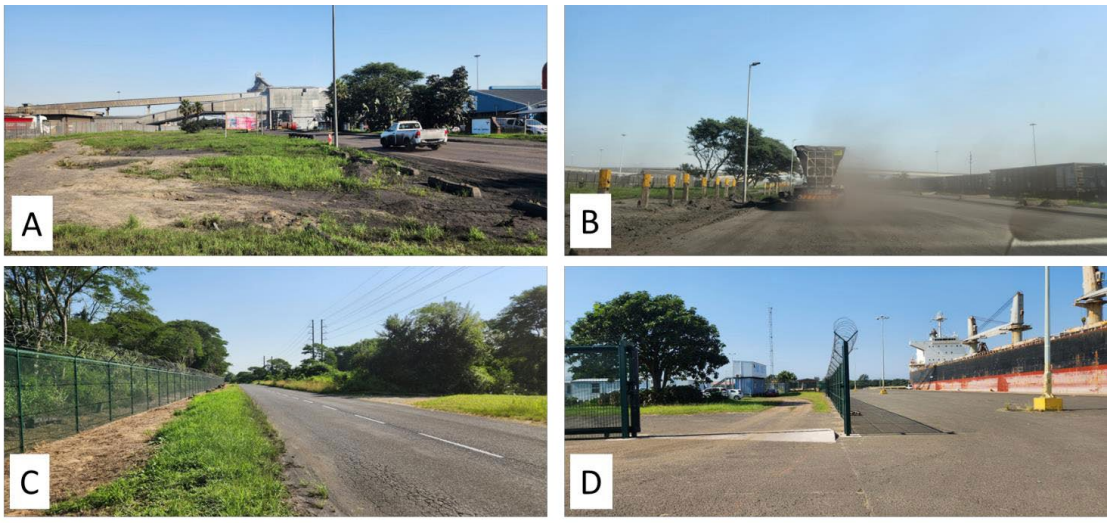


Figure 7-7: (A and B) Chemically polluted soils predominantly from coal dust which are situated on the roadside in which the evacuation line will be placed and (C and D) transported soils and physically disturbed soils (Witbank and Grabouw) along the road edge. Pictures were taken during the site visit on 8th of May 2024.

Table 7-1 gives information on the different soil characteristics identified at each auger sampling site. Soil sampling points are displayed in Figure 7-8. These characteristics include:

- Soil form and family;
- Soil colour;

- Soil field texture;
- Effective rooting depth;
- Subsoil permeability; and
- Slope at sampling location.

Table 7-1: Soil Properties identified at each auger sampling point (Land Matters Environmental Consulting, 2024)

NUMBER OF SAMPLE (AS PER CODE FIG. 17)	SOIL FORM	SOIL FAMILY	SOIL COLOUR	FIELD TEXTURE	EFFECTIVE ROOTING DEPTH (MM)	PERMEABILITY	SLOPE CLASS (%)	OBSERVATIONS
1	Witbank	1100	10YR 3/4	Loamy Sand	700	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
2	Witbank	1100	10YR 3/3	Sandy	>1000	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
3	Witbank	1100	10YR 3/3	Sandy	1200	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
4	Industria	1200	10YR 5/3	Loamy Sand	200	Restricted	3-5	Polluted soils Predominantly from settled coal dust adjacent to road.
5	Industria	1200	10YR 4/3	Loamy Sand	300	Restricted	0-2	Polluted soils Predominantly from settled coal dust adjacent to road.
6	Industria	1200	10YR 5/3	Loamy Sand	200	Restricted	0-2	Polluted soils Predominantly from settled coal dust adjacent to road.
7	Grabouw	2000	10YR 5/3	Sandy	400	Restricted	0-2	Adjacent to road side, disturbed soils.

NUMBER OF SAMPLE (AS PER CODE FIG. 17)	SOIL FORM	SOIL FAMILY	SOIL COLOUR	FIELD TEXTURE	EFFECTIVE ROOTING DEPTH (MM)	PERMEABILITY	SLOPE CLASS (%)	OBSERVATIONS
8	Grabouw	2000	10YR 5/3	Sandy	600	Restricted	0-2	Adjacent to road side, disturbed soils.

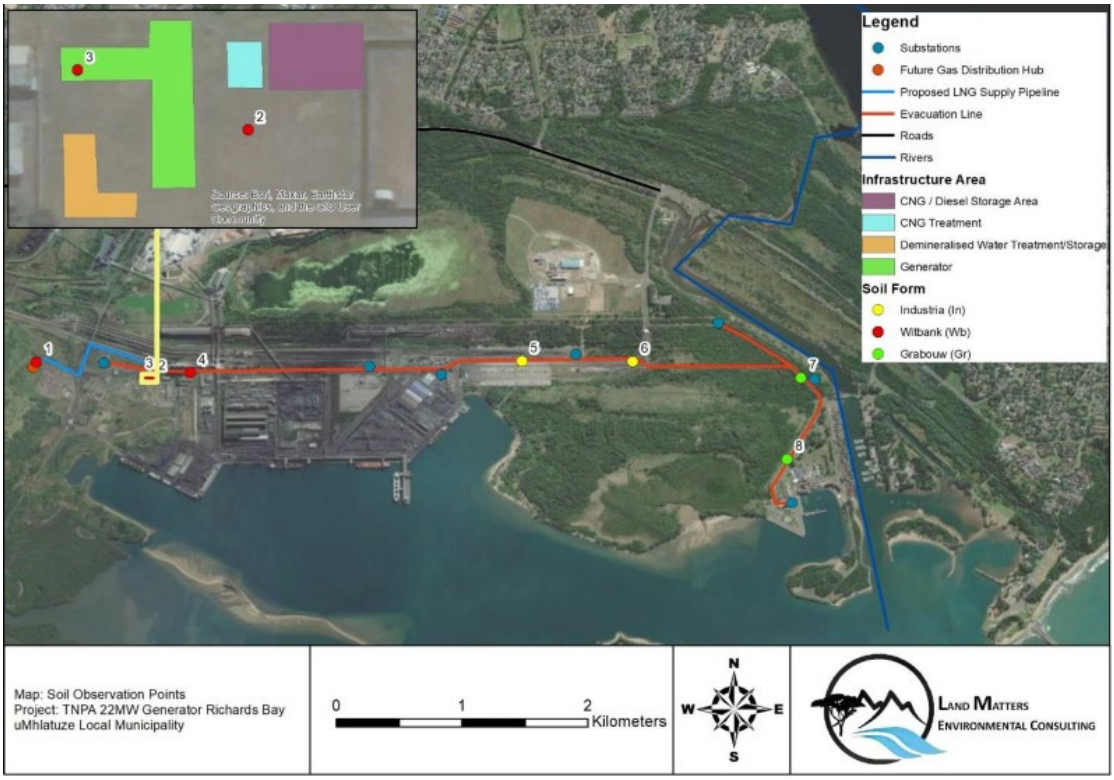


Figure 7-8: Soil observation points within the proposed infrastructure area (land Matters Environmental Consulting, 2024)

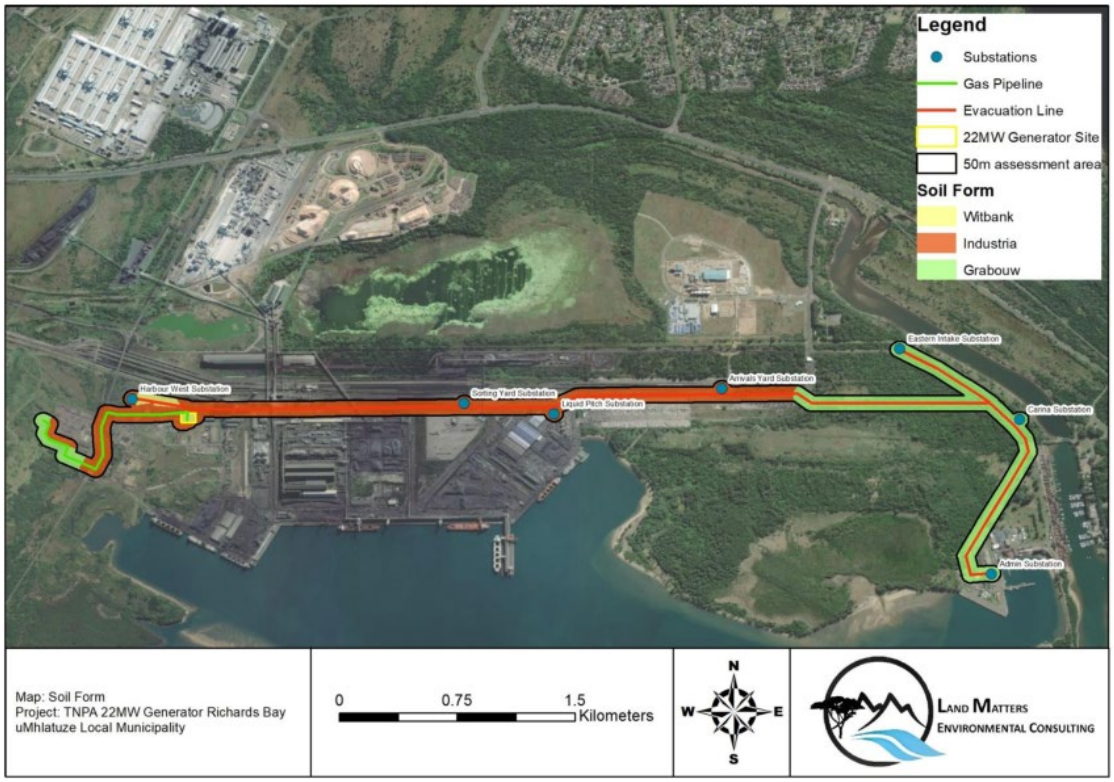


Figure 7-9: Soil forms recorded in the study site

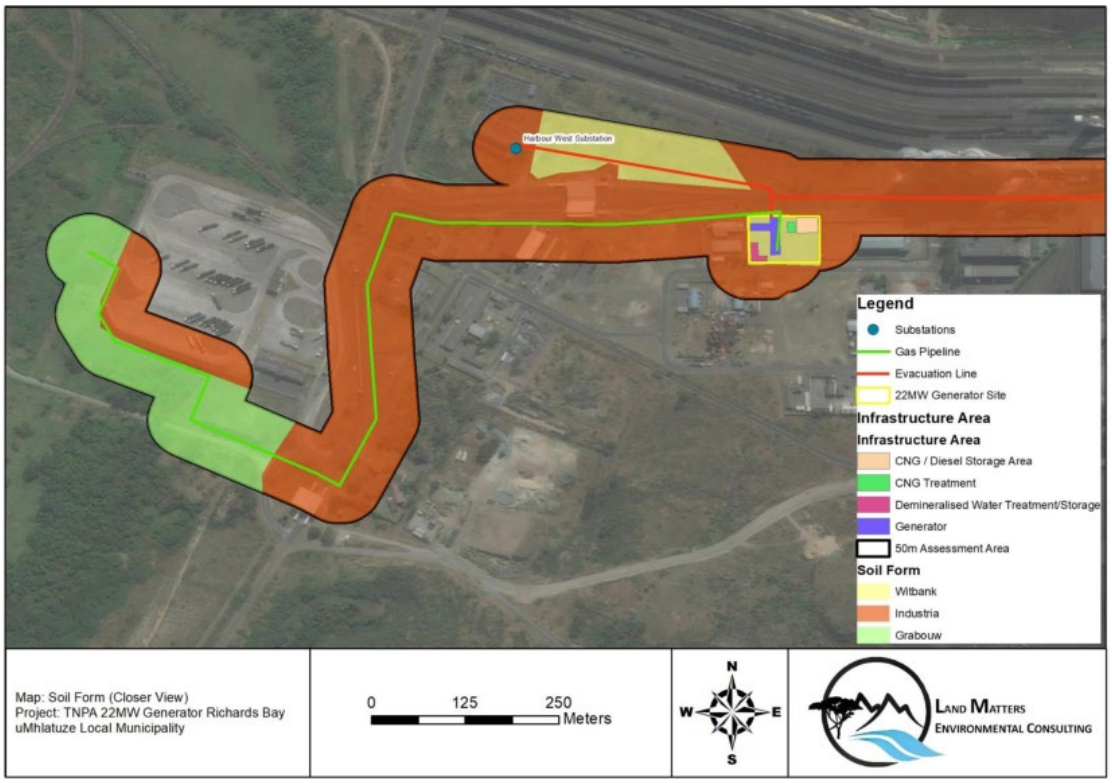


Figure 7-10: Closer view of the soil forms recorded in the study site

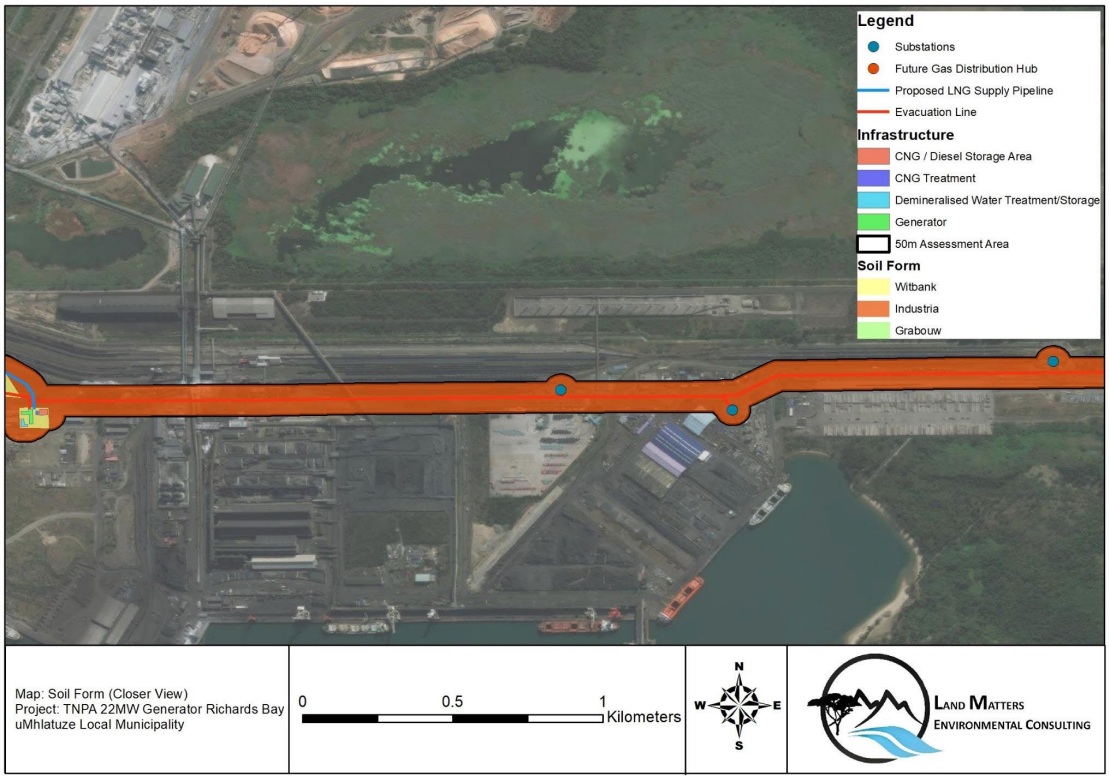


Figure 7-11: Closer view of the soil forms recorded in the study site

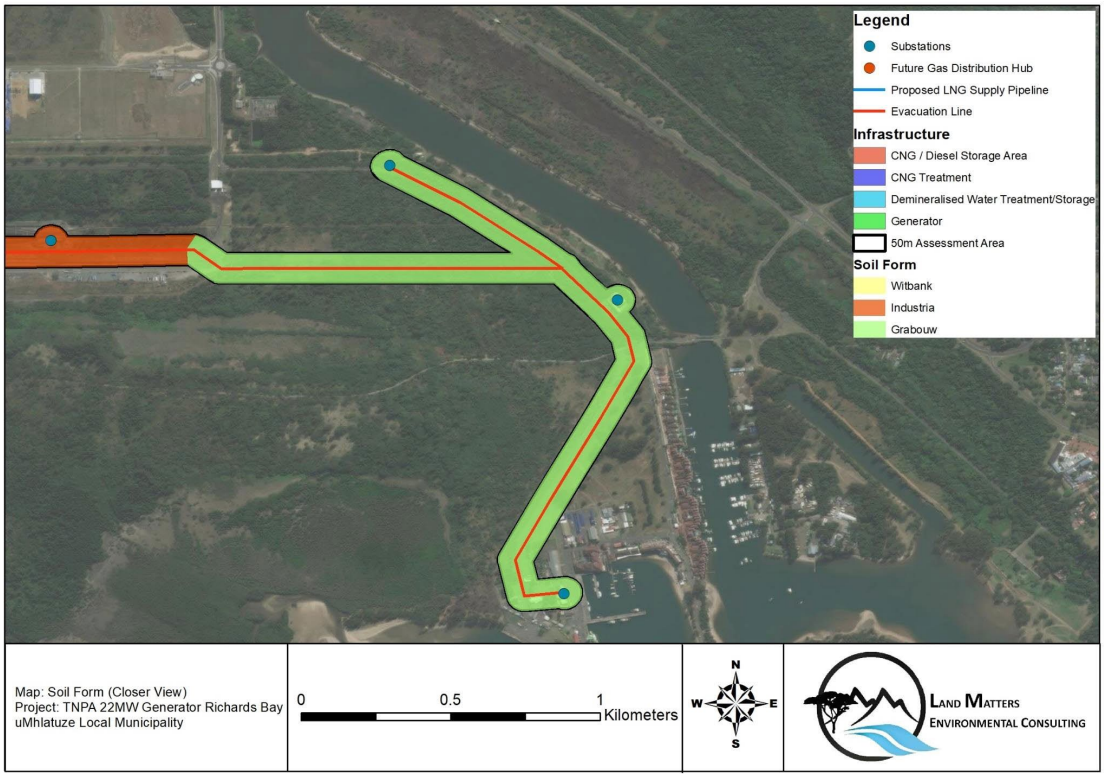


Figure 7-12: Closer view of the soil forms recorded in the study site

7.3.3.4 Soil Agricultural Potential

Land evaluation is the process of estimating the production potential for alternative land uses. The land capability and agricultural production for the proposed infrastructure site was determined through an evaluation of the soil, terrain, vegetation, and climatic features. The methodology provided by Smith (2006) was utilised. This methodology is an attempt to grade the potential of the land in terms of its best and worst uses in an arable situation. The land is classified according to its limitations, either on a permanent or temporary basis. The system is biased towards soil conservation and is based on the negative features of the land. The classification system is categorised into eight classes (I to VIII) and three capability groups (Table 7-2). Classes I to IV are suitable for arable land, classes V to VII are suitable for grazing land and class VIII is suitable for wildlife.

Table 7-2: Land capability classification descriptions

Land Capability Class	Increased Intensity of Use									Land Capability Groups
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W		LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife

W - Wildlife	MG – Moderate Grazing	MC – Moderate Cultivation
F - Forestry	IG – Intensive Grazing	IC – Intensive Cultivation
LG – Light Grazing	LC – Light Cultivation	VIC – Very Intensive Cultivation

The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in Table 7-3. The final land potential results are then described in Table 7-4.

Table 7-3: Climate combination table for land potential classification

Land Capability Class	Increased Intensity of Use							
	C1	C2	C3	C4	C5	C6	C7	C8
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

Table 7-4: Land potential classes descriptions

Class	Description
I	Very high potential. No limitations. Appropriate contour protection must be implemented and inspected.
II	High potential. Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
III	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate contour protection must be implemented and inspected.
IV	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate permission is required before ploughing virgin land.
V	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall.
VI	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures, or rainfall. Non-arable
VII	Low potential: Severe limitations due to soil, slope, temperatures, or rainfall. Non-arable.
VIII	Very low potential: Very severe limitations due to soil, slope, temperatures, or rainfall. Non-arable.

The primary function of land evaluation is to predict the possible effects, both detrimental and beneficial for a change in land use. The most important soil and landscape characteristics when applying this system are texture (Clay %), soil depth, permeability, slope, rockiness, surface crusting and wetness. At the study site these were found to occur according to the following broad patterns.

- **Soil texture**: Soils were examined for texture within the field. Soils were recorded as having a sandy or loamy sand texture. This is most likely as a result of the original area in which the Port is located as being the estuary of the Mhlathuze River. Soils were brought in and deposited on top of the original soil profiles. This deposited soil is also sandy to loamy sand in nature. The majority of soils were furthermore coated by coal particles from settled dust along the roadway. Sandy to loamy sand textures are not generally agriculturally productive as they do not retain water for long enough to allow for the optimal crop of a large variety of crops. This limitation coupled with the polluted nature of the soils reduces the use of these soils for agricultural production.
- **Soil depth**: Soil depths were generally shallow and compacted as a result of the anthropogenic environment. Soil depth is considered a limitation to agricultural production.

- **Soil permeability**: As a result of the anthropogenic nature of the soils, permeability is limited in the majority of the study site. This is due to the existence of hardened surfaces, the compacted nature of the soils, and in some instances the polluted nature of the soil. Soil permeability is therefore a limitation to agricultural production.
- **Slope/Topography**: The site consisted of gentle terrain with the slope percentages recorded in the 0-10% category. Slope is therefore not a limitation to cultivation.
- **Surface crusting**: Compaction of the first 100 - 200 mm of the majority of soil profiles examined was noted and is an impeding layer for water infiltration. It is a limitation to the productivity of the soils.
- **Rockiness**: Rockiness was not identified as a limitation to cultivation Surface rocks were not encountered on the site. Rockiness is not seen as a limitation to cultivation.
- **Current activities on site**: The Richards Bay Port is a completely transformed area, utilised as a coal terminal for the export of coal. It consists of hardened surfaces, pollution from settled coal dust, stockpiles of coal, and other material and in open areas, pioneer and alien invasive species exist. It is not utilised at all for agricultural production and is unlikely to be rehabilitated for agricultural production in the future.

Considering the above factors, the study site has been categorised into the Class VII and Class VIII categories (Figure 7-13).

The Class VII category has been mapped where the Witbank and Grabouw soils were recorded. The soils are not suitable for agricultural production in the area but do not consist of polluted soil or hardened surfaces. They are physically disturbed or are deposited. The Class VIII soils were mapped where settled coal dust as well as the presence of hardened surfaces, completely reduces the use of these areas for any agricultural production. These areas are also unlikely to be rehabilitated to be used for agriculture in the future.

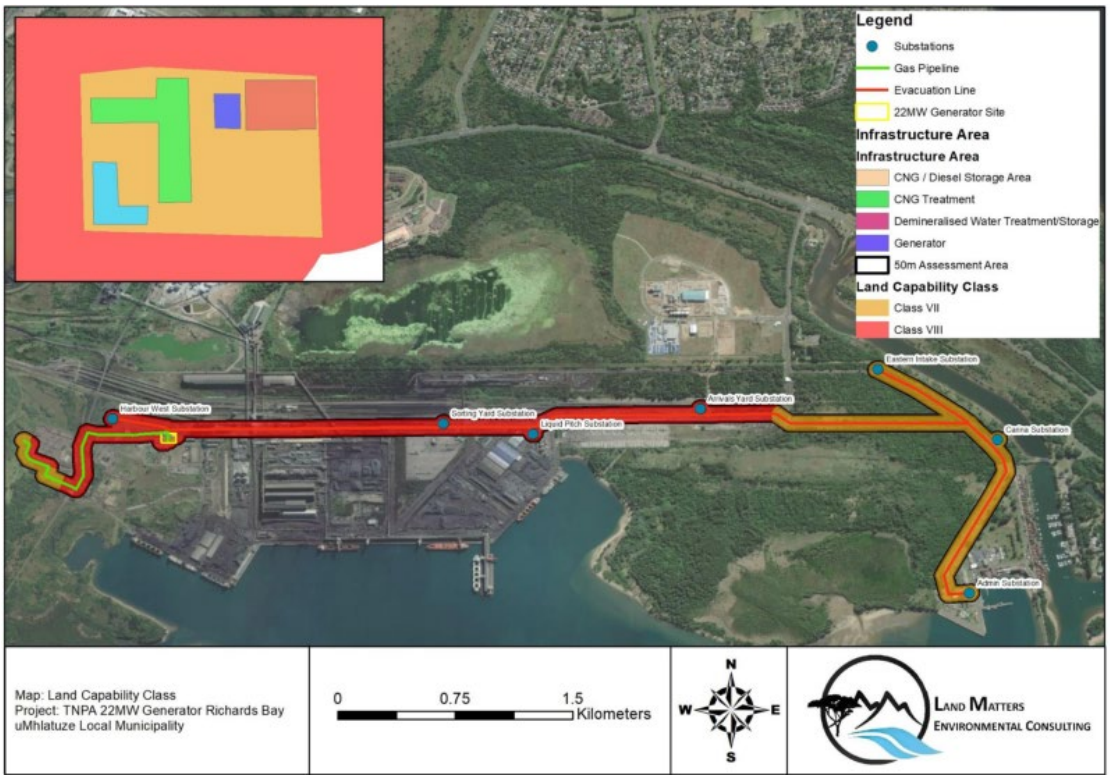


Figure 7-13: Land Capability Classes of the study site

The specialist has indicated that taking into account all factors the soil and agricultural assessment has reclassified the very high sensitivity classification of the site for agricultural production to a low classification for agricultural production. This considers the use of the area as the Richards Bay Port as well as the non-arable to problematic soil characteristics of the site.

7.3.4 Recommendations

No severe and/or irreversible impacts are anticipated as far as the soil agricultural land capability aspect is concerned. The following integrated mitigation measures are recommended to reduce the impact of the proposed project on the receiving environment:

- Any recommendations provided by a storm water management plan must be adhered too.
- Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created.
- All stockpiles created from the construction activities must be protected from erosion, stored on flat areas, where runoff will be minimised.

- Stockpiles must also only be stored for the minimum amount of time necessary.
- Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures.
- Vehicles are to be maintained in good working order so as to reduce the probability of leakage of fuels and lubricants. A dedicated store with adequate concrete flooring or bermed area must be used to accommodate chemicals such as fuel, oil, paint etc.
- Concrete is to be mixed on mixing trays only, not on exposed soil. Concrete and tar must be mixed only in areas which have been specially demarcated for this purpose. After all the concrete / tar mixing is complete all waste concrete / tar must be removed from the batching area and disposed of at an approved dumpsite.
- An Environmental Management Plan must be implemented to ensure that all waste and pollutants are handled, stored, and disposed of correctly.

7.4 Soil, Surface Water and Groundwater Assessment

7.4.1 Specialist Details

The Baseline Soil Surface Water and Groundwater Assessment for the Proposed TNPA 22MW Genset Development was done the to determine the possible impacts of the activity might have on the groundwater, surface water and soil has been undertaken by GCS (Pty) Ltd (C/O Hendrik Botha, dated April 2024). This report is included in Appendix E-4

7.4.2 Scope of Work

The scope of work was as follows:

- Data review of previous studies and public data.
    - This includes an overview of the soils, groundwater flow fields, groundwater levels, nearest watercourses, wetlands, geology, and hydrogeology.
- Fieldwork
    - Inspections:
        - Initial site inspection and inspection for visible spillages and contamination on-site.
        - Inspection of all drains and existing monitoring boreholes (if they exist or if wells are close by from neighbours).
        - Collect photo-ionisation-detector (PID) readings in the drains and monitoring wells on the site. This will help determine if there are volatile organic carbons (VOC) on the premises.

        - Field hydrocensus within a 500 m radius of the site to verify if there are groundwater boreholes.
        - Field survey of watercourses/rivers and streams within a 500 m radius of the site.
    - Auger hole drilling:
        - Drill several auger test holes to evaluate sub-soils on a preliminary level.
        - Soils were profiled per SA guidelines, and the PID was used to screen for VOCs at depths of 30 cm down to the bottom of the hole.
    - Sampling:
        - 4 soil samples were budgeted, for hydrocarbon screening. Composite samples were taken.
- Risk Assessment:
    - Identify potential pathways and receptors.
    - Determine if there is existing site contamination and what the potential impact would be if the proposed activities take place.
- Reporting:
    - A writeup of the status quo of the site based on the groundwater, surface water and soil data that was gathered for the site. Several maps were produced.

7.4.3 Findings

7.4.3.1 Soil and Water Quality

The soil, groundwater and surface water quality for the project area were derived from available literature and site-specific data and is discussed in the sub-sections below.

Groundwater Quality

Literature suggests that the electrical conductivity (EC) for the underlying aquifers generally ranges between 0 – 70 mS/m (milli Siemens/meter) and the pH ranges from 6 to 8 (refer to Figure 7-14). Groundwater is described as Type D with sodium, potassium, chloride, and sulphate as the dominant ions. Similar conditions are expected for surface water bodies fed by natural groundwater baseflow. Water obtained from the aquifers can generally be used for domestic and recreational use.

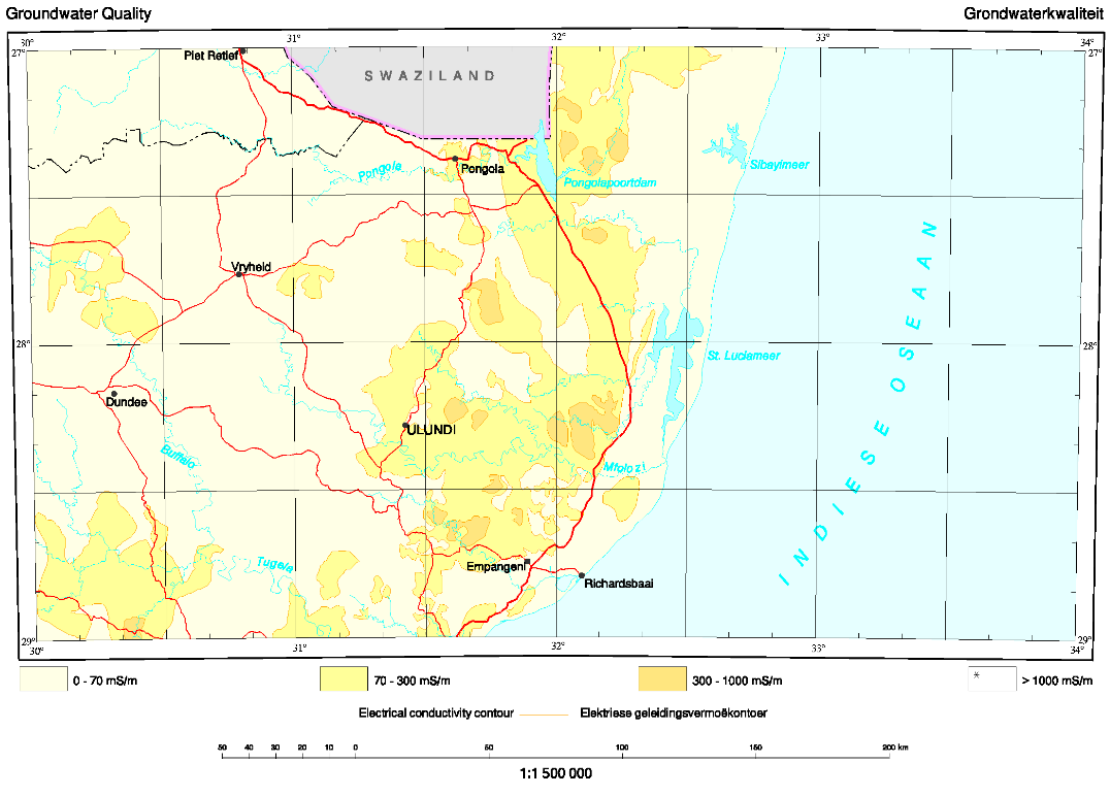


Figure 7-14: Groundwater conductivity for the study area (King, et al., 1998)

Surface Water

No surface water streams exist on the site. Thus, no surface water quality data is available or could be generated.

Soil Quality

GCS undertook a soil survey on the 12 and 13th of February 2024. The findings of the soil survey and site walkover assessment are summarised in Table 7-5 and the spatial distribution of the investigation points.

During the soil survey, a photo-ionisation-detector (PID) was used to determine if there are volatile organic carbons (VOC) on the premises and in the soils. The VOC readings ranged from 0.4 to 30 ppm and were measured at various depths. Acceptable VOC levels for hydrocarbons are <100 ppm.

Table 7-5: Hydrocarbon screening of composite soil samples

LabNo.	49365	49365	49365	49365
Date Received.	20/02/2024	20/02/2024	20/02/2024	20/02/2024
Date Analysed.	20/02/2024	20/02/2024	20/02/2024	20/02/2024
Date Reported.	2024/02/26	2024/02/26	2024/02/26	2024/02/26
Project Name.	TNP Richards Bay	TNP Richards Bay	TNP Richards Bay	TNP Richards Bay
Project Number.	23-0807	23-0807	23-0807	23-0807
Sample number.	**RB-AH1**	**RB-AH3**	**RB-AH4**	**RB-AH7**
Matrix.	Soil	Soil	Soil	Soil
BTEX/GRO Dilution.	20	20	20	20
TPH Dilution.	1	1	1	1
BTEX/GRO Units.	µg/kg	µg/kg	µg/kg	µg/kg
TPH Units.	mg/kg	mg/kg	mg/kg	mg/kg
MTBE.	<100	<100	<100	<100
TAME.	<100	<100	<100	<100
Benzene.	<8	<8	<8	<8
Toluene.	<20	<20	<20	<20
Ethylbenzene.	<8	<8	<8	<8
m+p-Xylene.	<16	<16	<16	<16
o-Xylene.	<8	<8	<8	<8
1,3,5-Trimethylbenzene.	<8	<8	<8	<8
1,2,4-Trimethylbenzene.	<8	<8	<8	<8
Naphthalene.	<8	<8	<8	<8
GROC7-C9.	<200	<200	<200	<200
TPHC10-C14.	<20	<20	<20	<20
TPHC15-C36.	<22	<22	<22	<22
TPHC10-C36 Total.	<22	<22	<22	<22

7.4.4 Conclusions

The following is concluded:

- The project falls within quaternary catchments W21F of the Pongola to Mtamvuna Elevations for the site area range from 5 to 20 metres above mean sea level (mamsl). The mean annual precipitation (MAP) for the area is in the order of 1071 mm/yr with mean annual evaporation (MAE) exceeding 1300 mm/yr.
- The project stretches from Meerensee towards the eastern side of the Richards Bay Port to the west of the Tansnet Permit Office (Harbour West area). The proposed Evacuation Lines follow existing access and service line servitudes, and no recognized rivers or streams are associated with the evacuation line that connects the Admin, Carina, Eastern Intake, Arrivals Yard, Storage Yard, Sorting Yard, and Harbour West Substations. The proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site is located within an area of about 0.44Ha with no recognised drainage lines or nearby rivers and streams. The site is bound towards the east and west by industrial storage houses and towards the north by Newmark Road. Rainfall-runoff generated on-site, and therefore overall

drainage, is towards the north and the south of the site towards the access roads and into dedicated and existing storm drains.

- The soil survey undertaken in the vicinity of the proposed generator and diesel storage tank area suggests no existing hydrocarbon contamination is present. Soil augering during this investigation confirmed the presence of built-up quaternary sands with refusal reached ranging from 1.4 to 2.2 m. No seepage was observed in any of the auger holes, placing the water level of the site deeper than 2.2 m.

Based on the existing activities and mitigations to offset impacts, GCS believes that the authorisation of the activities should be considered. The final decision rests with the Government Authorities and should be based on the predicted soil-water impacts as well as the socio-economic value of the project. This statement is further founded on the assumption that the proposed mitigation measures and EMPr recommendations be implemented during the life of the project.

7.5 Terrestrial Biodiversity

7.5.1 Specialist Details

A Terrestrial Biodiversity Study for the proposed TNPA 22MW Generator Project has been undertaken by Ecolink South Africa (C/O Magnus van Rooyen, dated May 2024). This report is included in Appendix E-2.

7.5.2 Scope of Work

The Scope of Work (SoW) is comprised of the following tasks:

- A methodology of the site visit and techniques used to assess the specific aspects of the site;
- Details of the assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives (where applicable);
- An indication of any areas that are to be avoided, including provision of buffers;
- A description of any assumptions made and any uncertainties or gaps in knowledge;
- A description of the findings and potential implications of such findings on the impact of the proposed activities;
- Any mitigation measures for inclusion in the Environmental Management Programme Report (EMPr);

- Any conditions for inclusion in the Environmental Authorisation and the Water Use Licence;
- Any monitoring requirements for inclusion into the EMPr or Water Use Licence; and
- A reasoned opinion whether the activity should be authorised based on the findings of the assessment.

In addition to the above terms of reference, cognisance of the requirements of the Department of Forestry, Fisheries and the Environment's biodiversity assessment requirements as detailed in their Online Screening Assessment Tool. The outcome of the Online Screening Tool has identified the following sensitivities associated with the site.

7.5.3 Findings

National Vegetation Map, South African National Biodiversity Institute (SANBI) (2018)

The project site is located in Subtropical Alluvial Vegetation (Aza7) that has a distribution in Limpopo, Mpumalanga and KwaZulu-Natal Provinces and in parts of eSwatini. The vegetation occurs along some rivers and river-fed pans in the subtropical regions of eastern South Africa, in particular in the Lowveld of Mpumalanga and Limpopo (Limpopo, Luvubu, Olifants, Sabie and Crocodile Rivers) and northern KwaZulu-Natal (Phongolo, Usuto and Mkuze Rivers). The vegetation type occurs only in the Savanna Biome ranging in an altitude from 0m – 1000m.

The vegetation typically consists of medium to tall grassland with scattered low shrubs. Large portions of the vegetation type have been transformed by agricultural practices dominated by forestry, the growing of sugarcane and infrastructure development (especially in and around the town of Richards Bay.

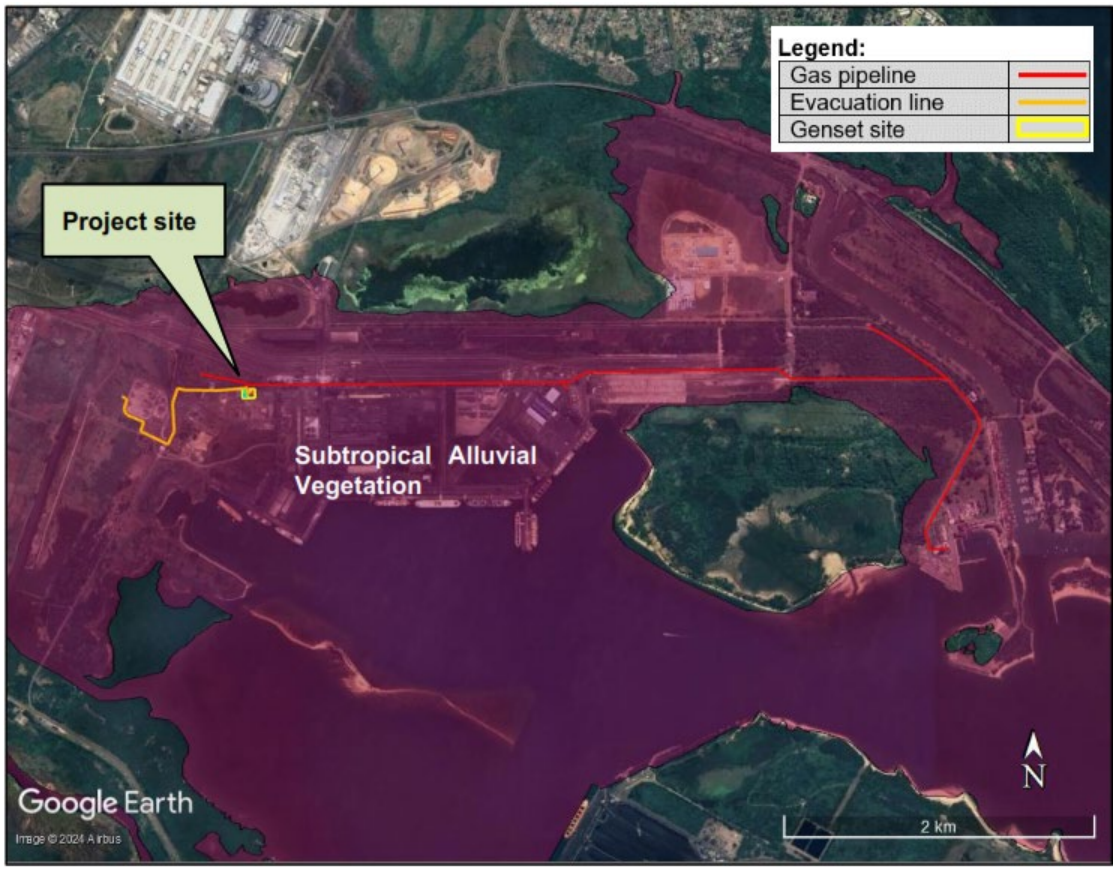


Figure 7-15: Location of the project site within the Subtropical Alluvial vegetation type (Aza7)

KwaZulu-Natal Biodiversity Sector Plan (2014)

The KwaZulu-Natal Biodiversity Sector Plan (2014) is a dataset that contains the following layers: landscape corridor, vegetation types, Critical Biodiversity Areas (CBAs), provincial conservation status and Protected Areas.

The dataset has indicated the presence of fragmented CBA areas within and within close proximity of the project site. These fragmented CBAs are classified as "irreplaceable" in the Sector Plan. The location of these fragmented CBAs is shown in Figure 7-16.

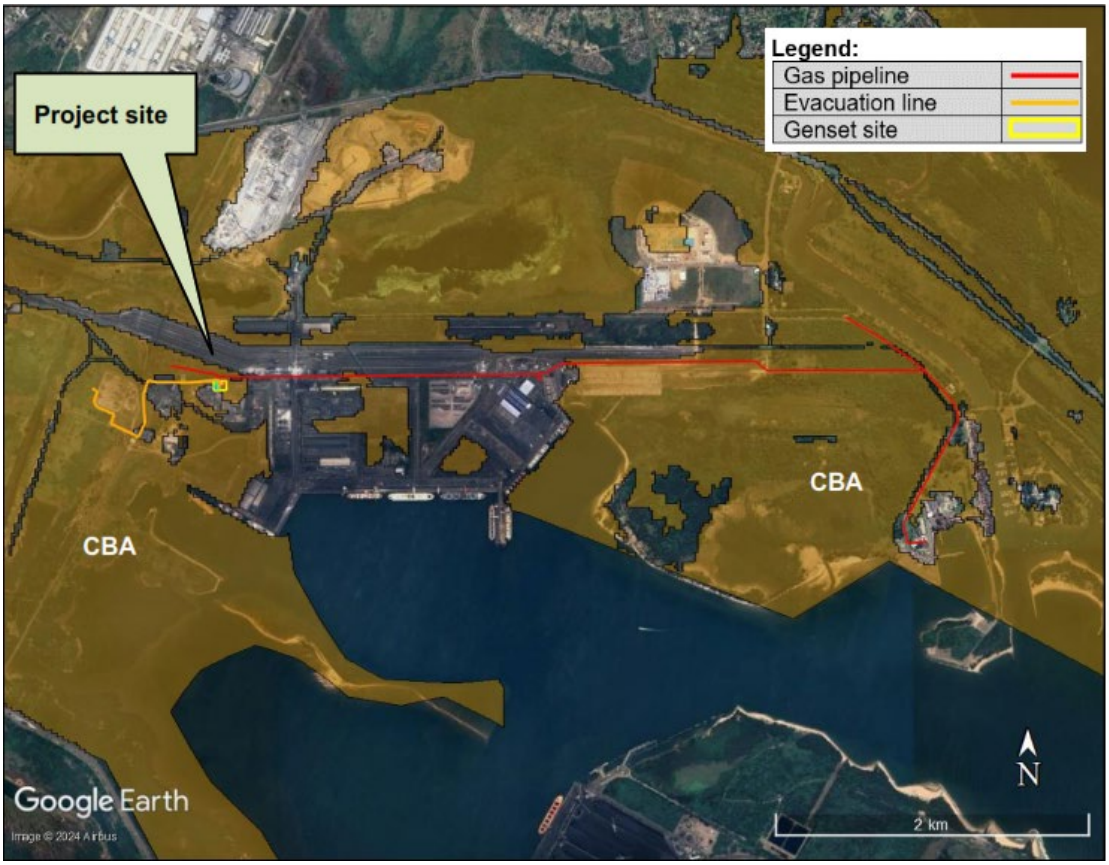


Figure 7-16: Location and extent of the fragmented CBAs included in the KwaZulu-Natal Biodiversity Sector Plan (2014)

South African National Land-cover (2020)

The South African National Land-cover dataset indicates that the land-cover in the area is dominated by surface infrastructure, transport infrastructure in the west and natural woodland on the eastern extent. The Land Cover Map is provided in Figure 7-17.

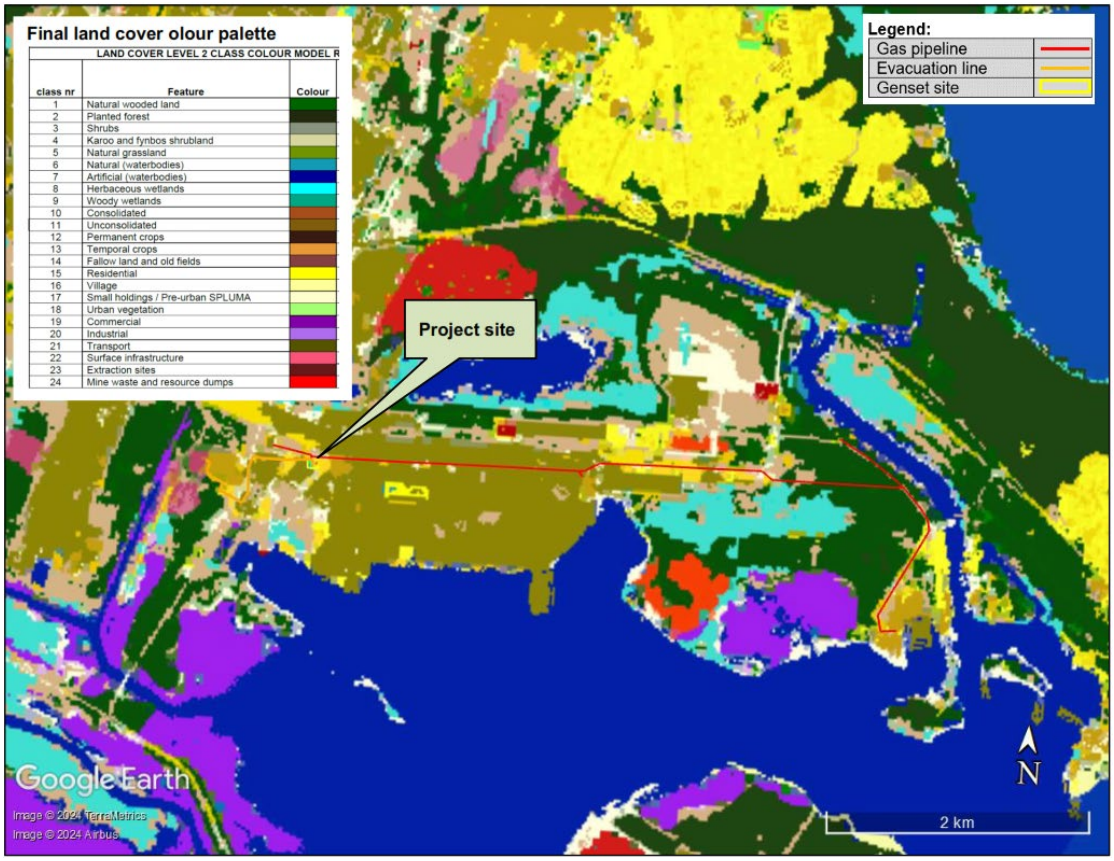


Figure 7-17: Location and extent of the land cover (2020) associated with the TNPA 22MW Genset Project

Important Bird Areas (2015)

No Important Bird Areas (IBA) as identified by Bird Life South Africa overlap the project site. The nearest such area is located approximately 2.5km to the southwest of the project site and is identified as the Richards Bay Game Reserve IBA. The location of the IBA in relation to the project site is shown in Figure 7-18.

Figure 7-18: Location of the Richards Bay Game Reserve IBA in relation to the project site

Red Listed Ecosystem, SANBI (2022)

The 2022 revised List of Threatened Terrestrial Ecosystems includes Critically Endangered, Endangered and Vulnerable Terrestrial Ecosystem types for South Africa. Based on the IUCN Red List of Ecosystems framework and published in Government Gazette 47526 (Notice 2747) on 18th November 2022. This data set replaces the 2011 list of ecosystems as published in the National Environmental Management: Biodiversity Act (Act 10 of 2004).

The database identifies the project site to be located within and in close proximity to the Subtropical Alluvial Vegetation Ecosystem. The database classifies this ecosystem as being of "Least Concern". The location of these areas is shown in Figure 7-19.

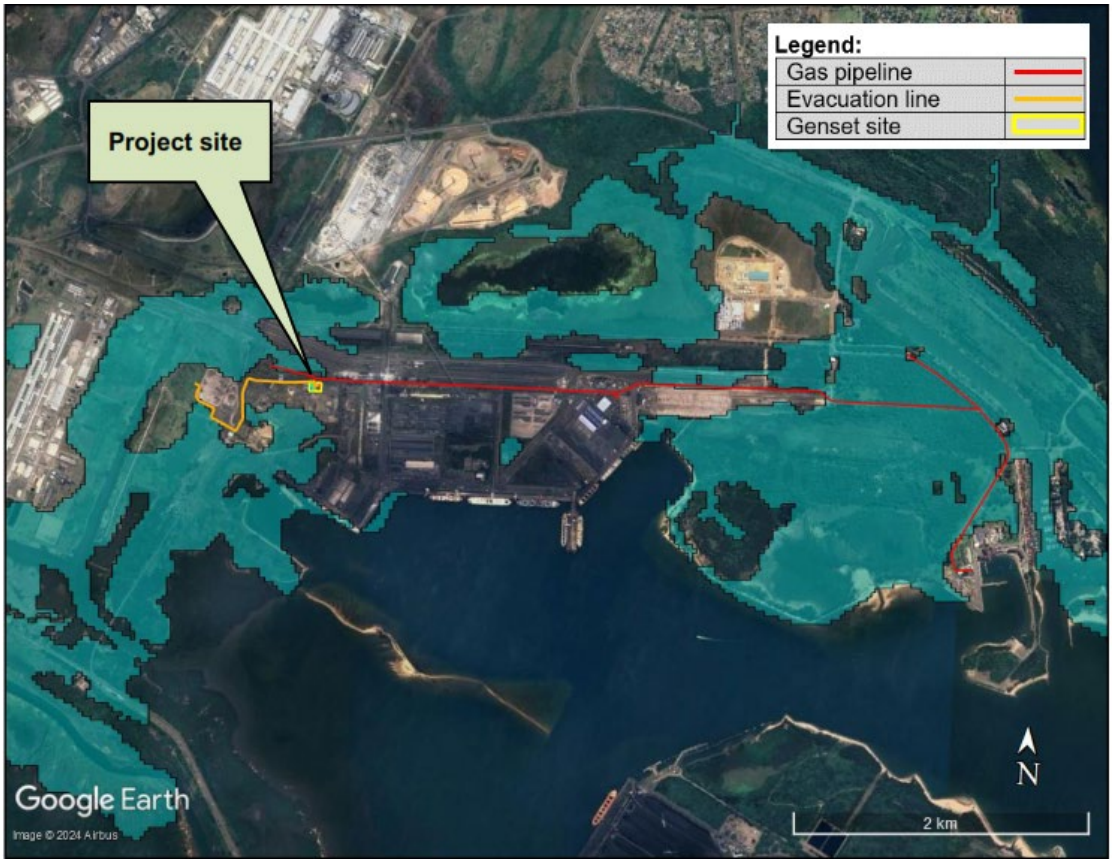


Figure 7-19: Location and extent of the Subtropical Alluvial Ecosystem (classified as "Least Concern") in relation to the project site

Protected Areas (2019)

The South African Protected Areas Database (SAPAD) is a GIS inventory of all formally Protected Areas in South Africa. The nearest such Protected Area is located approximately 2.5km to the southwest project site and is identified as the Richards Bay Game Reserve that was promulgated in 1937. The location and extent of the Protected Area is shown in Figure 7-20.

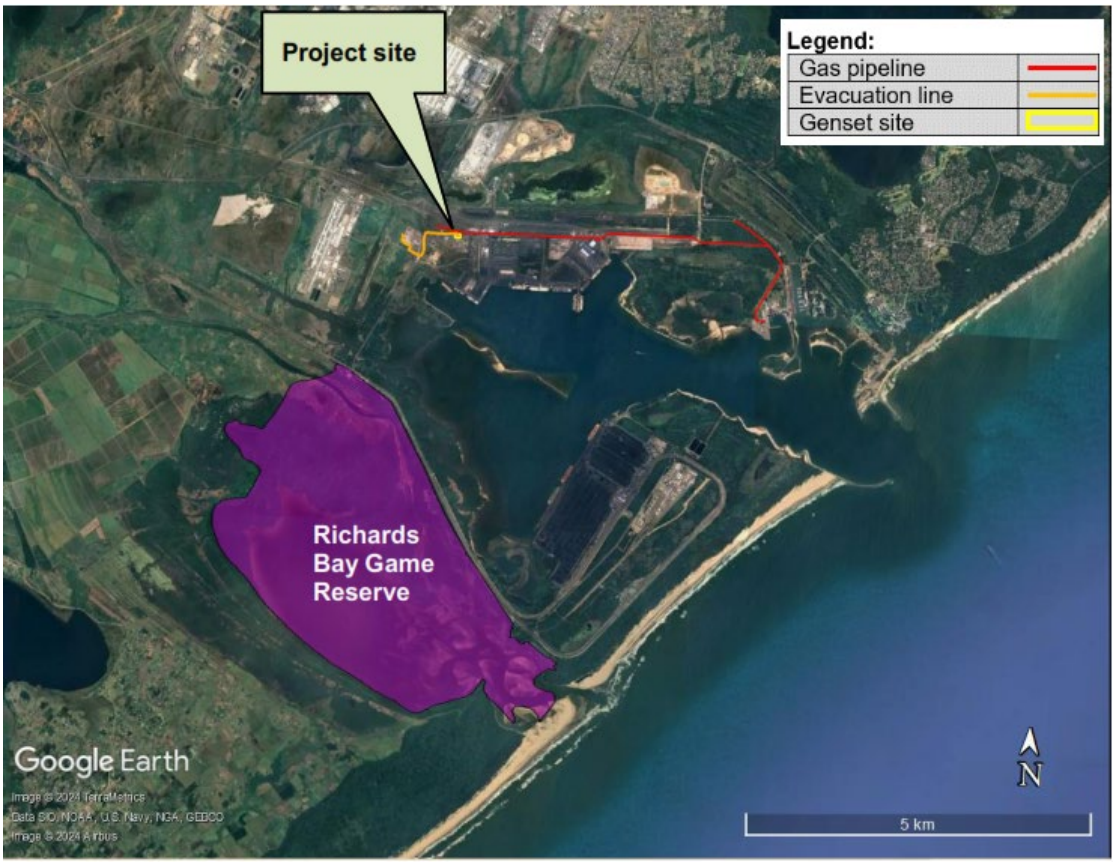


Figure 7-20: Location and extent of the Richards Bay Game Reserve in relation to the project site

7.6 Heritage and Paleontological Assessment

7.6.1 Specialist Details

A Heritage Survey has been undertaken by Land Matters Environmental Consulting (C/O Dr Phillipa Harrison, 16 May 2024) for the proposed TNPA 22MW Generator Project and associated infrastructure. This report is included in Appendix E-6.

7.6.2 Scope

The following terms of reference were provided:

The Phase 1 HIA aims to locate, identify and assess the significance of any heritage resources that may be found on the project footprint, including archaeological and palaeontological deposits/sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and basic cultural landscapes and viewscapes, as defined and protected by the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act. As per the requirements set out in Section 41(3) of the KwaZulu-Natal Amafa and Research Institute Act, the key terms of reference for the Phase 1 HIA were as follows:

- The identification and mapping of all heritage resources in the study area.
- Undertaking an assessment of the significance of such resources in terms of the heritage assessment criteria set out in Section 6(2) and/or Section 7 of the NHRA.
- Undertaking an assessment of the impact of the proposed project on the identified heritage resources.
- An evaluation of the impact of the proposed project on such identified heritage resources relative to the sustainable social and economic benefits to be derived from the project.
- Reporting on the results of the consultation with communities affected by the proposed project and other interested parties regarding the impact of the project on heritage resources.
- The consideration of alternatives should any heritage resources potentially be adversely affected by the proposed project.
- The compilation of plans for mitigating of any adverse effects during and after the completion of the proposed project.

In addition to the above, the primary aim of the Desktop PIA was to undertake a review of all relevant palaeontological and geological literature including maps and previous palaeontological impact reposts for the general study area, to predict the potential for the occurrence of buried fossil heritage within the project footprint.

7.6.3 Findings

An investigation into historical aerial imagery of the project site was undertaken as part of the Phase 1 HIA. Aerial imagery from 1957, 1970, and 1977 used to identify past activity on the site and assist in the identification of heritage resources.

The aerial imagery from both 1957 and 1970 (Figure 7-21 and Figure 7-22) shows the study site as completely undeveloped, and located within the Mhlatuze River mouth, before the Richards Bay Port was constructed. The site is associated with a single, large, relatively undisturbed estuarine system.

There are no built structures present on the study site in the 1957 imagery. By 1970 however, some roads and / or railway lines have been constructed in the area.

Figure 7-21: Historic aerial imagery of the study site from 1957 shows the area as undeveloped, and located within the Mhlatuze River mouth, before the Richards Bay Port was constructed. There are no built structures present on the study site in the 1957 imagery.

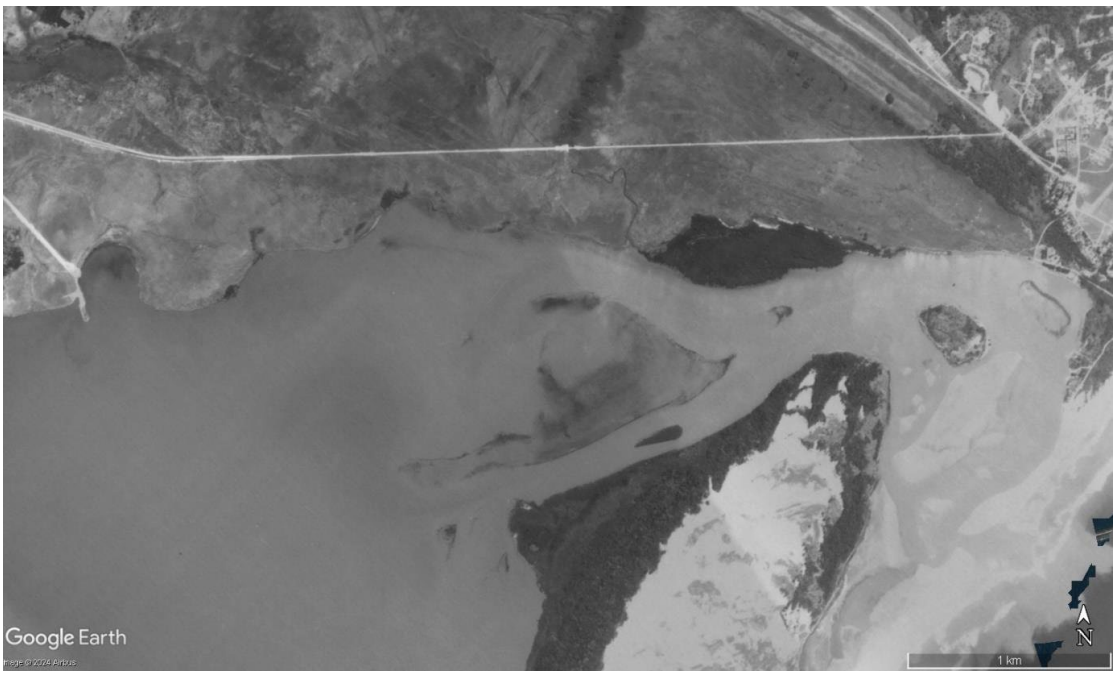


Figure 7-22: Historic aerial imagery of the study site from 1970 shows the site as still undeveloped and located within the natural Mhlatuze River mouth system. Roads and / or railway lines have however now been constructed in the area.

The historic imagery from 1977 (Figure 7-23) shows a significant change to the study area. In 1972, construction of the Richards Bay Port commenced, with the construction of a berm, or causeway and canal system that divided the estuarine system into two zones, the Mhlatuze River mouth, and the Richards Bay Harbour. The northern section was developed into the Port of Richards Bay while the southern area was designated as a nature sanctuary (Mhlatuze Estuary) (Weerts and Cyprus, 2002)

Figure 7-23: Historic aerial imagery of the project site from 1977 shows a significant change to the study area with the realignment of the Mhlatuze River Mouth evident, and the subsequent construction of the Port of Richards Bay well underway.

The results of the desktop assessment show no evidence of heritage resources present on the project site in the historical aerial imagery for the area. All of the built structures that are currently present on the project site are all less than 60 years old, having been built after 1972 as part of the construction of the Port of Richards Bay.

Ground Survey

The ground survey focused on the identification and assessment of heritage resources directly on the project site and immediate surrounds. No development activities associated with the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure had begun on the project site at the time of the ground survey. All areas of the project site were visited and visually surveyed for the presence of archaeological, palaeontological, or heritage features. No heritage resources were identified on the study site during the ground survey, as outlined in Table 7-6: List of Possible Heritage Resources and Assessment Findings below.

Table 7-6: List of Possible Heritage Resources and Assessment Findings

Heritage Resource Type	Finding
Places, buildings, structures and equipment of cultural significance	None
Places to which oral traditions are attached or which are associated with living heritage	None
Historical settlements and townscapes	None
Landscapes and natural features	None
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	None
Graves and burial grounds	None
Public monuments and memorials	None
Sites of significance relating to the history of slavery in South Africa	None
Movable objects	None

An assessment in terms of the significance criteria outlined in Section 3(3) of the NHRA was also undertaken for the study site as part of the Phase 1 HIA and Desktop PIA, as shown in Table 7-7 below.

Table 7-7: Evaluation of Heritage Sites or Objects in terms of Section 3(3) of the NHRA

Significance criteria for heritage sites or objects in terms of Section 3(3) of the NHRA 1999 (Act 25 of 1999)	Rating
Importance in the community, or pattern of South Africa's history.	None
In possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	None
Has potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.	None
Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects.	None
Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;	None
Importance in demonstrating a high degree of creative or technical achievement at a particular period.	None
Has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	None
Has a strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.	None
Sites of significance relating to the history of slavery in South Africa.	None

Palaeontology

The results of the Desktop PIA show that the project site is underlain by Quaternary-aged Aeolian (windblown) sands of the Sibayi Formation, Maputaland Group. Aeolian sands do not preserve vertebrate or plant fossils, and the only possible fossil finds within the Sibayi Formation sands would be Holocene-aged fossil shell fragments (Bamford, 2020). However, any such fossil fragments would be very young and difficult to distinguish from subfossil or modern marine shell fragments (Bamford, 2020). Furthermore, to date there have been no records of plant or animal fossil finds from the Sibayi Formation sands in this region of the KwaZulu-Natal coastline (Bamford, 2020). As such, no well-preserved fossils are expected to be present on the study site.

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 7-24: Palaeontology sensitivity map (SAHRIS Paleo Map)

8 PUBLIC PARTICIPATION PROCESS

This section of the report documents the process, which was and will be followed with respect to consultation of Interested and Affected Parties (I&APs)/stakeholders and government authorities.

8.1 Purpose of Public Participation

The most important objective of public participation is to provide sufficient and accessible information to potential I&APs in an objective manner and to provide a platform for constructive participation in the application process, thereby assisting I&APs to:

- Gain an understanding of the project, the various components and the potential impacts (positive and negative);
- Raise issues of concern and suggestions for enhanced benefits;
- Comment on reasonable alternatives;
- Verify that their issues have been recorded in the Comments and Responses Report (CRR) and considered in investigations; and
- Contribute relevant local information and traditional knowledge to the process.

8.2 Competent Authority Consultation

The Competent Authority (which is the DFFE as a State-Owned Entity) has been consulted at the following key stages:

- A pre-application meeting has been held with DFFE on the 25th of January 2024 to discuss the details of the project.
- The Draft Scoping Report (DSR) was submitted to the DFFE on the online platform on the 8th of March 2024.
- Comments on the Draft Scoping Report was received from the DFFE on 11 April 2024. The comments were incorporated into the FSR and a formal response were also provided on the comments.
- The FSR was submitted to the DFFE on 23 April 2024.
- The FSR was approved with comments on the 6th of June 2024.
- The Draft EIR was submitted to the DFFE on 24th June 2024 on the online platform.
- The FEIR will be submitted to the DFFE once the PPP has ceased and all comments and question and concerns have been incorporated and responded to.
- The CA may convene a meeting post-submission of the FEIR should it be deemed necessary.

8.3 Public Consultation Process during the Scoping Phase

This section provides a summary of the various activities of the public consultation process undertaken in support of the application process.

8.3.1 Stakeholder database

A stakeholder database or list of I&APs was compiled and will be updated as the process unfolds and as more I&APs register. The database was compiled using lists of contact details of previous applications in the area, the Development Zone contacts, commenting authorities and other possible stakeholders identified.

The current I&AP database is attached as Appendix C2 to this Report *(Note that this database is not inclusive of personal details of the I&APs in compliance with the Protection of Personal Information Act, No. 37067 of 26 November 2013)*. The I&AP database is the means through which information will be conveyed to stakeholders as part of the announcement of the applications and the availability of the consultation and final reports as these become available for public review. For this project, I&APs typically include the following:

- Owners or persons in control of the land where the proposed project activities are to be undertaken (Project Area);
- Occupiers of the property where the activities are to be undertaken;
- Owners and occupiers of land adjacent to the project area;
- Provincial (Kwa-Zulu Natal) and local government (City of uMhlathuze (CoM) Local Municipality and King Cetshwayo District Municipality (KCDM));
- Organs of state, other than the competent authorities having jurisdiction over any aspect of the proposed activities, including the Kwa-Zulu Natal Department of Economic Development, Tourism, and Environmental Affairs (EDTEA), the Department of Water and Sanitation, etc.;
- Relevant residents' associations, agricultural unions, community-based organisations, water user associations, and any catchment management authority and Non-Governmental Organisations (NGOs);
- Environmental organisations, forums, groups and associations; and
- Private sector organisations (businesses, industries) in the vicinity.

8.3.2 Announcement of the application process

The integrated application process was announced to I&APs by means of the following:

- An advertisement has been placed in the Zululand Observer on the 8th of March and in Isolezwe on the 7th of March 2024;

- A Background Information Document (BID) was compiled and distributed to all I&APs on the stakeholder database;
- Site Notices will be placed all around the project area;
- Placement of all notices and the BIDs on the GCS website (https://www.gcs-sa.biz/public-documents/). The GCS website is used to make documents electronically available to stakeholders. The website address was published in the advertisement, BIDs, site notices and all other communication; and
- A Registration and Comment Sheet is included with every BID, inviting stakeholders to register as I&APs and to provide their comments on the proposed application.

The announcement included details pertaining to the proposed project, how I&APs can participate in the process, the availability of the DSR for comment and how it can be accessed. Refer to Appendix C1-3 for copies of the above notification documentation.

8.3.3 Comments and Responses Report

All comments received during the application process will be captured in a Comments and Responses (CRR). The CRR will be updated on a continuous basis and will be presented to the authorities and other I&APs together with the consultation and final reports as a full record of issues raised, including responses on how the issues were considered during the application process. The Scoping CRR, which captures all the comments and issues raised during the scoping phase PPP is included in Appendix C1-6, and the Final CRR which contains all the comments and issues raised during the entire public participation will be included in the FEIAR.

8.3.4 Review of the Draft Scoping Report

The DSR was available for public review from **8 March 2024 until 11 April 2024** (30 days) at the following public venues:

- Richard's Bay Public Library (Physical Address: Kruger Road CBD, Richard's Bay).

The report is also available electronically via the GCS Website (link provided above) or a CD/USB can be made available upon request.

Refer to Appendix C1-4 for proof of delivery of the DSR to the public places as well as the placements of the Site Notices to inform possible I&APs of the proposed project.

8.4 Public Participation during the EIA Phase

The review of the Draft EIR/EMPr takes place from 25 June to 26 July 2024. The main objectives of public participation during this phase are:

a) to verify that stakeholder issues have been considered by the EIA Specialist Studies and in the reports which will be compiled; and

b) to provide stakeholders the opportunity to comment on the findings of the EIR/EMP Report and other associated reports, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The public participation activities during the EIA phase includes:

- email notifications to stakeholders to inform them of the opportunity to review the Draft EIR/EMP;
- The draft EIR/EMPr is made available for review. A hard copy will be available at the following venue:
    - Richard's Bay Public Library (Physical Address: Kruger Road CBD, Richard's Bay).

  Stakeholders are requested to download the report from the GCS website and / or request electronic copies of the report by prior arrangement;
- advertisements to notify stakeholders of the availability of the draft reports were published in the same newspapers used during the scoping phase, Zululand Observer on the 21st of June 2024 and in Isolezwe on the 21st of June 2024.

Refer to Appendix C3-1 for the notifications issued, Appendix C3-2 for proof of delivery of the DEIR to the public places listed above and Appendix C3-3 for placements of the Site Notices.

The Final EIR/EMP report will be available to stakeholders for their review on the GCS website. A notification letter will be sent to all stakeholders informing them of the submission of the report to the competent authority and their opportunity to comment on the report directly to the competent authority.

8.5 Public Participation during the Authorisation Phase

Once the Competent Authority provides information with regards to their decision in terms of the integrated application process, their decision and the details thereof will be communicated to registered I&APs according to the conditions stipulated. I&APs will be made aware of their rights to appeal the decision and the proposed process to follow in such regard. The legislative and required public participation activities will end once the appeal periods have lapsed.

9 EIA PROCESS AND APPROACH

A Scoping and Environmental Impact Assessment (S&EIR) process has two distinct phases: The Scoping Phase and the Environmental Impact Reporting Phase. The Scoping Phase has been concluded with the acceptance of the Scoping Report by the Competent Authority on the 6th of June 2024.

This Environmental Impact Assessment Report illustrates the risk assessment undertaken of potential biophysical and socio-economic aspects and impacts of the proposed 22MW generator and associated infrastructure on the receiving environment. This report summarises the risks and findings of various specialist studies undertaken and outlines avoidance, mitigation and management actions which will assist in minimising the impact of the project as far as possible.

The Environmental Impact phase concludes with the submission of a Final Environmental Impact Report to the Competent Authority (CA) for consideration, thereafter the application will be granted or rejected.

9.1 Impact Assessment Methodology

Possible impacts were identified through comments from I&APs, specialist reports, and from the EAP's experience. The assessment of potential impacts was addressed in a standard manner to ensure that a wide range of impacts were comparable. The ranking criteria and rating scales were applied to all specialist studies for this project. To enable a scientific approach to the determination of the environmental significance (importance), a numerical value is linked to each rating scale.

Clearly defined rating and rankings scales (**Table 9-1 - Table 9-7**) were used to assess the impacts associated with the proposed activities. The impacts identified by each specialist study and through public participation were combined into a single impact rating table for ease of assessment.

Table 9-1: Severity or magnitude of impact

Not applicable/none/negligible	0
Minor/insignificant/non-harmful (no loss of species/habitat)	2
Low/small/potentially harmful (replaceable loss with minimal effort)	4
Moderate/significant/slightly harmful (replaceable loss of species/habitat with great effort and investment)	6
High/highly Significant/harmful (impact to human health or welfare/loss of species/habitat)	8
Very High/extremely significant/extremely harmful/within a regulated sensitive area (loss of human life/irreplaceable loss of Red Data species/conservation habitat)	10

Table 9-2: Spatial Scale of activity

Not applicable/none/negligible	0
Site only	1
Local (within 5km)	2
Regional/neighbouring areas (5 km to 50 km)	3
National	4
International	5

Table 9-3: Duration of activity

Not applicable/none/negligible	0
Immediate (immediately reversible with minimal effort)	1
Short-term (0-5 years - reversible)	2
Medium-term (5 to 15 years – difficult to reverse with effort)	3
Long-term/life of the activity (very difficult to reverse with extensive effort)	4
Permanent/beyond life of the activity (not reversible)	5

Table 9-4: Frequency of activity (how often activity is undertaken)

Not applicable/none/negligible	0
Improbable /almost never/annually or less	1
Low probability/very seldom/6 monthly	2
Medium probability/infrequent/temporary/monthly	3
Highly probable/often/semi-permanent/weekly	4
Definite/always/permanent/daily	5

Table 9-5: Frequency of incident/impact (how often activity impacts environment)

Almost never/almost impossible/>20%	1
Very seldom/highly unlikely/>40%	2
Infrequent/unlikely/seldom/>60%	3
Often/regularly/likely/possible/>80%	4
Daily/highly likely/definitely/>100%	5

Table 9-6: Legal Issues – governance of activity by legislation.

No legislation	1
Fully covered by legislation	5

Table 9-7: Detection (how quickly/easily impacts/risks of activity on environment, people and property are detected)

Immediately (easier to mitigate)	1
Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered (more difficult to mitigate)	5

Each impact identified must be assessed in terms of probability (likelihood of occurring); the consequence of the impact (spatial scale, severity and duration); and the associated risk (impact significance).

Consequence was then determined as follows:

CONSEQUENCE = Severity + Spatial Scale + Duration

The probability or likelihood of occurrence of the activity was then calculated based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected:

LIKELIHOOD = Frequency of Activity + Frequency of Impact + Legal issues + Detection

The significance or risk of each identified impact was then based on the product of consequence and likelihood:

Environmental Significance/Risk = Consequence x Likelihood

Impacts will be rated as either of high, medium or low significance on the basis provided in Table 9-8. Each impact will also be assessed in terms of the level to which there is an irreplaceable loss of resources (Table 9-9) and its degree of reversibility (Table 9-10).

Table 9-8: Impact significance ratings.

SIGNIFICANCE	ENVIRONMENTAL RISK RATING	COLOUR CODE
High (positive)	>240	H
Medium (positive)	120 to 240	M
Low (positive)	<120	L
Neutral	0	N
Low (negative)	>-120	L
Medium (negative)	-120 to -240	M
High (negative)	<-240 (max = 400)	H

Table 9-9: Irreplaceability of resource caused by impacts

No irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate)	**Low**
Resources that will be impacted can be replaced, with effort	**Medium**
Project will destroy unique resources that cannot be replaced	**High**

Table 9-10: Reversibility of impacts

Low reversibility to non-reversible	**Low**
Moderate reversibility of impacts	**Medium**
High reversibility of impacts	**High**

The significance of an impact gives one indication of the level of mitigation measures required to minimise negative impacts and reduce environmental damage during the construction, operational and decommissioning phases. Suitable and appropriate mitigation measures, to ensure avoidance, management and mitigation of impacts, will be identified for each of the potential impacts based on specialist recommendations and GCS expertise.

9.2 Environmental Impact Assessment

The potential impacts identified for the construction and operational phases are discussed below and the significance rating for each impact is presented in Appendix F.

9.2.1 Potential Impacts on Air Quality

The air quality impact assessment for the proposed TNPA Power Generation Project for the operational phase is based on model predicted ambient SO2, NO2, PM10 and CO concentrations using the methodology described above, and is therefore quantitative. The proposed TNPA Power Generation Project is assessed in isolation, and cumulatively with existing sources and with other gas-to-power projects in Richards Bay. The two operational phases which include the proposed TNPA Power Project in isolation and with existing sources is similar and is therefore assessed together.

9.2.1.1 During Construction Phase

The proposed TNPA Power Generation Project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas – it is assumed that the generator and associated infrastructure will be hauled to site in special trailers and then assembled;
- The installation of diesel fuel tank(s) with a total capacity of 600 m3;
- The installation of a 200 m3 tank for the storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the proposed site;
- An auxiliary pit;
- A drain facility for used diesel and sludge;
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the proposed generator site.

A range of vehicles and equipment are used during construction including heavy duty vehicles and mobile generators. Activities during construction are associated with the movement of a range of vehicles and equipment including bulldozers, excavators and tipper trucks. These activities inherently generate dust that depends on a number of factors, including:

- The nature of the activity: The physical movement of soil through digging, grading, loading and tipping, loosens otherwise bound fine particles allowing entrainment into the atmosphere through mechanical processes and wind.
- Equipment operation and vehicles: Equipment and vehicle movement on unpaved surfaces pulverise particles to a fine dust, which may be entrained into the atmosphere by their movement. Dust entrainment is a function of vehicle size and speed, with heavier vehicles and faster travel generating more dust.
- Silt content of the soil and other materials: Soils and materials with high silt content have a higher percentage of fine material that is easily entrained into the atmosphere when it is disturbed.
- The size of the denuded construction area: Larger exposed areas are naturally greater sources of wind-generated dust.
- The frequency of strong wind and rainfall: Strong winds easily entrain dust from open areas, from storage piles and during operational activities. Rainfall on the other hand suppresses the generation of dust.
- The dust abatement programme: Dust can be suppressed at the point where it is generated in a number of ways. Diligent management of an abatement programme can have a marked effect on reducing dust from all construction activities.

All aspects of construction inherently generate dust, but the movement of construction vehicles on the unpaved surfaces at the construction site are generally the largest source of dust. Dust is also easily entrained from exposed areas by wind.

During the construction phase, surface preparation of the proposed project area will be done by vegetation clearing and compaction. A laydown area for the receipt, temporary storage, and assembly of construction equipment and other supplies will be demarcated. Construction for the proposed site infrastructure is estimated to take approximately 6-12 months to complete. There is insufficient information to estimate dust emissions from the construction phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during construction is therefore qualitative. The impact assessment below applies to the construction phase of the proposed project, specifically focusing on construction dust.

9.2.1.2 Potential Impacts During Operational Phase

Severity or magnitude of impact

The severity or magnitude of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by comparing the predicted SO2, NO2 PM10 and CO concentrations with the health-based NAAQS.

The predicted ambient SO2 concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.03% of the limit value of the NAAQS. The severity or magnitude of the impact associated with SO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient NO2 concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.001% of the limit value of the NAAQS. The severity or magnitude of the impact associated with NO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient PM10 concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.005% of the limit value of the NAAQS. The severity or magnitude of the impact associated with PM10 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient CO concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.0001% of the limit value of the NAAQS. The severity or magnitude of the impact associated with CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

Monitoring data for 2021-2023 has shown that ambient SO2 concentrations are relatively high in Richards Bay, with many exceedances of the 1-hour and 24-hour NAAQS. The additive effect of the contribution of SO2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient SO2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of SO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for NO2 in Richards Bay. Despite this, the additive effect of the contribution of NO2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient NO2 concentrations is

highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of NO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 has shown that ambient PM10 concentrations are relatively high in Richards Bay because of high regional background concentrations, with one exceedance of the 24-hour NAAQS. The additive effect of the contribution of PM10 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient PM10 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of PM10 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for CO in Richards Bay. Despite this, the additive effect of the contribution of CO from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient CO concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Spatial scale of activity

The spatial scale of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by evaluating the spatial extent of predicted SO2, NO2, PM10 and CO concentrations in the ambient environment.

In all cases the predicted ambient concentrations are very low relative to the NAAQS and the highest predicted concentrations occur within a 3 km radius to the west and north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas. The spatial scale of the impact is therefore local (score = 2) as impacts are limited to the Port of Richards Bay and the immediate surrounding areas for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Duration of activity

The duration of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering the operational lifespan of the proposed project. Impacts on ambient air quality in terms of SO2, NO2, PM10 and CO will exist for the entire duration of the proposed project. It is assumed that the duration of activity will be for a medium-term of 5-15 years (score = 3) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Frequency of activity

The frequency of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering how often the activity is undertaken. It is expected that the generator will only be used during emergency situations, which is mainly during loadshedding or in the event of power failures. As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Frequency of incident/impact

The frequency of incident of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering how often the activity will impact on ambient air quality. The predicted ambient concentrations of SO2, NO2, PM10 and CO are very low. The highest predicted concentrations are well below the respective NAAQS. The additive effect of the contribution of SO2, NO2, PM10 and CO from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. Impacts will only occur when the generator is in use during emergency situations, which is mainly during loadshedding or in the event of power failures. Impacts are therefore expected to be almost never/almost impossible/>20% (score = 1) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Legal issues

Ambient air quality in South Africa is governed by the National Environmental Management: Air Quality Act No. 39 of 2004 (NEM: AQA) and supporting regulations. According to the legislation, the act was promulgated “to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto”.

Air quality objectives defined in Provincial and Municipal Air Quality Management Plans (AQMP) are achieved to a large extent through the enforcement of regulations supporting the NEM: AQA and through municipal by-laws.

In this study, reference has been made to the MES, NAAQS and AEL. In terms of legal issues, the impact of the proposed TNPA Power Generation Project emissions on ambient air quality in terms of predicted SO2, NO2, PM10 and CO concentrations in the ambient environment is

fully covered by legislation (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Detection

The detection of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by evaluating how quickly/easily impacts/risks of activity on environment, people and property are detected. Air dispersion modelling is a robust tool that is used to easily predict if ambient concentrations are compliant with the NAAQS, as has been done in this study. Fenceline monitoring can be used to determine ambient concentrations on the fenceline of a facility; and to assess compliance with the NAAQS, during the operational phase of the proposed project. Stack emission testing can be used to measure emissions within a stack and assess compliance with the MES, during the operational phase. Detection of impacts is therefore considered to be undertaken without much effort (score = 2) , for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Consequence (Severity + Spatial Scale + Duration)

Consequence is a function of the severity, duration, and spatial scale of an impact. As discussed above:

- The severity (or magnitude) of the impact is expected to be insignificant (score = 2) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- The spatial scale of the impact is local (score = 2) as impacts are limited to the Port of Richards Bay and the immediate surrounding areas for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- The duration of the impact will be for a medium-term of 5-15 years (score = 3) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Based on the equation provided, the consequence of ambient concentrations of SO2, NO2, PM10 and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 2+2+3=7 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Likelihood or Probability (Frequency of Activity + Frequency of Impact + Legal Issues + Detection)

The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. As discussed above:

- As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- Impacts will only occur when the generator is in use during emergency situations, hence, impacts in terms of frequency of impact are therefore expected to be almost never/almost impossible/>20% (score = 1) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- In terms of legal issues, the impact of the proposed TNPA Power Generation Project emissions in the ambient environment is fully covered by legislation (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- Detection of impacts is considered to be undertaken without much effort (score = 2), for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Based on the equation provided, the likelihood or probability of ambient concentrations of SO2, NO2, PM10 and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 5+1+5+2=13 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Environmental Significance/Risk (Consequence x Likelihood)

Significance is a function of consequence and likelihood. Based on the equation provided, the significance of ambient concentrations of SO2, NO2, PM10 and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 7x13=91 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Emissions of SO2, NOX, PM10 and CO from sources associated with the proposed TNPA Power Generation Project will result in an increase in ambient concentrations of SO2, NO2, PM10 and CO. Exposure to air pollutants through inhalation poses a health risk, regardless of the concentration. The status of the impact is therefore negative for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

The significance of impact relating to emissions of SO2, NOX, PM10 and CO from sources associated with the proposed TNPA Power Generation Project is therefore predicted to be low (negative) for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Irreplaceability of resource caused by impacts

The predicted ambient concentrations of SO2, NO2, PM10 and CO are very low and well below the respective NAAQS. Air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project are therefore not expected to incur a loss of any resources. Since no irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate), the irreplaceability of resource caused by impacts is rated as low for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Reversibility of impacts

The predicted ambient concentrations of SO2, NO2, PM10 and CO are very low and well below the respective NAAQS. Air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project are therefore expected to reverse with minimal rehabilitation and negligible residual effects. Since a high reversibility of impacts is possible, the reversibility of impacts caused by the proposed TNPA Power Generation Project is rated as high for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Mitigation Measures proposed

During Construction

A few general recommendations to minimise the emission of dust from construction activities are proposed below:

- Strict enforcement of speed limits on all site roads
- Routine water spraying of site roads and denuded/disturbed areas (more frequent spraying may be necessary during dry, windy conditions)
- Removal of vegetation only if necessary
- Revegetation or paving of disturbed areas once construction activities are complete.

No further dust control or mitigation is deemed necessary as these measures will be adequate to control dust emissions.

During Operations

The generator will be fitted with a water injection metering system to reduce NOX emissions for gaseous fuel (LNG in this case) or liquid fuel (diesel in this case) operation. Demineralised water is injected into the combustor through ports in the fuel nozzles to produce NOX suppression. Water is supplied to the nozzles by a special water manifold. Water injection

can reduce NOX emissions to 25 ppm (51 mg/Nm3) for gaseous fuels and to 42 ppm (86 mg/Nm3) for liquid fuel.

Air quality management interventions in the form of emission control have been considered in all aspects of design and operation. Further emission reduction interventions are deemed to be unnecessary considering the low impact of the proposed project on air quality. No further control or mitigation is necessary as these measures will be adequate to control exhaust emissions.

9.2.2 Potential Impacts on Wetland, Estuarine and Aquatic Environment

There are no delineated wetlands situated within the project area vicinity.

There is no anticipated removal of any estuarine vegetation for the proposed development, and no disturbance to functional estuarine habitat, nor changes to hydrodynamic function or water quality. There is no anticipated discharge to the marine environment. There are no irreversible changes to estuarine form or function likely to be caused by the proposed development, and the land can be returned to the current state within two years of completion of the construction phase. Wetland Comment has reclassified the very high sensitivity classification of the site for an aquatic biodiversity (wetland) perspective to a low classification.

The anticipated impact from the construction and operational activities on the site's aquatic systems is anticipated to be **Low** with the implementation of the proposed mitigation measures outlined in the EMPr (Appendix G).

9.2.3 Potential Impact on Soils and Agricultural Potential

Taking into account the above factors the soil and agricultural assessment has reclassified the very high sensitivity classification (in the Screening Report) of the site for agricultural production to a low classification for agricultural production (in the Environmental Risk Assessment). This considers the use of the area as the Richards Bay Port as well as the non-arable to problematic soil characteristics of the site. Most of the impacts can be mitigated through the implementation of the EMPr (Appendix G).

Utilising the soil information, climatic information, topography and vegetation information, the study site was assessed in terms of its land potential. The site has been categorised into the Class VII and Class VIII categories. The Class VII category has been mapped where the Witbank and Grabouw soils were recorded. The soils are not suitable for agricultural production in the area but do not consist of polluted soil or hardened surfaces. They are physically disturbed or are deposited. The Class VIII soils were mapped where settled coal dust as well as the presence of hardened surfaces completely reduces the use of these areas

for any agricultural production. These areas are also unlikely to be rehabilitated to be used for agriculture in the future.

The clearing of any vegetation and the stripping of soil for the infrastructure will result in the movement of sediment into the receiving environment. Furthermore, the use of heavy machinery or vehicles during construction, will lead to the compaction of these disturbed soils. This will increase the soil bulk density, reduce the porosity further of the soil and the hydraulic conductivity, leading to a greater potential for the formation of erosion if storm water is not managed.

The proposed infrastructure site is located in the Richards Bay Port area and as such is not utilised for any agricultural production. The site consists of anthropogenically modified soils that are classified as Witbank, Industria and Grabouw. Compaction of the soils as well as the polluted nature of the area reduces the likelihood that this site will be considered for any future agricultural production should rehabilitation be implemented. As such there is no impact on agricultural production from the proposed project.

Mismanagement of waste and pollutants during the construction and operational phases including hydrocarbons, construction waste, and other hazardous chemicals will result in these substances entering and polluting the soils. Furthermore, stormwater runoff emanating from the existing Port area is polluted with contaminates such as petroleum residues, oil, metals from brake linings, rubber particles from tyres, nitrous oxide from vehicle exhausts, and grease. These pollutants can enter the soil profile, where they will remain as do not break down like organic compounds. An increase in pollutants will lead to a decline in the quality of the soils utilised for any future rehabilitation purposes. Pollution of the soils is an existing problem within the study site largely as a result of settled coal dust which lines the roadways and covers any remaining vegetation. Any further pollution as a result of the project will lead to more costly rehabilitation requirements in the future.

Mitigation measures recommended for this project to reduce the impact of the proposed project on the receiving environment includes:

- Any recommendations provided by a storm water management plan must be adhered too.
- Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created.
- All stockpiles created from the construction activities must be protected from erosion, stored on flat areas, where runoff will be minimised.

- Stockpiles must also only be stored for the minimum amount of time necessary.
- Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures.
- Vehicles are to be maintained in good working order so as to reduce the probability of leakage of fuels and lubricants.
- A dedicated store with adequate concrete flooring or bermed area must be used to accommodate chemicals such as fuel, oil, paint etc.
- Concrete is to be mixed on mixing trays only, not on exposed soil. Concrete and tar must be mixed only in areas which have been specially demarcated for this purpose. After all the concrete / tar mixing is complete all waste concrete / tar must be removed from the batching area and disposed of at an approved dumpsite.
- An Environmental Management Plan must be implemented to ensure that all waste and pollutants are handled, stored, and disposed of correctly.

9.2.4 Potential Impact on Surface Water and Water Quality

There are no surface water streams located on site, therefore the potential surface water quality impacts are low. Water and soil quality impacts have been identified as low to negligible impacts after mitigation.

- The destruction of the vadose zone sediments by clearing activities (levelling) or cut and fill activities. This impact is permanent and is therefore not included in the impact table as no mitigation measures can be recommended. This could lead to sediment runoff and surface water contamination.
- Clearing topsoil from footprint areas will influence the rate of infiltration of water to the shallow groundwater system and/or baseflow component to shallow streams.
- Handling of waste and transport of material can cause various types of spills (i.e. hydrocarbons) which can infiltrate and contaminate the soils and groundwater system.
- Oil and fuel spills and leakages at vehicle park areas, and in the project areas, may cause poor-quality seepage and soil contamination.
- Poor quality stormwater discharge onto soils or into the surface environment.

- There is a potential for poor quality seepage from the generator, diesel storage areas and stormwater system that will be developed (i.e., poor workmanship, wear and tear over time or clogging of stormwater systems). Raw sewage would impact both the soils and could run into the nearby watercourses. Prolonged pollution may migrate to the shallow groundwater environment.
- Oil and fuel spillages associated with service vehicles accessing and undertaking maintenance work at the site, as well as leakages from residential vehicles parked at the site.

Mitigation measures that has been proposed for the project are as follows:

- Only excavated areas apply to the project area.
- Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils.
- Cover excavated soils with a temporary liner to prevent contamination.
- Retain as much indigenous vegetation as possible.
- Exposed soils are to be protected using a suitable covering or revegetating.
- Park heavy machinery in lined areas and place drip trays under vehicles at the site.
- Have fuel and oil cleanup kits available to clean spillages if they occur.
- Ensure maintenance vehicles are fully operational before undertaking work.
- Visual soil assessments for signs of contamination during construction (daily)
- Park residential vehicles in designated areas and ensure that there are oil traps installed in the stormwater system.
- Have fuel and oil cleanup kits available to clean spillages if they occur.
- Visual soil assessments for signs of contamination during the operational phase (monthly)
- Regular inspections of the generator and fuel storage tank areas. If any pollution is observed action should be taken according to site cleanup protocols.

Visual monitoring of the site on an ongoing (daily) basis will serve as a 1st order detection system for any soil and water pollution that may take place. The collected information should be used as part of an active soil/water management system and act as an early warning system for the application of mitigation measures. The identified impacts are not likely to negatively affect the commencement of the proposed projects.

In general, the operational phase risk associated with the project is predicted low, and it is foreseen that the impacts can be managed.

9.2.5 Potential Visual Impacts

As the generator is located within the PoRB with the adjacent Richards Bay Development zone, the surrounding infrastructure consists of several hight administration buildings, warehouses and silos which are higher that the generator. The existing infrastructure and facilities create a barrier for the site, which reduces the visual impact from the installation of the generator at the proposed site. The visual impact would therefore be very low to negligible.

9.2.6 Potential Noise Impacts

Noise levels and noise disturbance in the immediate vicinity of the site will slightly increase during construction activities due to:

- The movement of construction and earth-moving vehicles for site preparation;
- Increased traffic entering and exiting the site;
- Operation of generators;
- Noise from hydraulic hammers and winches; and
- General construction noise.

While the generator will make noise, considering the distance to the closest receptors and existing elevated ambient sound levels, it is unlikely that they will even hear the generator. With the existing large number of trucks entering the and existing the port, the additional fuel trucks during operation would not affect the existing noise levels.

9.2.7 Potential Heritage and Paleontological Impacts

As no heritage resources have been identified on the project site; the area is not part of any known cultural landscape; and it is highly unlikely that fossils will be impacted by the proposed project; the proposed activity poses a minimal risk to both heritage and paleontological resources.

9.2.8 Potential Social Impacts

The construction of the 22MW generator and associated infrastructure would not affect the daily routines of the surrounding communities or disturb any social aspects**. There would be possible jobs created during the construction phase, but no additional jobs would be created during the operational phase. The installation of the generator would however benefit the current workforce in the sense that there would be lesser power related delays and disruptions in daily routines and there would be more periods of time when shifts can be completed and work can continue.**

9.2.9 Potential Traffic Impacts

The current traffic volumes on site are vast with vehicles delivering and collecting goods and materials from the port daily. The port is able to handle a large number of traffic at any given time and measures are in place for traffic management. The number of construction vehicles that would enter the site during construction and fuel trucks during operation would not affect the traffic on site should the mitigation measures set out in the EMPr (Appendix G) is implemented.

9.3 Environmental Impact Assessment – Decommissioning Phase

The decommissioning of the generator is not foreseen to take place in the near future. However, should the generator be decommissioned at some point, environmental impacts are anticipated to be similar to those identified for the construction phase, specifically in terms of topography, soil, surface water contamination, waste management, and impacts on vegetation and soils.

9.4 Environmental Impact Assessment – Cumulative and Residual Impacts

Section 2 of the NEMA requires the consideration of cumulative impacts as part of the environmental assessment process. EIAs have traditionally, however, failed to come to terms with such impacts, largely as a result of the following considerations:

- Cumulative effects may be local, regional or global in scale and dealing with such impacts requires co-ordinated institutional arrangements; and
- EIA's are typically carried out on specific developments, whereas cumulative impacts result from broader biophysical, social and economic considerations, which typically cannot be addressed at the project level.

Cumulative impacts associated with this type of development could lead to initial, incremental or augmentation of existing types of environmental degradation, including impacts on the air, soil and water present within the available habitat. Pollution of these elements might not always be immediately visible or readily quantifiable, but incremental or fractional increases might rise to levels where biological attributes could be affected adversely on a local or regional scale. In most cases, these effects are not bound and are dispersed or diluted over an area that is much larger than the actual footprint of the causal factor. These impacts are usually most prevalent in areas where continuous and long-term impacts have been experienced.

A summary of the potential cumulative and residual impacts identified for the project are outlined within the various specialist studies and is presented in this section. The full impact assessments can be found within the various specialist' reports and the significance rating is presented in Appendix F.

9.4.1 Air Quality Impacts

Monitoring data for 2021-2023 has shown that ambient SO2 concentrations are relatively high in Richards Bay, with many exceedances of the 1-hour and 24-hour NAAQS. The additive effect of the contribution of SO2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient SO2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of SO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for NO2 in Richards Bay. Despite this, the additive effect of the contribution of NO2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient NO2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of NO2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 has shown that ambient PM10 concentrations are relatively high in Richards Bay because of high regional background concentrations, with one exceedance of the 24-hour NAAQS. The additive effect of the contribution of PM10 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient PM10 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of PM10 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for CO in Richards Bay. Despite this, the additive effect of the contribution of CO from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient CO concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

9.4.2 Ecological Impacts

The following cumulative impacts associated with the development of the TNPA 22MW Genset Facility have been identified:

- Spread of alien invasive plant species.

9.4.3 Visual Impacts

From a cumulative perspective, it is important to note that the proposed generator plant is expected to blend in with the existing port infrastructure due to its proximity to these activities. Furthermore, the sensitive receptors are currently exposed to night lighting from operational activities of the existing port and industrial activities within the area. Therefore, the expected impacts from the generator plant will add to the cumulative visual impacts however, it will not be significant if the recommended mitigation measures are adhered to.

10 KNOWLEDGE GAPS, ASSUMPTIONS AND LIMITATIONS

The EIA Regulations require that an account of any assumptions, uncertainties and gaps in knowledge applicable to the preparation of this report is provided.

An impact assessment is a predictive tool to identify aspects of a development that need to be prevented, altered or controlled in a manner to reduce the impact to the receiving environment, or determine where remediation activities will need to be incorporated into the overall development/activity plan. This does not mean that the impact will occur at the predicted significance but provides guidance on the formulation of the management and monitoring requirements which need to be incorporated to prevent/reduce/manage the impact.

Several specialist reports were used to define the baseline environment and predict the impacts of this project. The assumptions and limitations applicable to the individual specialist studies are outlined within each of the respective specialist reports appended to this report.

Findings, recommendations and conclusions provided in this report, and all specialist reports, are based on the authors' best scientific and professional knowledge and information available at the time of compilation.

11 ENVIRONMENTAL IMPACT STATEMENT

11.1 Key Findings of Impact Assessment

The results of the impact assessment indicated that the most significant impacts on the receiving environment would be those listed below in Table 11-1 and Table 11-2. The correct implementation of the mitigation measures outlined in the EMPr will ensure that all impacts are managed, mitigated or avoided as far as practicably possible.

The Impact Assessment tables with the risk ratings can be found in Appendix F.

Table 11-1: Key impacts during the construction phase

Environmental Aspect	Impacts
Air Quality	• Dust generation
Climate Change	• Greenhouse gas emissions
Terrestrial Biodiversity	• Potential increase in alien vegetation • Contamination of the area by petrochemical spillages • Contamination of the area by construction waste • Contamination of the area by domestic waste. • Contamination of the area as a result of leaking portable toilet facilities.
Loss Agricultural Activities, Soils and Land use	• Soil Compaction and Erosion • Soil Pollution Potential
Estuary and Aquatic Ecosystems	• Contaminated run-off from the site
Hydrology	• The destruction of the vadose zone sediments by clearing activities (levelling) or cut and fill activities. This impact is permanent and is therefore not included in the impact able as no mitigation measures can be recommended. This could lead to sediment runoff and surface water contamination. • Clearing topsoil from footprint areas will influence the rate of infiltration of water to the shallow groundwater system and/or baseflow component to shallow streams. • Handling of waste and transport of material can cause various types of spills (i.e. hydrocarbons) which can infiltrate and contaminate the soils and groundwater system. • Oil and fuel spills and leakages at vehicle park areas, and in the project areas, may cause poor-quality seepage and soil contamination.

Visual	• Change of visual landscape and character
Noise	• Noise disturbance from the movement of construction vehicles • Noise disturbance from the operation of machinery
Heritage & Paleontological Impacts	• Loss of cultural heritage resources • Loss of palaeontological resources
Social	• Increased annoyance, air quality and noise • Influx of construction workers • Job creation and skills development • Positive economic impacts
Traffic	• Increase in traffic of construction vehicles • Additional abnormal loads

Table 11-2: Key impacts during the operational phase

Environmental Aspect	Impacts
Air Quality	• SO_2 emissions • NO_2 emissions • PM_{10} emissions • CO emissions
Terrestrial Biodiversity	• Spreading of alien invasive vegetation • Contamination by domestic waste generated by the operations • Contamination by leaking petrochemical substances.
Loss Agricultural Activities, Soils and Land use	• Pollution potential from the use of fertilisers • Continued Soil Compaction and Erosion • Continued Soil Pollution Potential
Estuary & Aquatic Systems	• Contaminated run-off from the site.
Hydrology	• Poor quality stormwater discharge onto soils or into the surface environment. • There is a potential for poor quality seepage from the generator, diesel storage areas and stormwater system that will be developed (i.e., poor workmanship, wear and tear over time or clogging of stormwater systems). Raw sewage would impact both the soils and could run into the nearby watercourses. Prolonged pollution may migrate to the shallow groundwater environment. • Oil and fuel spillages associated with service vehicles accessing and undertaking maintenance work at the site, as well as leakages from residential vehicles parked at the site.

Visual	• Impacts from smoke or emissions from the generator.
Noise	• Noise from the operation generator
Traffic	• Increase in trucks delivering fuel

11.2 Opinion regarding authorisation of activity/ies

The EAP is confident that all major impacts associated with the proposed 22MW generator plant has been adequately described and mitigated. It is the opinion of the EAP that the TNPA 22MW Generator Plant should be authorised, provided that the proposed mitigation measures are implemented effectively and in line with the EMPr and any site specific conditions outlined within the environmental authorisation. The generator will be situated within an existing port and industrial footprint area and there are no fatal flaws found for the project. The air quality impacts will be outweighed by the long-term positive impacts of the proposed generator plant for the operations and economic benefits of the generator. The project is also identified and gazetted a Strategic Infrastructure (SIP Project) for the country and should be considered. Based on the findings of the Impact Assessment, the EAP sees no reason why the EA should not be granted for the proposed project to proceed.

11.3 Environmental Management Programme Report

GCS has prepared an Environmental Management Programme Report (EMPr), which is required as part of the EIR submission in Appendix G. The purpose of the EMPr is to control the impacts of construction and operational activities. The effective implementation of an EMPr will ensure that the required works are conducted in an environmentally sound manner and that the potential negative impacts of construction and operational activities are minimised and/or prevented.

The EMPr details the responsibilities and authority of the various parties involved in the project and contains environmental specifications to which the contractor and operator are required to adhere throughout the duration of the construction and operational phases. The EMPr cover impacts that have been identified in the EIA Process and which could potentially arise during the construction and/or operation of the road. The EMPr cover the following aspects:

- Project background information.
- Identification/listing of project and operational activities.
- Implementation and operational instructions.
- Roles and responsibilities of parties with regard to environmental management.
- Environmental training and awareness material for construction staff.

- Environmental specifications e.g. protection of biodiversity and sensitive environments, rehabilitation, public safety and perceptions, traffic control, material and waste management, litter, containment and disposal of hazardous substances (e.g. hydrocarbons, waste oils) etc.
- Measurement of compliance with the EMPr.

11.4 Proposed conditions of Authorisation

Following the findings of the EIA, it is suggested that the CA include the following conditions in the EA, should they decide to grant such:

- The applicant, or anyone acting on the applicant's behalf, must comply with the applicable legislation, regulatory and permit requirements from all relevant authorities during the construction and operation phases.
- The recommendations and mitigation measures included in the specialist investigations must be adhered to;
- Correct implementation of all feasible mitigation measures included in the Environmental Management Programme (EMPr) during the project lifecycle; and
- In terms of Environmental Monitoring and Auditing, the following:
    - Appointment of an Environmental Officer for the duration of the construction phase of the project, to monitor environmental compliance of the project to all environmental conditions and requirements during all construction phases (pre-construction, construction, post-construction);
    - Appointment of an External Auditor to undertake annual environmental compliance audits on the conditions of the EMPr and Environmental Authorisation for the project.

12 CONCLUSION

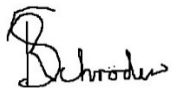
This Draft EIA Report has been compiled where the potential impacts on the environment of listed activities associated with the proposed TNPA 22MW Generator Plant and associated infrastructure were considered, investigated and assessed in compliance with the NEMA and EIA Regulations. The report contains all information that is necessary for the competent authority to consider the application and to reach a decision regarding the application and includes an assessment of each identified potential impact, including biophysical, ecological, socio-economic and cumulative impacts of the proposed development on the environment. The impact assessment is more detailed than the preliminary assessment undertaken in the scoping phase, by incorporating all of the conditions required by the EIA regulations, to provide a thorough investigation into all potential impacts.

Based on the conclusion that no environmental fatal flaw was found, that the project is a National Strategic Infrastructure Project (SIP) and that the medium to low risk negative impacts can be mitigated to low levels, GCS recommends that an EA is granted, provided the proposed mitigation measures are implemented and the recommendations are considered.

13 UNDERTAKING BY EAP

13.1 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I, Rona Schröder, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties received since project announcement, have been correctly recorded in the report.

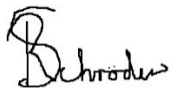


Signature of the EAP

Date: 21 June 2024

13.2 UNDERTAKING REGARDING LEVEL OF AGREEMENT

I, Rona Schröder, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders since announcement of the project, has been correctly recorded and reported herein.



Signature of the EAP

Date: 21 June 2024

APPENDIX A: EAP DECLARATION

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF EAP AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	14/12/20/ 14/12/16/3/3/2/2525
NEAS Reference Number:	DEA/EIA/
Date Received:	

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

PROJECT TITLE

TNPA Dual Fuel Generator for the Port of Richards Bay

Environmental Assessment Practitioner (EAP):[1]	GCS Environment South Africa (Pty) Ltd		
Contact person:			
Postal address:			
Postal code:	2128	Cell:	084 910 1909
Telephone:	011 803 5726	Fax:	
E-mail:	ronas@gcs-sa.biz		
Professional affiliation(s) (if any)			

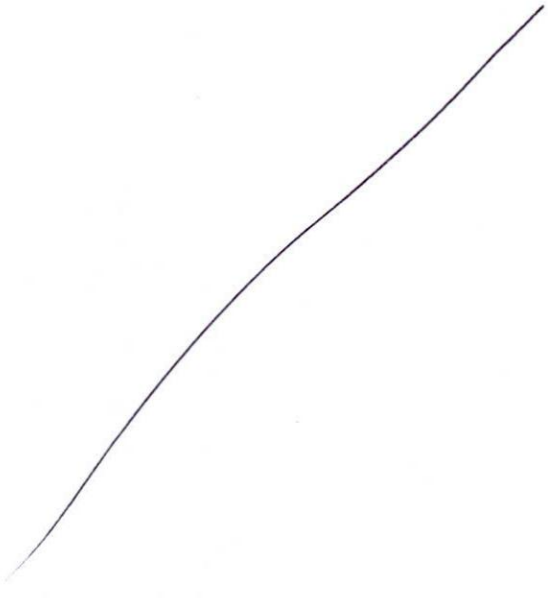
Project Consultant:	Gerda Bothma		
Contact person:	PO Box 2597, Rivonia		
Postal address:	2128		
Postal code:	011 803 5726	Cell:	082 322 6806
Telephone:	gerdab@gcs-sa.biz	Fax:	011 803 5745
E-mail:			

4.2 The Environmental Assessment Practitioner

I, Rona Schröder , declare that –

General declaration:

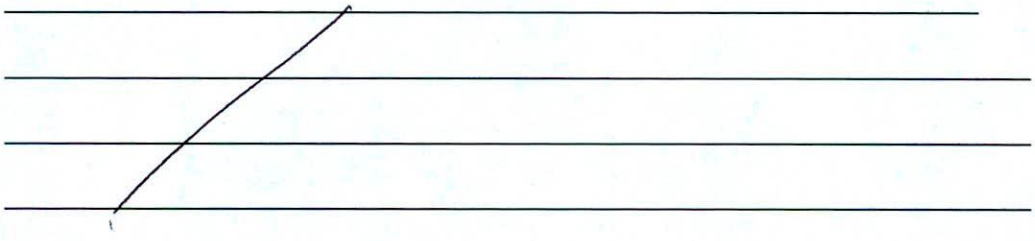
I act as the independent environmental practitioner in this application
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
I declare that there are no circumstances that may compromise my objectivity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



Disclosure of Vested Interest (**delete whichever is not applicable**)

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

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



Signature of the environmental assessment practitioner:

GCS Environt South Africa (Pty) Ltd

Name of company:

21/06/2024

Date:

APPENDIX B: EAP CVS

Rona Schröder

Senior Environmental Assessment Practitioner

CORE SKILLS

- Project Management
- Environmental Impact Assessment
- Water Use Licencing
- Mining Environmental Compliance
- Environmental Compliance Auditing
- Environmental Strategic Action Plans

DETAILS

Qualifications

- B.Sc. (Hons) Environmental Analysis and Management - University of Pretoria (2011)
- B.Sc. Geology and Management - University of the Free State (2012)
- SHEilds (NEBOSH) International General Certificate in Occupational Health and Safety (2018)
- Certificate in Project Management for Strategic Advantage, University of Stellenbosch Business School (2017)

Professional Registrations

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1149)
- Pr.Sci.Nat (120605), South African Council for Natural Scientific Professionals)
- International Association for Impact Assessors of South Africa (IAIASA)

Languages

- English
- Afrikaans

Countries Worked In

- South Africa
-

PROFILE

Rona has over 10 years's experience within the environmental management, water and mining field and is aimed at delivering the required environmental services for each client.

Rona has experience in the environmental fields as an Environmental Assessment Practitioner as well as having worked in the mining field on-site ensuring environmental compliance for several mining and processing sites.

She has dealt with projects in the mining, municipal, farming, electricity generation, telecommunications and water industries. She has been involved with environmental projects from site screening and feasibility, environmental application, writing of Environmental Management Programes (EMPr), writing of technical reports all the through to Stakeholder Engagement Processes and completing of projects up to issuing authorization permits and licenses.

- Proposal Writing and project management
- Stakeholder Management and Engagement
- Government institution and authority liaison
- Water Use Licence Applications
- Environmental Impact Assessment / Basic Assessments
- Environmental Compliance Officer
- Public Participation Processes
- Environmental Compliance Auditing
- Mining Environmental Projects and Licensing
- Environmental Screening and Site Evaluations
- Environmental Training

Previous Experience

Period	Employer	Position	Role/ Responsibility
2021 - 2023	Ikwezi Mining & Zinoju Coal & Zarbon Coal	Group Environment Manager	**I started as Group Environment Officer for Ikwezi Mining and Zarbon Coal and was promoted to Group Environment Manager for Ikwezi Mining, Zarbon Coal and Zinoju Coal. Here is a brief description of my responsibilities at Ikwezi Mining and Buffalo Coal.** • **Responsible for obtaining all relevant environmental authorizations and licenses for the current mining and plant operations as well as new projects;** • **Managing environmental compliance for opencast and underground mining operations as well as washing plants;** • **Departmental and community liaising on all environmental aspects;** • **Project planning, project management and process management for applications and specialist studies;** • **Developing and reviewing SOPs and COPs for environmental aspects;** • **Environmental Auditing, compliance tracking and reporting;** • **Environmental awareness program development and implementation;** • **Environmental monitoring and reporting;** • **Action plans development and implementation;** • **Guidance and implementation of Environmental Legislation;**
2019 - 2021	ACE Environmental Solutions	Head of Department: Environmental	• **Project Management; Proposal Writing for new projects; Company Marketing; Document Quality Assurance;** • **Environmental Authorizations, Water Use License Applications and Waste Management License Applications;** • **Client and Government Department Liaisons;** • **Environmental Compliance Auditing;** • **Managing of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts;** • **Managing Stakeholder Engagement Processes for authorizations and licensing**

			applications; • Development and implementation of Environmental Management Plans (EMP); • Developing Protocols for environmental processes
2013 - 2019	Alta van Dyk Environmental Consultants	Environmental Consultant	• Project Management of multi-disciplinary teams; • Please note that our standard 2023 terms and conditions were sent out in December of 2022. • Environmental Compliance Auditing of Authorizations (ECO), Authorizations and Environmental Management Programmes (EMP); • Project Management for Environmental Processes under the National Environmental Management Act (NEMA), Mineral and Petroleum Resources Development Act (MPRDA) and National Water Act (NWA); • Environmental Authorization, Water Use License and Waste Management License Applications; • Proposal Writing for new projects; • Identification and assessments of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts; • Report Writing and reviewing; Client and Government Department Liaisons; • Stakeholder Engagement Processes for authorizations and licensing applications; • Development and implementation of Environmental Management Plans (EMP); • Developing License Auditing Protocols for conducting environmental legal compliance audits, • Experience as a Data Controller for a large international company with several operations as part of their due diligence process and management system actions;
2013	**Prime Africa Consultants**	**Risk Assessment Matrix Developer**	• Developing a Multi Criteria Risk Assessment Matrix for site selection during Environmental Impact Assessments.

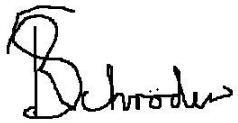
Project Experience

Year	Client	Project Description	Role/Responsibility
2013-2015	Pandora Platinum Mine	Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner
2014	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2014-2019	Lonmin Plc	Marikana Operations Water Use Licence Audit	Environmental Practitioner
2015	Lonmin Plc	Precious Metal Refinery Water Use Licence Application	Environmental Practitioner
2015-2016	Lonmin Plc	Marikana Operations Water Use Licence Application	Environmental Practitioner
2016	Keaton Energy	Vanggatfontein Colliery Wash Plant Extension Authorisation	Environmental Practitioner
2016-2018	Keaton Energy	Vanggatfontein Colliery External Water Use Licence Audits	Environmental Practitioner
2016	Nqutu Local Municipality	Rural Electrification Project Ndodekhling-Shayiwe Small Scall Hydropower Plant	Environmental Practitioner
2016	Mhlontlo Local Municipality	Rural Electrification Project Kwa-Madiba Small Scale Hydropower Plant	Environmental Practitioner
2016	Anglo Thermal Coal	Licence and Permitting Database Development – For all Coal Operations	Data Controller
2016	Anglo Platinum	Licence and Permitting Database Development – For all Platinum Operations	Data Controller
2019	Ekurhuleni Metropolitan Municipality	Mooifontein Cemetery Extension Water Use Licence Application	Environmental Practitioner
2019	Blue Valley Golf Estate	Environmental Management Programme	Environmental Practitioner
2017	Nkomati Anthracite	Water Use Licence Audit Report	Environmental Practitioner
2017	Nkomati Anthracite	Basic Assessment Report	Environmental Practitioner
2017-2019	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2018	Glencore	Chrome Plant Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner

2018-2019	Lonmin Plc	Precious Metal Refinery Water Use Licence Audit	Environmental Practitioner
2018-2019	Lonmin Plc	Marikana Operations Water Use Licence Application Amendment	Environmental Practitioner
2020-2021	Atlas Towers	Telecommunications Mast Basic Assessments	Project Manager and Environmental Practitioner
2021-2023	Ikwezi Mining	Opencast Mining and Coal Washing Plant Compliance	Group Environmental Manager
2022-2023	Buffalo Coal	Underground Mining and Coal Washing Plant Compliance	Group Environmental Manager

DECLARATION

I, Rona Schröder, hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 15/01/2024

UNIVERSITY OF THE **FREE STATE**
UNIVERSITEIT VAN DIE **VRYSTAAT**
YUNIVESITHI YA **FREISTATA**

THIS IS TO CERTIFY THAT THE DEGREE HIERMEE WORD VERKLAAR DAT DIE GRAAD

Baccalaureus Scientiae

HAS BEEN CONFERRED UPON
TOEGEKEN IS AAN

SCHRÖDER, Rona Wilma

IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY. AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEëL VAN DIE UNIVERSITEIT HIERONDER.

ENDORSEMENT: GEOLOGY AND MANAGEMENT
ENDOSSEMENT: GEOLOGIE EN BESTUUR

VICE- CHANCELLOR / VISEKANSELIER

DEAN / DEKAAN

REGISTRAR / REGISTRATEUR

BLOEMFONTEIN
2012-03-28
2007009976

28055749

Universiteit van Pretoria

Die Raad en die Senaat verklaar hiermee dat die graad

Baccalaureus Scientiae Honores

in

Omgewingsanalise en -bestuur

met al die regte en voorregte daaraan verbonde by geleentheid van 'n kongregasie van die Universiteit toegeken is aan

Rona Wilma Schroder

kragtens die Wet op Hoër Onderwys, 1997 en die Statuut van die Universiteit

Namens die Raad en die Senaat

C. de la Rey

Visekanselier en Rektor

Namens die Fakulteit
Natuur- en Landbouwetenskappe

Dekaan

Registrateur

2013-04-17

nebosh

Management of international health and safety

A unit of the:
NEBOSH International General Certificate in Occupational Health and Safety
NEBOSH International Certificate in Construction Health and Safety
NEBOSH International Certificate in Fire Safety and Risk Management

Rona Wilma Schroder

achieved this unit on

12 November 2018

William Nixon
Chair

Ian Taylor
Chief Executive

Master log certificate No: IGC1/00447107/1026644
SQA Ref: UE48 04

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Hiermee word gesertifiseer dat
It is hereby certified that

Rona Wilma Schroder

die volgende kursus suksesvol voltooi het
successfully completed the following course

PROJECT MANAGEMENT FOR STRATEGIC ADVANTAGE (ONLINE)

Number of Short Course Credits : 8

Vir die periode
Over the period

24/01/2017 - 10/03/2017

Prof Piet Naude
Director/Direkteur USB

Frik Landman
Chief Executive Officer
Hoof-Uitvoerende Beampte

USB Executive Development
University of Stellenbosch Business School

4497/55470

EAPASA
Unit 19 Oxford Office Park
3 Bauhinia Street
Highveld Techno Park
Centurion
0157
Tel. (+27) 12 880 2154

Email: registrar@eapasa.org / Website: www.eapasa.org

Environmental Assessment Practitioners Association of South Africa
Advancing environmental assessment practice in South Africa

Miss Rona Schroder
384 Fountains Avenue
Lyttelton
Pretoria
0157

Sent by email to: blommetjie@ymail.com

Dear Miss Schroder

Registered Environmental Assessment Practitioner: Number 2020/1149
Rona Wilma Schroder : South African ID 8901300067080

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Rona Wilma Schroder is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

https://registration.eapasa.org/registered-practitioners

Your registration is effective for a period of five years from 31 August 2020, and expires on 31 August 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

RC Hill

Dr Richard Hill
Registrar
Date: 31 August 2020

Board Members: Ms Snowy Makhudu (Chairperson), Mr Khangwelo Desmond Musetsho (Vice-Chairperson),
Mr Ntsako Baloyi, Mr Zama Dlamini, Mr Siyabonga Gqalangile, Ms Jacqui Hex,Mr Phumudzo Nethwadzi, Mr Danie Neumann.
Registrar: Dr Richard Hill
NPO Reg. No. 122-986

Gerda Bothma

GCS Group Environmental Manager

CORE SKILLS

- Project Management
- Technical & Impact Assessment Guidance
- Environmental Assessment
- Water Use Licencing
- Waste Management Licencing
- Environmental & Waste Auditing and Compliance Monitoring

DETAILS

Qualifications

- B.Sc. Microbiology (Honours) University of Pretoria 1996
- B.Sc. Biological Sciences University of Pretoria 1994

Memberships/ Professional Affiliations

- International Association for Impact Assessors of South Africa (IAIA)
- Institute of Waste Management of South Africa (IWMSA)
- SACNASP (No.117348) (South African Council for Natural Scientific Professionals)

Languages

- Afrikaans
- English

Countries worked in:

South Africa, Zambia, Namibia

PROFILE

Gerda has over 25 years' experience within the environmental and waste management field and strives to deliver custom environmental services to clients.

Gerda began her career in the environmental field within the government sector, managing environmental aspects and impacts as well as reviewing environmental assessments with the view of authorizing or declining authorization of the developments.

After six years within the government sector she joined a consulting engineering firm where she was ultimately responsible for the Management of the Environmental Sub-Division. Gerda has experience in project and client management, financial management and the compilation and costing of project proposals and tenders. She has been involved in several engineering projects as the Environmental Assessment Practitioner as well as the Environmental Control Officer during construction working closely with the Occupational Health and Safety Officer. Gerda has also been involved in projects where waste licensing as well as water use licensing processes formed an integral part of the services offered. Environmental auditing and compliance monitoring of waste disposal sites also forms part of her experience gained. She also has experience in dealing with projects which involve NEC3 Contracts, the Equator Principles and World Bank IFC Principles.

Gerda has specialist skills in the following areas:

- Project proposals, planning, costing and timing
- Project and Client Management
- Authority Liaison
- Basic Assessments & Scoping/EIA Processes
- Amendment of EA's & EMP's
- S24G Applications
- Facilitation of Public Participation Processes & Stakeholder Engagement
- IWULA & IWWMP Applications
- Environmental Control Officer (ECO) duties
- Environmental Compliance Auditing (IFC Performance Standards & Equator Principles)
- Mentorship & Guidance

Work Experience

Period	Employer	Position	Role/ Responsibility
2019 to Current	GCS Water and Environment (Pty) Ltd	Environmental Manager	Management of the environmental unit since 2019 up to January 2024 and then the GCS Group Environmental Division since February 2024. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2018 to 2019	Terramanzi Group (Pty) Ltd	Senior Environmental Consultant	Management of the environmental unit within the Terramanzi Group. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2014 to 2017	GIBB (Pty) Ltd	Senior Environmental Scientist	Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2011 to 2013	WorleyParsons RSA	Senior Environmental Scientist & Durban Department Head Environment	Management of the environmental unit in the Durban Office. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2003 to 2011	KV3 Engineers	Senior Environmental Scientist	Management of applications for exemption from compliance with the EIA Regulations, undertaking of basic environmental assessment applications, as well as full environmental impact assessment applications.
2000 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Assistant Director: Waste Management Division	Project management and environmental management pertaining to all developments within a designated area in Gauteng Province. Review of EIAs, formulation of comments and or authorisations within designated area in Gauteng Province. Liaison with waste contractors, industries and others. Management of legal interventions required in terms of environmental legislation within a designated area. Supporting environmental officers at all levels in terms of technical and environmental guidance, input into strategic decisions, resolving complex and potentially challenging issues.
1999 to 2000	Gauteng Department of Agriculture, Conservation & Environment	Senior Environmental Officer: Waste Management Division	
1997 to 1999	Gauteng Department of Agriculture, Conservation & Environment	Environmental Officer: Waste Management Division	
1996	Spartan Private School	Teacher: Natural Science & Biology	Teacher in Biology and Natural Science for Grades 7 to 12.

Year	Client	Project Description	Role/ Responsibility
Strategic and Environmental Guidance Projects			
1999 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of a Health Care Risk Waste Management Strategy for Gauteng.	Part of Development Team
2001 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of Minimum Domestic Waste Collection Standards for Gauteng Province.	Part of Development Team
2002	Gauteng Department of Agriculture, Conservation & Environment	Development of new EIA guidelines and regulations for the Gauteng Province.	Part of Development Team
2005	Gauteng Department of Agriculture, Conservation & Environment	GDACE Green Procurement Project: Development of the GDACE Green Procurement Policy, Gauteng	Project Manager & Reviewer
2008	GAUTRAIN Project Engineers (i.e. KV3 Engineers)	Environmental Assistance for the Gautrain Project: Environmental Evaluation of various documentation and engineering designs in terms of their environmental compliance.	Project Manager & Reviewer
2009	Department of Environmental Affairs	Alignment of MIG Project Process with EIA Process: Evaluation of the EIA process as well as the MIG process in order to produce a process alignment guideline to the municipalities to streamline the two processes.	Part of Development Team
2021	CoalTech	Development of "A Manual for the Authorisation of Pitlakes as a Closure Option for South African Coal Mines"	Part of Development Team
Environmental Feasibility and Screening			
2008	Nu Way-property Developments	Management of Environmental Screening and Due Diligence Assessment for several proposed Nu Way-property Developments, Gauteng.	Project Manager
2008	Department of Water Affairs	Mokolo Croc WAP Environmental Feasibility and Screening, Limpopo.	Project Manager & Senior Environmental Assessment Practitioner (EAP)
2016	Kwadukuza Municipality	Environmental Feasibility for Civil Engineering Project Foxhill Road Alignment and Construction, Tongaat, Kwa-Zulu-Natal.	Environmental Project Leader
2016	King Sabata Dalindyebo Local Municipality (C/O OR Tambo District Municipality)	Environmental Screening Investigation of six proposed development corridors for the Mthatha Bulk Water Infrastructure Presidential Intervention – Phase 2: Secondary Bulk Infrastructure project.	Environmental Project Leader
2019 to 2020	Phumaf Holdings (Pty) Ltd	Environmental Screening for various sites within Ekhurhuleni Municipality as part of the Gauteng Rapid Land Release Programme (GRLRP) project for the Provincial Department of Human Settlements	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Environmental Opinions & Appeals			
2019 to 2020	Tendele Coal	Environmental Review Report for the Somkhele Anthracite Mine (MR 10041) High Court Case Number 82865.	Project Manager & Senior EAP
2022	CNG Holdings	Environmental Opinion regarding the Environmental Legislative Requirements for the proposed Compressed Natural Gas Motherstation in Avoca, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Tendele Coal	Environmental support to the Somkhele Anthracite Mine for the IWULA Appeals Process.	Project Manager & Senior EAP
Development Environmental Assessments			
2003 to 2005	ABSA DevCO	Environmental Impact Assessment for a change of land-use from agricultural to Residential and Town Development of the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Senior EAP
2005 to 2010	Air Traffic Navigation Services (ATNS)	The project entails the upgrading of existing, and the provision of new air navigation sites (27 in total) throughout South Africa. Civil and electrical infrastructure to the sites needed to be upgraded to accommodate the equipment. Various Environmental Impact Assessments for various individual projects in various provinces within South Africa.	Project Manager & Senior EAP
2006 to 2009	Amathole District Municipality	Elliotdale Rural Sustainable Human Settlement Pilot Project Environmental Impact Assessment. Responsible for the environmental assessment process which was based on a strategic approach for the Elliotdale Rural Housing Project, Elliotdale, Eastern Cape.	Project Manager & Senior EAP
2007	Elkem Ferroveld	Environmental Basic Assessment for the upgrading and expansion of the Ferroveld Plant in Ferrometals, Emahlaheni, Mpumalanga.	Project Manager & Senior EAP
2008	ABSA DevCO	Environmental Impact Assessment for a change in land use from agricultural to Residential and Town development of Montana X40, Pretoria, Gauteng.	Project Manager & Senior EAP
2012	Transnet Capital Projects	Environmental Basic Assessment and technical environmental investigations for the proposed expansion of the existing tug jetty and construction of a new tug jetty for Transnet Capital Projects in the Port of Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	Dube TradePort	Environmental Impact Assessment for the proposed construction of the Dube TradePort TradeZone 2 in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2017	Dube TradePort	Environmental Impact Assessment for the proposed Support Precinct 2 Development in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities at the Areena Resort, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities on Hillsdrift Farm, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2018 to 2019	Watchman Properties (Pty) Ltd	Environmental Basic Assessment for the proposed Vendome Residential Development on Portion 1 of Farm 1766 and Portion 2 of Farm 1766, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2018 to 2019	Keysha Investments 213 (Pty) Ltd	Environmental Basic Assessment for the proposed River Farm Estate Development and associated infrastructure on remainder of farm Rivierplaas No. 1486, Erf 111 and Erf 197, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Paarl Vallei Developments (Pty) Ltd	Environmental Basic Assessment for the proposed Paarl Valleij Retirement Village Development, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Val de Vie Investments (Pty) Ltd	Parallel Substantive Amendment Application process for the authorised Pearl Valley II & Levendal Residential Developments, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2019 to 2021	Phumaf Holdings (Pty) Ltd	Environmental Services for: • Full Environmental Impact Assessment for the proposed Unitas Park Ext 16 Mixed Use Development; • Basic Environmental Impact Assessment for the proposed Evaton West F Mixed Use Development; and • Basic Environmental Impact Assessment for the proposed Evaton West I Mixed Use Development.	Project Manager & Senior EAP
Renewable Energy Environmental Assessments			
2011	Farmsecure Carbon	Environmental Basic Assessment and Water Use License Application process for a proposed Biogas Waste to Energy project for a pig farm, Mooiriver, KwaZulu-Natal.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Doornfontein Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 230 MW Doornfontein Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 118, Doornfontein, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Kruispad Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Kruispad Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 120, Kruispad, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	Brandvalley Wind Farm (Pty) Ltd	Part 2 Amendment Application for the authorised 140 MW Brandvalley Wind Energy Facility (WEF) located within the Karoo Hoogland, Witzenberg and Laingsburg Local Municipalities in the Northern and Western Cape Provinces.	Project Manager & Senior EAP
2018 to 2019	Copperton Wind Farm (Pty) Ltd	Non-Substantive Amendment Application to update the information of the Holder of the Environmental Authorisation & an EMPr Amendment Process to update the Airstrip Alignment and to provide an updated "outcomes based" EMPr for the Copperton Wind Energy Facility near Copperton in the Northern Cape.	Project Manager & Senior EAP
2018 to 2019	WKN Windcurrent SA (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Haga Haga Wind Energy Facility (WEF) & Environmental Basic Assessment for the associated Haga Haga Overhead Powerline (OHPL) in Haga Haga, Great Kei Local Municipality, Eastern Cape.	Project Manager & Senior EAP
2021 to 2022	Cennergi Holdings	Environmental Impact Assessment and Water Use License Application (GA) process for the proposed 100MW Lephalale Solar Plant located mainly on the Farm Appelvlakte 448 within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Mining Environmental Assessments			
2007	Chris Hani Municipality	Environmental Assessment and DME Licence Application on behalf of Chris Hani Municipality. Responsible for exemption application from Mining Permit and Environmental Management Programmes for 17 borrow pits in Middelburg, Eastern Cape.	Project Manager & Senior EAP
2010	Samancor Chrome Limited	The Lwala Greenfields Mine and Smelter EIA and EMP. Responsible for the Environmental impact assessment and technical investigations for the waste management issues for the proposed development of a new chrome smelter project in the Steelpoort area, Limpopo.	Project Manager & Senior EAP
2011	Xtrata Alloys	Xtrata Alloys Western Mines PSV application for authorization in terms of the MPRDA. Responsible for the undertaking of the EIA and compilation of the amended EMPr and technical environmental investigations for the proposed development of an open cast mine in Rustenburg, North West.	Project Manager & Senior EAP
2019 to 2021	Harmony Gold	Environmental Assessment process to obtain environmental authorisation for the proposed expansion of the existing Kareerand Tailings Storage Facility, Dr Kenneth Kaunda District Municipality, North-West Province.	Project Manager & Senior EAP
2019 to 2021	Zululand Anthracite Colliery	Environmental Basic Assessment for the proposed New Mngeni Adit & Associated Infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Sibanye-Stillwater	Part 2 Amendment Application for the approved Burnstone Gold Mine EA/EMPr located near Balfour within the Dipalaseng Local Municipality, Mpumalanga.	Project Manager & Senior EAP
2021 to 2022	Exxaro Resources	Section 34 EMPr Amendment Application for the approved Grootegeluk Mine EMPr located near Lephalale within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP
2021 to 2022	Booysendal Northam Platinum	Part 2 Amendment Applications for the Booysendal Mine located near Lydenburg, across both Mpumalanga and Limpopo provices: • Booysendal North Mine: New Emergency Escape Portal and two new Ventilation Shafts and associated Infrastructure; and • Booysendal South Mine: New Ventilation Shafts and associated infrastructure.	Project Manager & Senior EAP
2022 to 2023	Booysendal Northam Platinum	Integrated Environmental Authorisation Application for the Booysendal South Phase III Expansion, Lydenburg, Mpumalanga: • Booysendal South Tailings Storage Facility Expansion; • Booysendal South Run of Mine Stockyard Stockpile Expansion; and • Booysendal South New Merensky Plant.	Project Manager & Senior EAP
2022 to 2023	Kangra Coal	Integrated Environmental Authorisation Application for the establishment of a Co-Disposal Discard Facility and Wastewater Treatment Plant at the Maquasa East Operations, Piet Retief, Mpumalanga.	Project Manager & Senior EAP
2023	Kangra Coal	Integrated Environmental Authorisation Application for the Umgala/Knights Hill Mining Application, Utrecht, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Waste Management Environmental Assessments			
2003	Assmang Chrome Machadodorp	Environmental Impact Assessment for the permitting of the H:H Hazardous Waste Disposal Facility at Assmang Chrome, Machadodorp.	Senior EAP
2004	Emfuleni Local Municipality	Environmental Impact Assessment for the closure of the Zuurfontein Landfill site for the Emfuleni Local Municipality, Sedibeng, Gauteng	Senior EAP
2004	Ekurhuleni Municipality	Environmental Impact Assessment for the closure of the Sebenza Landfill Site for the Ekurhuleni Municipality, Gauteng.	Senior EAP
2004	Tzaneen Local Municipality	Application for authorisation and EIA for the permitting of an existing solid waste disposal site for the Tzaneen Local Municipality, Mpumalanga.	Senior EAP
2006	Samancor Chrome Middelburg	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Middelburg, Mpumalanga.	Senior EAP
2006	Samancor Chrome Ferrometals	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Ferrometals Witbank, Mpumalanga.	Senior EAP
2007	Steve Tshwete Municipality	Environmental Impact Assessments for four Solid waste Transfer Stations for the Steve Tshwete Municipality, Mpumalanga.	Senior EAP
2008	Assmang Chrome Machadodorp	Environmental Impact Assessment for the expansion of the existing Slag Waste Disposal Facility at Assmang Chrome. Responsible for the EIA application for authorization for the proposed expansion project in Machadodorp, Mpumalanga.	Project Manager & Senior EAP:
2010	ArcelorMittal	ArcelorMittal BOF Slag Disposal site licensing of new site and closure of old site, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP:
2010	Lekwa Municipality	Waste Management License Application for authorization and the conducting of an EIA and technical environmental investigation for the proposed development of two landfill sites for the Lekwa Municipality, Mpumalanga.	Project Manager & Senior EAP:
2015 to 2017	Umgungundlovu Municipality	Advanced Solid Waste Management Project for Umgundgundlovu Municipality for proposed Materials Recovery Facilities located in various Local Municipalities, Umgungundlovu Municipality, KwaZulu-Natal.	Project Manager & Senior EAP:
2019 to 2022	Buffalo Coal	Magdalena Colliery Waste Management License Application, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP:
Water and Wastewater Environmental Assessments			
2004	Msukaligwa Municipality	Environmental Impact Assessment for the installation of a water reticulation system at Nganga for the Msukaligwa Municipality, Mpumalanga.	Senior EAP
2006 to 2010	eThekwini Municipality: Water and Sanitation	Proposed upgrading of the WWTW capacity in the Northern Areas of the eThekwini Municipality. Responsible for EIA application for authorization, technical environmental investigations, and waste management license application for the proposed expansion of the WWT capacity in Northern eThekwini, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2008	Johannesburg Water	Environmental Management Services for Johannesburg Water: Environmental Impact Assessment (Exemption) for various individual projects related to the upgrading of the Bryanston Water Mains, Gauteng.	Project Manager & Senior EAP
2014 to 2017	eThekwini Municipality: Water and Sanitation	Environmental Basic Assessment and Water Use License Application for the Northern Aqueduct Water Augmentation Project (Phase 5), Durban, KwaZulu-Natal.	Project Manager & Senior EAP
Electrical and Linear Environmental Assessments			
2005	Magallies Water	Application for (exemption) authorisation on behalf of Magallies Water for the installation of the Rising Main from the Roodeplaat Waterworks to the Wallmannsthal Reservoir, in Wallmannsthall, Gauteng.	Senior EAP
2010	Moloto Rail Corridor Development	EIA for the Moloto Rail Corridor Development. Responsible for the EIA application for authorization and technical environmental investigations for the proposed Moloto Rail Corridor Development, Moloto, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Honingklip 88kV & ESKOM Randjiesfontein 88kV overhead line and Sub-Stations, Johannesburg, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Ubertas Strategic Servitude Sub-Station, Johannesburg, Gauteng	Project Manager & Senior EAP
2014 to 2017	Msunduzi Municipality	Environmental Impact Assessment for the proposed Msunduzi IRPTN project, Pietermaritzburg, KwaZulu-Natal	Project Manager & Senior EAP
Environmental and Waste Management Compliance Monitoring and Auditing			
2005 to 2009	Sedibeng District Municipality	Auditing of Zuurfontein and Boitshepi Landfill sites for the Sedibeng District Municipality, Gauteng.	Part of Audit Team
2006 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Amberfield Development on the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Environmental Control Officer (ECO)
2007 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Zambezi Estate Development, Montana, Gauteng.	Project Manager & ECO
2008 to 2009	Steve Tshwete Municipality	Auditing of Middelburg Landfill Site for the Steve Tshwete Municipality, Mpumalanga.	Part of Audit Team
2008 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Cedar Creek Development, Fourways, Gauteng.	Project Manager & ECO
2017 to 2018	Dube TradePort	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of TradeZone 2, Dube TradePort, La Mercy, KwaZulu-Natal.	Project Manager & ECO
2017	Richards Bay Minerals	Environmental Legal Compliance Audit to determine the level of compliance of Richards Bay	Project Manager &

Year	Client	Project Description	Role/ Responsibility
		Minerals' to their various mining, water and waste licenses and environmental authorisations and permits, Richards Bay, KwaZulu-Natal.	Environmental Auditor
2017 to 2018	eThekwini Municipality	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of the Northern Aqueduct Phase 5, Durban, KwaZulu-Natal.	Project Manager & ECO
2019	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Samancor Eastern Chrome Mines	Annual Performance Assessment Audits for the following mines in Limpopo: • Doornbosch, Steelpoort and Montrose Mines; • Quartz Mine; • Lwala Mine; • Lannex Mine; • Spitskop Mine; and • Tweefontein Mine.	Project Manager & Technical Review
2020	ESKOM	ESKOM Biennial PCB Phase-out Compliance Audit, various sites within South Africa.	Project Manager & Lead Auditor
2020	ESKOM	Majuba Power Station Legal Compliance Audit, Volksrust, Mpumalanga.	Project Manager & Lead Auditor
2021	Zululand Anthracite Colliery	Annual IWUL Audit for 2020, Mandlakazi Traditional Authority, KwaZulu-Natal	Project Manager & Technical Review
2021	ESKOM	Kendal Power Station Legal Compliance Audit, eMalahleni Local Municipality, Mpumalanga.	Project Manager & Lead Auditor
2021	Coalition Trading	External Compliance Audit for the Humberdale Landfill Site, in terms of the Waste Management Permit, KwaZulu-Natal	Project Manager & Auditor
2021	Tronox KZN Sands (Pty) Ltd	NEM: WA Norms and Standards External Waste Compliance Audit for the Tronox Central Processing Complex located in Empangeni, KwaZulu-Natal	Project Manager & Lead Auditor
Integrated Water Use License Applications			
2010	FOSKOR	Integrated Water Use License Application for a new storage dam for FOSKOR, Richards Bay, KwaZulu-Natal.	Part of Project Team
2014 to 2015	SANRAL	Integrated Water Use License Applications as required for the proposed SANRAL N2 Road upgrade from Mthunzini to Empangeni, KwaZulu-Natal.	Project Manager & Senior EAP
2014	eThekwini Municipality: Roads	Integrated Water Use License Application for the proposed Realignment of Inanda Arterial Road, Durban, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2015 to 2017	SMEC (Umzimkulu Municipality)	Integrated Water Use License Application for the proposed Licensing of the existing Umzimkhulu Waste Water Treatment Works, Umzimkhulu, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	eThekwini Municipality: Roads	Water Use License Application for the proposed eThekwini BRT Route C1A, Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2020	Zululand Anthracite Colliery	Integrated Water Use License Application for the new Mngeni Adit and associated infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2021	South32 SA Coal Holdings	Integrated Water Use License Application for the Roy Point Mine, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Amendment Application for the Magdalena Colliery, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Application for the Coalfields Processing Plant, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
Management and Master Plans			
2005	Livingstone Municipality	Development of the Livingstone Integrated Development Plan, Zambia.	Part of the Project Team
2008	Steve Tshwete Municipality	Development of an Integrated Waste Management Plan for the Steve Tshwete Municipality, Mpumalanga.	Part of the Project Team
2008	Kungwini Local Municipality	Development of an EMP (Framework) for Kungwini Local Municipality, Mpumalanga.	Part of the Project Team
2010	KZN Department of Public Works – Southern Region	Compilation of an Environmental Management Plan for the Fort Napier sewage upgrading project, Pietermaritzburg, Kwa-Zulu Natal.	Project Manager & Senior EAP

DECLARATION

I, ___Gerda Bothma_____ hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 21/02/2024

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae

with specialization in
Biological Sciences

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of
Science
(Sgd) N Sauer
Dean

(Sgd) CR de Beer
Registrar

Date of Conferment
8 December 1994

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores

with specialization in
Microbiology

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of Biological
and Agriculrural Sciences
(Sgd) J van Zyl
Dean

(Sgd) JA Boon
Registrar

Date of Conferment
27 March 1996

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Gerda Bothma

Registration Number: 117348

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **15 November 2017** Expires **31 March 2024**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX C: PUBLIC PARTICIPATION PROCESS

APPENDIX C1: Scoping Phase PPP

Scoping Phase Public Participation Report

63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

Public Participation Report:

Application for Environmental Authorisation:

Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, KwaZulu-Natal

Version: Final

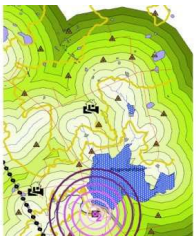
April 2024

Applicant: Transnet National Port Authority

GCS Project Number: 23-0807

Client Reference: TNPA/2023/06/0023/33545/RFP

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Offices: **Johannesburg** (Head Office) | Durban | Gaborone | Lusaka | Maseru | Windhoek | Ostrava
Directors: AC Johnstone | W Sherriff

Public Participation Report
Environmental Authorisation Application:
Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, KwaZulu-Natal

April 2024

DOCUMENT ISSUE STATUS

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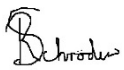
Title	Public Participation Report: Environmental Authorisation Application: Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, KwaZulu-Natal		
	Name	**Signature**	**Date**
Author **Stakeholder Engagement Specialist**	Anelle Lötter		20 April 2024
Environmental Assessment Practitioner	Rona Schröder *EAPASA: Reg. 2020/1149* *Pri.Sci.Nat.: 120605*		22 April 2024
Environmental Manager	Gerda Bothma *Pr. Sci. Nat: 117348*		23 April 2024

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EXECUTIVE SUMMARY

This report is the Scoping Public Participation Report (PPR), for the Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator environmental authorisation application processes; and it provides a summary of the public participation activities undertaken in support of the application process. It further includes all comments, issues raised and responses provided during the consultation process, as well as proof of participation activities undertaken. What follows is a summary of the main comments raised during the public participation process, and responses provided. Further details are provided within the report.

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LIST OF APPENDICES

1 INTRODUCTION

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline, including the Port of Richards Bay (PoRB). TNPA is responsible for the facilitation of the provision of water, lighting, power, sewerage, and telecommunications within the ports.

The TNPA is therefore proposing to install of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the PoRB.

The purpose of this dual fuel generator will be to provide emergency power for the port activities. Due to the current insufficient power supply from the national grid, the port is required to provide alternative emergency power generation to be able to effectively manage the port activities.

This Public Participation Report documents the process which is followed with respect to the public participation activities for the application of an environmental authorisation (EA) and a water use license (WUL). Public Participation activities is conducted according to the requirements as stipulated in the National Environmental Management Act (NEMA) (Act 107 of 1998) Chapter 6, Sections 39 to 44 of GNR 38282, 4 December 2014, as amended and per the requirements of the National Water Act (NWA) (Act 36 of 1998) for the application of a WUL. A concurrent public participation process is conducted for the applications.

The most important objective of public participation is to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner and to provide a platform for constructive participation in the regulatory process, thereby assisting I&APs to:

- Gain an understanding of the proposed activities applied for, the various legislative components, specials studies conducted and the potential impacts (positive and negative);
- Raise issues of concern and suggestions for enhanced benefits;
- Comment on reasonable alternatives and the proposals;
- Verify that their issues have been recorded in the Comments and Responses Report ("CRR") and considered in investigations; and
- Contribute relevant local information and traditional knowledge to the process.

2 SUMMARY OF THE CONSULTATION PROCESS

2.1 Identification of Stakeholders

A stakeholder database or list of Interested and Affected Partis (I&APs) was compiled and is updated as the process unfolds and as more I&APs registered. The database was compiled: a) using lists of contact details of previous application processes in the area; b) using information provided by stakeholders in response to advertisements published, site notices placed and/or emails sent; and c) from information provided by I&APs in response to an invitation to provide contact details of other stakeholders which may have been interested or affected. A list of the stakeholder database is appended (Appendix A).

2.2 Announcement of the regulatory process and proposed application

The regulatory process and TNPA's intent to apply for and EA and a WUL was announced to I&APs by means of the following:

- Advertisements (Appendix B) in English was published on Thursday, 7 March 2024 in the Isolezwe newspaper and on Friday, 8 March 2024 in the Zululand Observer.
- Various notifications (Appendix C), including Background Information Documents (BIDs) were compiled and distributed as follows:
    - To all I&APs on the stakeholder database via email notifications on Friday, 8 March 2024. A reminder email was sent to all on Thursday, 4 April 2024.
    - BIDs were printed and distributed to various I&APs during the placement of site notices and the Draft Scoping Report at public places on Friday, 8 March 2024
- The notifications provided information in respect of the application for the proposed project and included copies of the Background Information Document, information about the availability of the Draft Scoping Report and how stakeholders can comment on the report.
- Placement of the Draft Scoping Report on the GCS website. The website address was published in the advertisements, site notices and notifications, (e.g. email notifications) to I&APs.
- Placement of site notices around the proposed development area (Appendix D records the placement of site notices) on Friday, 8 March 2024.
- Telephonic notification to key I&APs and landowners.
- A Registration and Comment Form was distributed with every notification, inviting stakeholders to register as I&APs and to provide their comments.

2.2.1 Review of the Draft Scoping Report

The Draft Scoping Report was available for review and comment for a period of 30 days from 8 March to 11 April 2024. The availability of the Report for review and comment was announced to stakeholders through the following means:

- Email notifications and a reminder notification were sent to all I&APs on Friday, 8 March 2024 and Thursday, 4 April 2024 (Appendix C) informing them of the availability of the Draft Report for their review between 8 March and 11 April 2024. A comment sheet was distributed with the notification for stakeholders to complete and submit their comments in writing.
- Telephonic notification to key I&APs.
- Advertisements were published (Appendix B) on Thursday, 7 March in the Isolezwe and on 8 March in the Zululand Observer newspapers to inform readers about the regulatory process followed, the opportunity for stakeholder to participate in the process by reviewing the Draft Report and to provide their comments.
- The Draft Report was made available on the GCS web site and an electronic link to download the report was distributed with the notifications.
- Copies of the Draft Report was distributed electronically and in hard copy to the Competent and Commenting authorities (Appendix C provides proof of delivery notices).
- A Hard copy of the Draft Scoping Report was available for review at the Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)

2.2.2 Review of the Final Scoping Report

The Final Scoping Report was prepared after the comment period of the Draft Report has expired. The availability of the Final Report and where copies of the Final Report can be obtained for review and comment has been communicated in a notification letter to registered I&APs via email.

The Final Scoping Report was published on the GCS website.

3 COMMENTS AND RESPONSES REPORT

All comments received from the announcement in March 2024 and from the public review of the Draft Scoping Report are captured in a Comments and Responses Report (CRR) (Appendix E). The CRR is appended to the Final Scoping Report as a full record of issues raised to date, including responses on how the issues were considered.

4 CONCLUSION

This report forms part of the S&EIR application process for the Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator Project at the Port of Richards Bay. The aim of the report was to record and reflect the issues, concerns and responses raised during the application process undertaken, in line with the legislated requirements of NEMA.

APPENDIX A: STAKEHOLDER DATABASE

23-0807: Stakeholder Database - TNPA

Installation of a 22MW Dual Fuel Generator

Name	Surname	Company / Organisation
National Authorities		
Mmatlala	Rabothata	DFFE: Case Officer - Biodiversity Conservation
Lindiwe Victoria	Dlamini	DFFE: Case Officer - Biodiversity Conservation
Nyiko	Nkosi	DFFE
Seoka	Lekota	DFFE
Thembalakhe	Sibozana	DFFE: PMB
Amkela	Chiya	DFFE
Amanda	Mkhungo	DFFE
Khululiwe	Hlongwane	DFFE: Directorate: Forestry Resource Protection
Constance	Masemburi	DFFE: Directorate: Priority Infrastructure Projects
Provincial Authority		
Karoon	Moodley	DMRE
Mbali	Ndumo	CoGTA
Vhutshilo	Gelebe	CoGTA
Felicia	Mdamba	EDTEA
M	Mdamba	KZN Dept of Economic Development
Muzi	Mdamba	EDTEA - King Cetshwayo
Ann	McDonald	EDTEA
Zama	Mbanjwa	EDTEA - Northern Region
K	Naidoo	DWS KZN
Shaun	Naidoo	DWS
Zama	Hadebe	DWS
Andisa	Msomi	DWS
A	Starkey	DWS
B	Msane	DWS
Lindiwe	Dladla	DWS
Yolanda	Gwele	DWS
Zama	Malibiji	DWS
Makwabasa	Ntombethu	Catchment Management Agency
John	Pakwe	KwaZulu-Natal Amafa and Research Institute
Natasha	Higgitt	SAHRA
Lynn	Boucher	DRDLR
SP	Myeza	KZNDARD - HoD
T	Kunene	Department of Labour
Sibusiso	Gumbi	Department of Transport
Judy	Reddy	Department of Transport
Nolwazi V	Nkosi	EKZNW
Jenny	Longmore	EKZNW
Irene	Hutton	EKZNW
Santosh	Bachoo	EKZNW
Nerissa	Pillay	EKZNW
Dominic	Wieners	EKZNW
Dave	Druce	EKZNW
Richard	Penn Sawers	EKZNW

Andy	Blackmore	EKZNW
Parastatal		
Greg	Botha	Council for Geo-Sciences
John	Geeringh	ESKOM
Lungile	Motsisi	ESKOM
Troy	Govender	ESKOM
Willie	Joubert	Transnet
Eddie	Seaton	Transnet
Brenda	Kali	Telkom
Pynee	Chetty	Telkom
Neil	Sookaloo	Open Serve
Yolisa	Ndima	National Development agency
Nobuhle	Majola	National Development agency
Bhekizenzo	Nxumalo	National Development agency
Municipalities		
uMhlathuze Local Municipality		
Brenda	Strachan	Manager: Spatial and Environmental Planning
Estelle	Naidoo	City Manager
Nokubonga	Khumalo	Environmental Planning
Nokubonga	Duma	Project Manager: Environmental Planning
Kershia Govender		EMI: Economic Development, Tourism & Environmental Affairs
ES Ngcobo		Deputy Municipal Manager: Infrstructure Services
Daniel	Mohapi	
Nokubonga	Duma	
Lindiwe	Zondi	
Sharin	Govender	Project Manager: Environmental Planning
King Cetshwayo DM		
Philani	Sibiya	Municipal Manager - King Cetshwayo DM
Thanda	Mnguni	Municipal Manager - King Cetshwayo DM
Londeka	Ngcobo	Environmental Planning
Smangaliso	Goba	Air Quality
Nozipho	Khathi	
NGOs / CBOs		
Richards Bay Clean Air Association		
Sandy	Camminga	
Candice	Webb	
Franz	Schmidt	
Richards Bay Industrial Development Zone (RBIDZ)		
Joe	Muller	
Theunis	Roux	
Percy	Langa	
GroundWork		
Bobby	Peak	Director
Robbie	Mokgalaka	Groundwork
G	Knott	
Avena	Jacklin	Manager: Climate and Energy Justice Campaign
South Durban Community Environmental Alliance		
Nokwazi	Magubane	South Durban Community Environmental Alliance
Desmond	Dsa	South Durban Community Environmental Alliance

Bradley	Gibbons	Endangered Wildlife Trust
Constant	Hoogstad	Endangered Wildlife Trust
Gareth	T	Endangered Wildlife Trust
Rob	Crankshaw	KZN Conservancies
Tembeka	Dambuza	WESSA
Pieter	Burger	WESSA
Jean	Senogles	WESSA
Morgan	Griffiths	WESSA
Hanneline	Smit-Robinson	Birdlife SA
Mark	Anderson	Birdlife SA
Melissa	Lewis	Birdlife SA
Catherine	Meyer	Groundtruth
M	Mdamba	Umhlathuze Water
Jeremy	Ridl	Umfolozi Big Five Trust
Louise	de Bruin	Game Rangers Association of Africa
Charles John	Forrest	Game Rangers Association of Africa
Janet	Phelan	Game Rangers Association of Africa
Jeremy	Anderson	
Martin	Schofield	
Harold	Thornhill	
Mark	Gerrard	
Chris	Kelly	Wildlife ACT
Peter	JM	
Kirsten	Youens	Youens Attorneys / All Rise
Janice	Tooley	All Rise
Jade	Dafel	Somkhele Environmental Officer
Chris	Wright	Black Rock Environmental
Adrian	Nel	UKZN
DJ	Jones	Dolphin Coast Conservancy
JD	Hugo	Dolphin Coast Conservancy
Anna	Jordan	Conservation KZN
Mary	De Haas	KZN Monitor
Peter	Clarke	Indian Ocean Export Company
Phiwayinkosi	Mungwe	South African Youth Climate Change Coalition
Roderick	Bulman	Phelamange Projects
Matome	Kapa	Centre for Environmental Rights/Mining and Environmental Justice Community Network of South Africa
		Duzi Umngeni Conservation Trust
		Wildlands Conservation Trust
		Environmental and Rural Solutions KZN
		World Wildlife Fund (WWF)
Bernadet	Pawandiwa	AMAFA PMB
Barry	Theunissen	Inprodev (Pty) Ltd / Umfolozi Big 5 Reserve
Melita	Steele	Greenpeace Africa
Johan	Gouws	Activist
MJ	Vermaak	Activist
P Jankap		Activist
Chris	Boshoff	AfriForum

Sandra	Dell	Botanical Society of South Africa - KZN coastal branch
Sandy	Heather	Past Chair of Sustaining the Wild Coast
Ursina	Rusch	WWF South Africa's Black Rhino Range Expansion Pro
Jacques	Flamand	WWF South Africa's Black Rhino Range Expansion Pro
Gilbert	Martin	We Are South Africans
		Climate Justice Charter Movement
Rose	Williams	Biowatch
Lawrence	Mkhaliphi	Biowatch
Vanessa	Black	Biowatch
Media		
Tamlyn	Jolly	Zululand Observer
Elise	Tempelhoff	News24
Khulekani	Khuzwayo	Bay Watch
Tony	Carnie	Freelance Environmental Writer
Applicant		
Siyabonga Gadu		TNPA
Daisy Molamodi		TNPA
Karabo Chuene		TNPA
Motlatso Molapo		TNPA
Fikile Dlamini		TNPA

APPENDIX B: ADVERTISEMENTS

Advertisements were published on Thursday, 7 March in the Isolezwe and on 8 March in the Zululand Observer

606 RECRUITMENT | 606 RECRUITMENT | 606 RECRUITMENT

INDEPENDENT

MULTIMEDIA JOURNALIST x 4

The KZN Stream which encompasses **The Daily News, Independent on Saturday & the Sunday Tribune** has vacancies for **Multimedia Journalists x 4.** The successful incumbents will be located in Durban & be responsible for producing copy for use across multi media, multi platforms and across verticals (print and digital).

Key Responsibilities

- Produces high quality, newsworthy stories that are well researched, accurate, balanced, well-written and features sources that add depth to the content.
- Produce content that is error free, structured well and content needs minimal editing.
- Breaks exclusive stories on regular basis.
- Has thorough understanding of the beat and strong network of sources Generates leads, possesses problem solving skills, and takes initiatives to suggest or make such changes that strengthen Independent's news coverage.
- Producing distinctive stories that define quality.
- Assumes shared responsibility for quality.
- Has well-developed understanding of reader and positioning.
- Has high level of engagement with reader and stories consistently engage reader in print and online
- Follow-up of stories/content.
- All copy and features have strong "news you can use" and community connect element.
- Uses knowledge of readers to suggest content initiatives.
- Produces content for all platforms - Write for the digital title sites.
- Uses social networks to drive readership.
- Tweets and produces unique content for Independent. Post on social media all articles and follow up.
- Contribute ideas for pictures and graphics.
- Writing of opinion pieces and leaders for use across multi-media and multi-platforms across verticals (print and digital).
- Effectively uses social media to break news and to engage with online audience.
- Be attuned to life on the web, and incorporate online / digital tools into story research, information gathering and contact building.
- Finds opportunities in print to drive the reader online and online to drive users to print.

Minimum Requirements

- Must have a tertiary qualification in journalism or equivalent.
- Must have at least 4 to 5 years journalism experience working on multiple platforms.
- Having a formal training qualification in multimedia journalism would be advantageous.
- Must have an excellent understanding of the Daily News, Independent on Saturday and Sunday Tribune content requirements.
- Must have an in-depth understanding of what comprises good local news as well as national and global issues.
- A thorough understanding of issues affecting Durban, KZN and South Africa.
- A good understanding of the legalities affecting journalism and have sound knowledge of media law, the press code and journalistic ethics.
- Have a flair for tackling and writing a wide variety of stories with a good network
- Must have and be able to supply a contactable list of high profile contacts
- Have a strong presence on social media with a number of followers.
- Must have a valid driver's licence.
- Excellent command of English.
- Must be fully computer literate on Naviga, InDesign & InCopy, including the use of all social media applications.

Required Competencies

- Be technologically well advanced on all social network platforms.
- Excellent public speaking and presentation skills in gathering news and presenting news.
- Have excellent interpersonal skills in dealing with high level contacts.
- Must have the ability to think creatively.
- Be a self - starter that shows initiative and ability to work independently.
- Be extremely motivated and driven to work in a highly pressurised fast pace environment.
- Be highly flexible working long, irregular hours, nightshift, weekends and public holidays
- Be prepared to travel long distances across the province and country.
- The ability to work under constant deadlines pressure.

Independent Media is committed to its Employment Equity and Affirmative Action plans. All interested and suitably qualified applicants are required to submit a written motivational letter and detailed CV by no later than 16h30 on Monday , 11th March 2024 to Shamella Naidoo at vacancieskzn@corporateservice.co.za

If you have not heard from us within 2 weeks of submitting your application, please consider you application unsuccessful.

717 TENDERS | 717 TENDERS | 717 TENDERS

Application for an Environmental Authorisation, Water Use Licence and an Atmospheric Emissions Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

GCS Ref No: 23-0807

The Transnet National Ports Authority (TNPA) has appointed GCS Environment SA (Pty) Ltd (GCS) to assist with the applications for an Environmental Authorisation (EA), Water Use Licence (WUL) and an Atmospheric Emissions Licence (AEL) for the proposed installation of a dual fuel generator for the electricity generation of 22MW output at the Port of Richards Bay. The port is situated within the uMhlathuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal.

The proposed project site is located at the Port's main entrance and at the Employee Care Centre in the Bayvue Precinct. The project will consist of:

- 22MW generator capable to operate on either diesel fuel or liquified natural gas;
- Start-up generator, switching station(s) and internal reticulation;
- LNG supply pipeline;
- CNG / Diesel fuel tank storage area;
- Demineralised water treatment plant and storage tank area;
- Underground evacuation power lines to various substations;
- Auxiliary pit & drain facility for used diesel and sludge;
- Perimeter fencing and access control.

This notification forms part of the public consultation process for the S&EIR process as required by the National Environmental Management Act,1998 (Act 107 of 1998) (NEMA) EIA Regulations (2014, as amended) and the National Water Act, 1998 (Act 36 of 1998) (NWA).

The following potential Listed Activities in terms of the NEMA EIA Regulations (2014, as amended) will be applied for from the Department of Forestry, Fisheries and Environment (DFFE):

- GN R325, 07 April 2017, Listing Notice 2 – Activities 2 and 4
- GN R324, 07 April 2017, Listing Notice 3 – Activities 10 and 12

A WUL application, to be administered by the Department of Water and Sanitation (DWS) will be lodged for the following potential water uses:

- Section 21 (c); (i) and (j) of the NWA.

An application for an Atmospheric Emissions Licence (AEL) as per the requirements of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) Government Gazette, 24 February 2005 (No. 27318) will be submitted to the District Municipality.

OPPORTUNITY TO PARTICIPATE:

Interested and affected parties (I&APs) are invited to register as stakeholders for this project and to obtain more information. The Draft Scoping Report (DSR) is available for review and comment from **8 March to 11 April 2024** as follows:

- Electronic copy at: **https://www.gcs-sa.biz/public-documents/**
- Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)

To register and to obtain more information contact GCS:
Anelle Lötter / Gerda Bothma, **Tel:** 011 803 5726, **Fax:** 011 803 5745,
E-mail: anellel@gcs-sa.biz / gerdab@gcs-sa.biz or
Mail: P O Box 2597, Rivonia, 2128.

I&APs are invited to participate by providing written comments and raising issues of concern.

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717 TENDERS | 717 TENDERS | 717 TENDERS

UMZINYATHI DEVELOPMENT AGENCY

THE FOLLOWING BIDS WERE ADJUDICATED AND WE INTEND TO AWARD AS FOLLOWS

BID NUMBER	DESCRIPTION	SUPPLIER NAME
T-UDA-2024-01	Provision of dedicated internet connection, Email or domain hosting and telephone system for UDDA for a period of three years.	INNOVO NETWORKS (Pty) Ltd
T-UDA-2024-02	Leasing of suitable office accommodation for uMzinyathi Development Agency for the period of three years	RAUBENHEIMER FAMILY TRUST
T-UDA-2024-05	Appointment of a panel of service providers for the provision of Financial Management and Government improvement support program for a period of 36 months	• GM SOLUTIONS (Pty) Ltd • HTB CONSULTING CC • PK FINANCIAL CONSULTANTS CC • SHUMBA INC • IFIX BUSINESS SOLUTIONS • MUNSOFT • HLENGWA BROTHERS INVESTMENT (Pty) Ltd • MNTAMBO FINANCIAL CONSULTING CC

Objections to this award must be made within Fourteen (14) days to uMzinyathi Development Agency starting from **Thursday, 07th March 2024 to Thursday, 21st March 2024.**

Mr. S. Ntombela
Acting Chief Executive Officer

717 TENDERS | 717 TENDERS | 717 TENDERS

ABAQULUSI MUNICIPALITY

TENDER NUMBER	PROJECT NAME	CLOSING DATE AND TIME
7/3/4	LEASING OF MUNICIPAL PLOTS FOR AGRICULTURAL PURPOSES.	22 March 2024 at 12h00.
8/2/1/426	PANEL OF ADVERTISING AGENTS FOR MUNICIPAL NOTICES, VACANCIES AND TENDERS FOR THE PERIOD OF **36 MONTHS.**	05 April 2024 at 12h00.
8/2/1/443	PANEL FOR MUNICIPAL FINANCIAL MANAGEMENT SUPPORT/CONSULTANTS FOR THE PERIOD OF **36 MONTHS.**	05 April 2024 at 12h00.

Abaqulusi Municipality invites service provider to submit a bid as per above bids with specification in different tender documents as per above table.

Bids documents will be self downloaded from E-tender Portal **(www.e-tenders.gov.za)** as from **07 March 2024.**

Sealed bid documents marked with the relevant **"BID NAME AND BID NUMBER"** must be deposited in the bid box at the **Abaqulusi Local Municipality Offices no later than 12h00pm on A SPECIFIED DATE ON THE TABLE,** where after all bids will be opened to the public. Telegraphic, faxed and late tenders **WILL NOT** be accepted and the Municipality shall not be held responsible for any couriered and posted document.

CONDITIONS: • No awards will be made to a person, who is not registered on the Central Supplier Database • No awards will be made to a person, who is in the service of the state • No awards will be made to a person, if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state, and/or • No awards will be made to a person, who is an advisor or consultant contracted with the Municipality or Municipal entity • Fill in all the Municipal Bidding Documents (MBD'S) failure to do so will automatically disqualify • Fully Completed all the MBD'S on the tender document • Fully completed tender document (bidder will be disqualified for incomplete document) • Service Providers should be on Municipal database if not please collect data base forms at **SCM Office** or down load them from Municipal website **(www.abaqulusi.gov.za)** and submit them with your bid document.

Late bids **WILL NOT** be accepted. These tender will be valid for a period of **90 days** after the closing date. These tender must only be submitted on the documentation provided by Abaqulusi Municipality (Original document). Failure to comply with these conditions will result in immediate disqualification of the bid.

The Municipality reserves the right to withdraw any invitation to bid and/or to re-advertise or to reject any bid or to accept a part of it. The Municipality does not bind itself to accept the lowest bid or ward a contract to the bidder scoring the highest number of points.

MINIMUM REQUIREMENTS

The following documents have to be attached: • Central Supplier Database registration report (detailed) to claim special goals • Valid copy of company registration document • If above R10m, an audited three year AFS must be provided • SARS **PIN** or Tax Clearance certificate must be submitted • Certified B-BBEE Certificate from registered accountant is required or original **SWORN** Affidavit from Commissioner of Oath • Relevant experience with reference letter must be provided • A certified current account in terms of water and electricity/rates and taxes obtainable from your local Municipality must be submitted not older than three months or lease agreement • Certified copies of Identity Documents of directors and owners of the company must be submitted.

For more SCM enquiries please contact: Supply Chain Management Office, at e-mail: scm@abaqulusi.gov.za

No bids will be accepted from a person in the service of the state and whose Tax matters are non-compliant.

The Abaqulusi Local Municipality does not bind itself to accepting the lowest, or any bid, either wholly or in part or give any reason for such action.

S.P. DLAMINI: ACTING MUNICIPAL MANAGER **NOTICE NO: 09/2024**

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Dream to fly high comes true

Conelia Harry

DESPITE facing serious health challenges, Empangeni pensioner Patsy Labuschagne's zest for life has not been dampened as she ticks off bucketlist items and lives life on the edge. The bubbly and vibrant 76-year-old cancer patient had one of her dreams come true on Tuesday when the Zululand Observer's charity arm Dice (Do I Care Enough?) facilitated a helicopter ride sponsored by Bell Equipment in Richards Bay and supported by Mounties EMS.

Having faced her fair share of setbacks, Patsy has stayed steadfast on her mission to live life to the fullest and hold on to her faith in God.

And the thrill of the 30 minute flight across Richards Bay and up the coast renewed her energy and brought such joy to her and her family, who appreciated local businesses and organisations rallying to make her wish a reality.

With Mounties' Joe Kruger on hand for medical support, and pilot and Bell director: technical services Meltus Badenhorst in the driving seat, the pensioner had a smooth flying experience, soaking in the beautiful scenery from above.

For Patsy, who was involved in a car accident years ago and underwent many back operations, she has endured endless medical challenges and when diagnosed with double breast cancer, the chemotherapy negatively impacted her bone density, adding to her ailments.

Despite these challenges, the retired nurse did not lose hope but continued serving in recreational clubs handling the catering and as an active member in the Dutch Reformed Church in Empangeni.

She is still undergoing cancer treatment and enjoys reading, doing puzzles, knitting and crocheting.

Patsy said she was so overwhelmed with the flight experience and thanked all involved who made it possible for her wish to come true.

She said she was excited to tick this item off her list of things to do.

Joe Kruger, Meltus Badenhorst, Henk Labuschagne, Madeleen van Niekerk, Dirk Venter; (front) Patsy Labushagne, Joecee Kruger, Charlene de Blanche and Linda Venter

Although brown house snakes are drawn to human dwellings, they are harmless to humans

House snake hunt in Bay garden

Tamlyn Head

VELDENVLEI residents got the fright of their lives on Tuesday when they witnessed a brown house snake taking down a bird python-style at their bird feeder.

Dionne' Beneke, who sent in a video of the snake ingesting the small bird after it had killed it, said the bird had been feeding on the ground at their bird feeder.

"We thought the bird was injured but when we got closer, we got a fright. This is a brown house snake that feeds like a python - very interesting!" said Beneke.

In the video, the snake can be seen emerging from what appears to be a hole in the ground to grab the dead bird, and retreating back into the hole once it had swallowed its meal.

Confirming the species, expert snake handler Peter Daniel said brown house snakes are basically 'baby pythons' with the same hunting methods and prey, they just don't grow to the size of pythons.

"There are cases where brown house snakes have been seen eating other snakes," said Daniel.

"The hunting is exactly like the python. They'll eat little birds, mice, rats, lizards.

"I've even seen a photo of a house snake on a wall, eating another snake!"

Brown house snakes are commonly found throughout South Africa and, although they are drawn to human dwellings, they pose no threat to people.

They are considered a useful species of snake owing to their prey.

Bay Hospice house closes its doors

Conelia Harry

ZULULAND Hospice Association's Richards Bay house has closed and will be relocating all operations to the NPO's Empangeni premises.

General manager Christine Samuel confirmed the operational decision to officially close Richards Bay Hospice House at 2 Rhus Lancia in Arboretum was taken after years of operating its nurses' base station at the premises.

"It was not easy, but if we want to continue delivering quality service to all those in need of our palliative care programme, we had to work smarter," she said.

Samuel said the move will maximise human resources, work hours and travel time, while delivering a quality service to those in need of their palliative care programme.

The contact numbers are now 035 7724910 and 035 7724953 for the Empangeni House.

Richards Bay Hospice House closes its doors after years of service

Application for an Environmental Authorisation, Water Use Licence and an Atmospheric Emissions Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

GCS Ref No: 23-0807

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- Demineralised water treatment plant and storage tank area;
- Underground evacuation power lines to various substations;
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- GN R324, 07 April 2017, Listing Notice 3 – Activities 10 and 12

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OPPORTUNITY TO PARTICIPATE:

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- Electronic copy at: **https://www.gcs-sa.biz/public-documents/**
- Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)

To register and to obtain more information contact GCS:
Anelle Lötter / Gerda Bothma, **Tel:** 011 803 5726, **Fax:** 011 803 5745,
E-mail: anellel@gcs-sa.biz / gerdab@gcs-sa.biz or
Mail: P O Box 2597, Rivonia, 2128.

I&APs are invited to participate by providing written comments and raising issues of concern.

GCS

APPENDIX C: NOTIFICATIONS

Email notifications were sent on 8 March 2024 and a reminder notification was sent on 4 April 2024

BACKGROUND INFORMATION DOCUMENT

Application for an Environmental Authorisation and Water Use Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

March 2024

The purpose of this Background Information Document (BID) is to:

a. Invite your participation and registration as an Interested and Affected Parties (I&APs).
b. Provide information pertaining to the Transnet National Port Authority's intention to install a 22MW Dual Fuel Generator and supporting infrastructure for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal.

YOUR COMMENTS AND PARTICIPATION ARE IMPORTANT

You can participate by:

a. Responding (by phone or email) to our invitation for your participation in this application process.
b. Completing the attached registration and comment form and return it to GCS.
c. Writing, or contacting GCS in a convenient way for you if you have a query, comment or require further project information or assistance with the registration process.
d. Attending meetings as a registered I&AP.
e. Reviewing and commenting on the Draft Scoping Report before 11 April 2024.

Contact the GCS Public Participation Office to register as an Interested and Affected Party (I&AP)

Anelle Lötter / Gerda Bothma, Tel: 011 803 5726, Email: anellel@gcs-sa.biz / gerdab@gcs-sa.biz,

Postal Address: PO Box 2597, Rivonia, Johannesburg, 2128

Documents for review and comment are available on https://www.gcs-sa.biz/public-documents/ and at the public place(s) listed below.

Where you provide your personal information to be registered as an Interested and Affected Party (IAP), GCS Environment SA (Pty) Ltd (GCS) will retain this information according to the provisions of the Protection of Personal Information Act 4 of 2013 (POPIA). GCS may also provide this information to third parties, such as the applicant and competent and commending authorities. By submitting your information, you consent to GSC processing your personal information in this manner. You are entitled to leave the IAP List, but then your submissions will not be considered as part of the public participation process. You can revoke your consent by contacting the contact persons described above. GCS and its employees will not process your personal information unless they have a lawful basis to do so.

The Draft Scoping Report is available for public review and comment from 08 March to 11 April 2024 as follows:

Printed Copies	
Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)	
Electronic Copy	
Website download	https://www.gcs-sa.biz/public-documents/

Please send your *written comments* on the Draft Scoping Report to GCS by 11 April 2024.

Introduction and Project Description

Transnet National Port Authority (TNPA) is proposing to install of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the Port of Richards Bay.

The purpose of this dual fuel generator will be to provide emergency power for the port activities. Due to the current insufficient power supply from the national grid, the port is required to provide alternative emergency power generation to be able to effectively manage the port activities.

The infrastructure will include:

- A 22MW generator capable to operate on either diesel fuel or natural gas from LNG;
- Startup generator, switching station(s) and internal reticulation;
- LNG supply pipeline;
- CNG storage area;
- Diesel fuel tank storage area;
- Demineralised water treatment plant and storage tank area;
- Underground evacuation power lines to various substations;
- Auxiliary pit and drain facility for used diesel and sludge;
- Perimeter fencing and access control.

The project is Located on the Farm 14217 GV, Portion 0 within the uMhlathuze Local and King Cetshwayo District Municipalities in the KwaZulu-Natal Province.

The project is part of the Strategic Integrated Projects (SIP), project No. 20 which was gazetted on 06 December 2022 (Government Gazette 437658) in line with the provisions of the Infrastructure Development Act (IDA) (Act No.23 of 2014). These projects are classified as Strategic Integrated Projects (SIP) and are required to be managed within the requirements as set out in the IDA.

The area where the generator will be located is within the port boundary and there are existing access roads surrounding the site.

GCS Environment SA (Pty) Ltd (GCS) has been appointed to undertake the environmental authorisation (EA) and a water use license (WUL) application processes. They will also conduct an associated Public Participation Process (PPP) required for the applications for compliance to the National Environmental Management Act (NEMA) (Act 107 of 1998, as amended), the National Water Act (NWA) (Act 36 of 1998, as amended), and/or Supporting Environmental Management Acts (SEMA's).

Regulatory Context

National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)

Section 24 of NEMA requires that certain listed activities, which may have an impact on the environment, trigger the need for environmental authorization from a relevant authority before commencing with the activities. Such activities are listed under Regulations Listing Notice 1 GNR 324, Listing Notice 2 GNR 325 and Listing Notice 3 GNR 327 (Dated 4 April 2017) of NEMA.

Applicable Listed Activities for this application is:

#	Activity description and its applicability
Listing Notice 2 (GN R325)	
2	The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more. ***The TNPA proposes the installation of a 22 MW energy output generator and associated infrastructure.***
4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres. ***The TNPA proposes the installation of fuel tanks with a storage capacity of 600m^3.***

Listing Notice 3 (GN R324)	
10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres (d) in KZN, (vi) within 500m of an estuarine functional zone; (ix) within a Critical Biodiversity Area (CBA). ***The TNPA proposes the installation of fuel tanks with a storage capacity of 600m^3.***
12	The clearance of an area of 300 square metres or more of indigenous vegetation….; (d) in KZN, within …(v) a CBA. ***The TNPA proposes the construction of a LNG pipeline***

Considering the above, a full Scoping and Environmental Impact Assessment (S&EIR) process is to be undertaken.

National Water Act, 1998 (Act 36 of 1998) (NWA)

A Water Use License Application may need to be compiled and submitted to the Department of Water and Sanitation (DWS) to ensure the legality of the proposed project's water uses. The Water Use License Application will be conducted for the project in parallel with the EIA and EMP process for any activity in terms of Section 21 of the NWA.

The water uses triggered as part of the project require authorisation in terms of Section 21 of the NWA:

Section 21:	
c	The flow of water in a watercourse may be impeded or diverted by the proposed activities.
i	The bed, banks or characteristics of a watercourse may be altered. The activities may be located within a watercourse or within 500m from a watercourse.
j	Due to the high water table, construction activities my require the removal of water found underground.

In addition, An application for an Atmospheric Emissions Licence (AEL) as per the requirements of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) Government Gazette, 24 February 2005 (No. 27318) will be submitted to the District Municipality, should it be required.

Structure of the Environmental Impact Assessment Process

The EIA is a legislative tool used to ensure that the potential environmental impacts that may occur due to the proposed development are avoided or mitigated, if authorisation is granted. The 'environment' includes social, economic and biophysical aspects which the EIA must assess equitably.

The EIA process is divided into two phases, the Scoping Phase and the Impact Assessment Phase.

Scoping Phase:

The Scoping Phase aims to:

- Investigate and gather information on and around the proposed site, to establish an understanding of the area.
- Establish how the proposed development activities may potentially impact the environment.
- Identify IAPs and relevant authorities by conducting a Public Participation Process.
- Identify potential environmental impacts through investigation and PPP.
- Describe the proposed project and potential Alternatives.

Impact Assessment Phase:

During this phase, all issues/impacts and proposed alternatives identified in the Scoping Phase are assessed and are rated in terms of their significance. Where necessary, recommendations are made for the mitigation of potential negative impacts, or enhancement of potential positive impacts.

An Environmental Management Programme will also be compiled that will prescribe environmental specifications for the planning, pre-construction, construction, operational and decommissioning phases of the project. As with the Scoping phase, a PPP is an integral part of the Assessment Phase.

The following specialist investigations will be undertaken as a minimum to assess potential impacts:

- Ecological- and Estuarine investigation (including aquatic environment and wetlands).
- Soil, Surface- and Groundwater Baseline Investigation.
- Foundation Phase Geotechnical Assessment.
- Air Quality Assessment (air, climate change and acoustic).

Public Participation Process

The Public Participation Process (PPP) aims to inform a wide range of I&APs (any person or organisation that has a direct, business, financial, personal or other interest in, or may be directly or indirectly affected by, the proposed project) about the proposed development and the environmental authorisation process to be followed. It is a tool to allow the public to exchange information and to express their views and concerns on the proposed development for which the EIA is being conducted. The PPP assists in identifying potential issues and concerns that 2need to be addressed in the impact assessment by highlighting relevant information to be included in the assessment. PPP enables more accurate and descriptive analysis and helps to focus and enhance decision-making.

The EIA will be open and transparent to the public through this process with all registered IAPs continuously updated on events throughout the process. All contributions from IAPs will be fully documented, evaluated and responded to in the EIA.

Activities of the Public Participation Process:

Stakeholders are invited to register as an I&AP and take part in the PPP through:

- Media notices placed in newspapers (Zululand Observer and Isolezwe – 8 March 2024)
- Distribution of this Background Information Documents (BIDs).
- Placement of site notice boards.
- Stakeholder meetings (as appropriate).
- Submission of comments on the media notices, BID, Draft Scoping and Impact Assessment Reports.

How you can participate:

Interested and affected parties I&APs may forward their written comments along with their name, contact details and an indication of any direct business, financial, personal or other interest which they have in the application by post or email to GCS – contact details on page 1 of this BID.

Next steps:

You have until the 11 April 2024 to register as an I&AP and to comment on the Draft Scoping Report. The report describes the project, the baseline conditions of the affected area and the issues and concern to be investigated during the impact assessment phase.

Copies of the report is available as follows:

Printed Copies	
Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)	
Electronic Copy	
Website download	https://www.gcs-sa.biz/public-documents/

Following stakeholder comments, the Scoping Report will be finalised and submitted to the Competent Authority for approval. Stakeholders will be notified as such, and a copy of the Final Scoping Report will be made available.

During the next phase of the EIA, the impact assessment phase, stakeholders will be notified of the availability of the Impact Assessment Report and reports related to the WUL and AEL applications. These reports will be available for review and comment by stakeholders. Specialist assessments conducted as part of these applications will be appended to the reports for review.

It is proposed that the public review of these reports will be during June 2024. Stakeholder meetings will be held to present and discuss the findings of this phase.

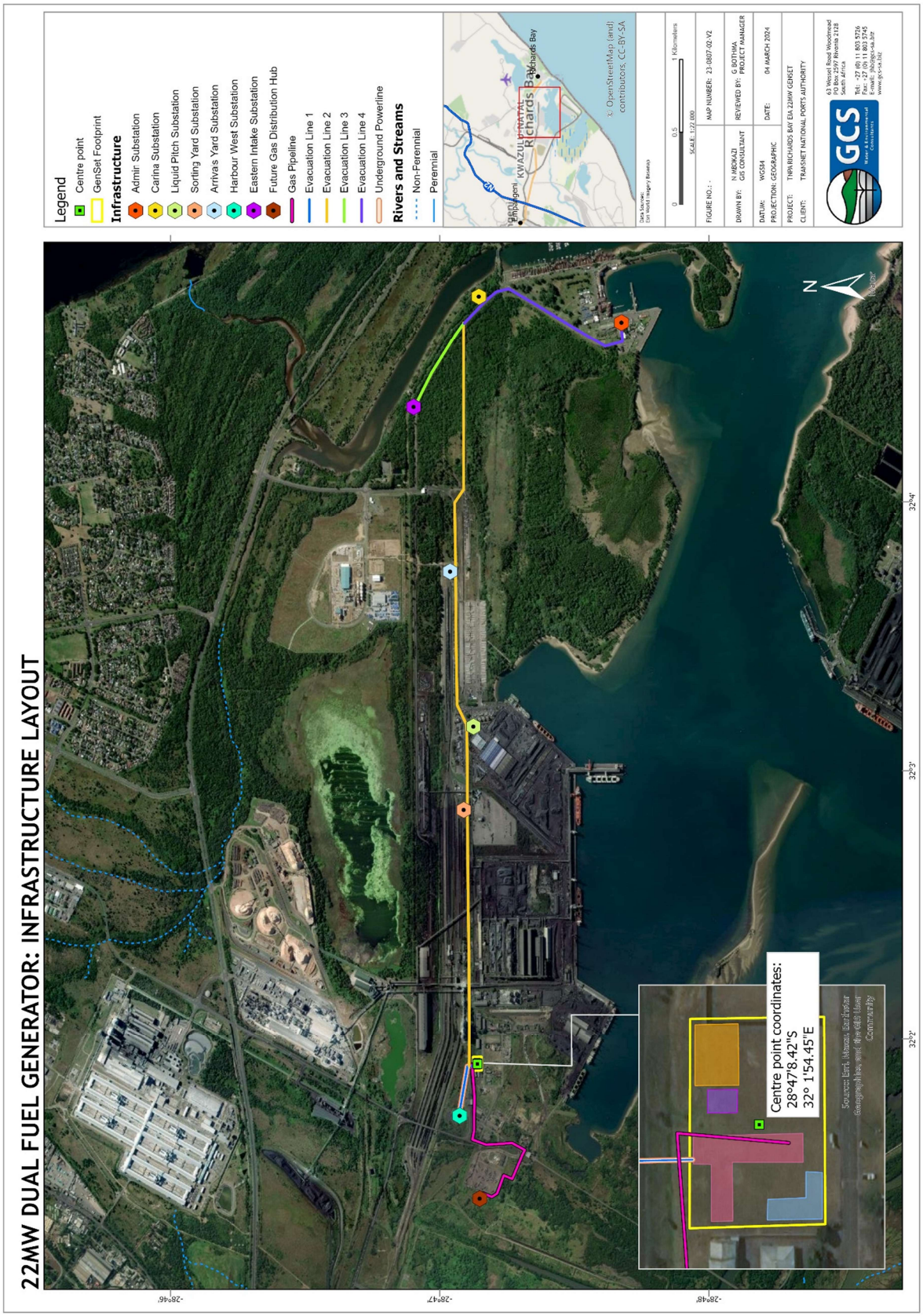

Figure 1: Proposed infrastructure layout

Application for an Environmental Authorisation, and Water Use Licence for the installation of a 22MW Dual Fuel Generator and supporting infrastructure for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

Comment and Registration Form

GCS Ref No: 23-0807

Name:		Surname:	
Organisation / interest:			
Postal / Residential address			
		Area:	Code:
Contact details	Tel:	( )	
	Mobile:	( )	
	Email:		

Please mark with an **X** to indicate whether you would like to participate in the process:	
Yes, I would like to participate in this process and receive periodic updates	
No, I am not interested in participating and do not wish to receive further information	
Date commented	(DD / MM / YYYY)

Please indicate any issues, comments and concerns with regards to the proposed project

Please indicate in which aspects you would require more information

Please indicate the contact details of any other I&APs whom you think should be contacted

Name:		Surname:	
Tel:	( )	Fax:	( )
Mobile:	( )		
Email:			

Return the completed comment and registration form to:
Anelle Lötter / Gerda Bothma, Tel: 011 803 5726, Email: anellel@gcs-sa.biz / gerdab@gcs-sa.biz
Postal Address: PO Box 2597, Rivonia, Johannesburg, 2128

From:	Anelle Lotter
Cc:	Gerda Bothma; Anelle Lotter
Bcc:	Bcadmin@dffe.gov.za; karoon.moodley@dmre.gov.za; mbali.ndumo@kzncogta.gov.za; vhutshilo.gelebe@kzncogta.gov.za; Felicia.Mdamba@kznedtea.gov.za; muziwandile.mdamba@kznedtea.gov.za; annmc@telkomsa.net; mbanjwaz@kznded.gov.za; Naidook@dws.gov.za; StarkeyA@dws.gov.za; MsaneB@dwa.gov.za; DladlaL@dws.gov.za; GweleY@dws.gov.za; malibijiz@dws.gov.za; MakwabasaN@dws.gov.za; john.pakwe@amafainstitute.org.za; nhiggitt@sahra.org.za; Lynn.boucher@drdlr.gov.za; hodpa@kzndard.gov.za; thabile.kunene@labour.gov.za; sbusiso.gumbi@kzntransport.gov.za; Judy.reddy@kzntransport.gov.za; jenny.longmore@kznwildlife.com; santosh.bachoo@kznwildlife.com; Nerissa.Pillay@kznwildlife.com; Dominic.Wieners@kznwildlife.com; Dave.Druce@kznwildlife.com; Richard.PennSawers@kznwildlife.com; Andy.Blackmore@kznwildlife.com; gabotha@geoscience.org.za; john.geeringh@eskom.co.za; motsisil@eskom.co.za; troy.govender@eskom.co.za; Willie.Joubert@transnet.net; Eddie.Seaton@transnet.net; kalib@telkom.co.za; ChettPR2@telkom.co.za; WayleaCR@telkom.co.za; YolisaN@nda.org.za; NobuhleM@nda.org.za; BhekizenzoN@nda.org.za; DumaNL@umhlathuze.gov.za; reg@umhlathuze.gov.za; Thringb@umhlathuze.gov.za; mohapimd@umhlathuze.gov.za; dumanl@umhlathuze.gov.za; lindiwe.zondi@umhlathuze.gov.za; rheedersc@kingcetshwayo.gov.za; Mthombenib@kingcetshwayo.gov.za; ngcobolo@kingcetshwayo.gov.za; gobas@kingcetshwayo.gov.za; makhathinisi@kingcetshwayo.gov.za; xabasa@kingcetshwayo.gov.za; buthelezint@kingcetshwayo.gov.za; camminga@iafrica.com; joe.muller@rbidz.co.za; theunis.roux@rbidz.co.za; percy.langa@rbidz.co.za; bobby@groundwork.org.za; robs@groundwork.org.za; avena@groundwork.org.za; janeira@sdceango.co.za; richard@sdceango.co.za; tanica@sdceango.co.za; bradleyg@ewt.org.za; constanth@ewt.org.za; garetht@ewt.org.za; ianl@ewt.org.za; wep@ewt.org.za; rob.crankshaw@amamarketing.co.za; Tembeka.Dambuza@wessa.co.za; Pieter@burgerip.co.za; jeansenogles@gmail.com; morgan.griffiths@wessa.co.za; conservation@birdlife.org.za; ceo@birdlife.org.za; melissa.lewis@birdlife.org.za; catherine@groundtruth.co.za; mmdamba@umhlathuze.co.za; jaridl55@gmail.com; info@gameranger.org; sec.gra@gmail.com; ngweduleforrest@gmail.com; cjforrest@netactive.co.za; mwplanit@mweb.co.za; conserva@global.co.za; schof@sai.co.za; thornhillh@thorn-ex.co.za; mark@wildlifeact.com; chris@wildlifeact.com; peterjm@mweb.co.za; kyouens@youensattorneys.co.za; kyouens@allrise.org.za; jtooley@allrise.org.za; jade@somkhele.co.za; chris@blackrock-env.co.za; nela@ukzn.ac.za; dijones@iafrica.com; rhugo@telkom.net; secretary@kznca.org.za; mary@violencemonitor.com; mary.dehaas@gmail.com; peterc@ioec.co.za; p.mungwe@gmail.com; rod@phelamanga.co.za; mkapa@cer.org.za; info@duct.org.za; info@wildtrust.co.za; admin@enviros.co.za; lbooysen@wwf.org.za; info@amafainstitute.org.za; inprodev@mweb.co.za; melita.steele@greenpeace.org; Chris.boshoff@afriforum.co.za; botsoc-kzn@mweb.co.za; brash@netactive.co.za; urusch@wwf.org.za; jflamand@wwf.org.za; gilbert@wearesouthafricans.com; cjcm@mweb.co.za; rose@biowatch.org.za; lawrence@biowatch.org.za; vanessa@biowatch.org.za; Tamlyn@zob.co.za; dave@zululandobserver.co.za; eliset@24.com; inkanyezi@caxton.co.za; tony.carnie@gmail.com; Siyabonga.Gadu@transnet.net; Daisy.Molamodi@transnet.net; Karabo.Chuene@transnet.net; Motlatso.Molapo@transnet.net; Fikile.Dlamini1@transnet.net; Naidooe@umhlathuze.gov.za; gknott@cer.org.za; bernadetp@amafapmb.co.za; Hadebez@dws.gov.za; msomiA@dws.gov.za; Tsibozana@dffe.gov.za; eia@kznwildlife.com; snaidoo@dws.gov.za; eia@ewt.org.za; archaeology@amafapmb.co.za; johan.gouws1@gmail.com; cmusemburi@dffe.gov.za; Mdambam@kznded.gov.za; ihutton@kznwildlife.com; mjvermaak@worldonline.co.za; jeremy.1953@gmail.com; jankapp@mweb.co.za; sharin.govender@umhlathuze.gov.za; rheedersc@uthungulu.co.za
Subject:	Installation of a 22MW Dual Fuel Generator for the Transnet National Port - Draft Scoping Report available for review
Date:	Friday, 08 March 2024 09:46:00
Attachments:	23-0807 TNPA 22MW Generator RB - BID.pdf Comment and Registration Form.docx

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Dear stakeholders

Transnet National Port Authority (TNPA) is proposing to install of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the Port of Richards Bay.

The purpose of this dual fuel generator will be to provide emergency power for the port activities. Due to the current insufficient power supply from the national grid, the port is required to provide alternative emergency power generation to be able to effectively manage the port activities.

GCS Environment SA (Pty) Ltd (GCS) has been appointed to undertake the environmental authorisation (EA) and a water use license (WUL) application process.
Should it be required, an Atmospheric Emissions License (AEL) may also be applied for.

Stakeholders are invited to review the Draft Scoping Report which is available for comment from **8 March to 11 April 2024** as follows:
Printed Copy: Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)
Electronic Copy: Website download https://www.gcs-sa.biz/public-documents/
Please send your written comments on the Draft Scoping Report to GCS by 11 April 2024.

Stakeholders are also requested to register as Interested and Affected Parties.
Please find attached a Background Information Document and a Comment and Registration form.

Your participation in this process is appreciated.

Kind regards
Anelle Lötter
Stakeholder Engagement
GCS Water & Environmental

Tel +27 (0) 11 803 5726
Fax +27 (0) 11 803 5745
Cell
Email anellel@gcs-sa.biz / gerdab@gcs-sa.biz
Web www.gcs-sa.biz
Address 63 Wessel Road, Rivonia, Johannesburg, South Africa

From: Anelle Lotter
Cc: Anelle Lotter; Gerda Bothma
Bcc: "Bcadmin@dffe.gov.za"; "Tsibozana@dffe.gov.za"; "eia@kznwildlife.com"; "cmusemburi@dffe.gov.za"; "karoon.moodley@dmre.gov.za"; "mbali.ndumo@kzncogta.gov.za"; "vhutshilo.gelebe@kzncogta.gov.za"; "Felicia.Mdamba@kznedtea.gov.za"; "Mdambam@kznded.gov.za"; "muziwandile.mdamba@kznedtea.gov.za"; "annmc@telkomsa.net"; "mbanjwaz@kznded.gov.za"; "Naidook@dws.gov.za"; "snaidoo@dws.gov.za"; "Hadebez@dws.gov.za"; "msomiA@dws.gov.za"; "StarkeyA@dws.gov.za"; "MsaneB@dwa.gov.za"; "DladlaL@dws.gov.za"; "GweleY@dws.gov.za"; "malibijiz@dws.gov.za"; "MakwabasaN@dws.gov.za"; "john.pakwe@amafainstitute.org.za"; "Lynn.boucher@drdlr.gov.za"; "hodpa@kzndard.gov.za"; "thabile.kunene@labour.gov.za"; "sbusiso.gumbi@kzntransport.gov.za"; "Judy.reddy@kzntransport.gov.za"; "jenny.longmore@kznwildlife.com"; "ihutton@kznwildlife.com"; "santosh.bachoo@kznwildlife.com"; "Nerissa.Pillay@kznwildlife.com"; "Dominic.Wieners@kznwildlife.com"; "Dave.Druce@kznwildlife.com"; "Richard.PennSawers@kznwildlife.com"; "Andy.Blackmore@kznwildlife.com"; "gabotha@geoscience.org.za"; "john.geeringh@eskom.co.za"; "motsisil@eskom.co.za"; "troy.govender@eskom.co.za"; "Willie.Joubert@transnet.net"; "Eddie.Seaton@transnet.net"; "YolisaN@nda.org.za"; "NobuhleM@nda.org.za"; "BhekizenzoN@nda.org.za"; "Strachanb@umhlathuze.gov.za."; "Naidooe@umhlathuze.gov.za"; "DumaNL@umhlathuze.gov.za"; "reg@umhlathuze.gov.za"; "Thringb@umhlathuze.gov.za"; "mohapimd@umhlathuze.gov.za"; "dumanl@umhlathuze.gov.za"; "lindiwe.zondi@umhlathuze.gov.za"; "sharin.govender@umhlathuze.gov.za"; "rheedersc@kingcetshwayo.gov.za"; "rheedersc@uthungulu.co.za"; "Mthombenib@kingcetshwayo.gov.za"; "ngcobolo@kingcetshwayo.gov.za"; "gobas@kingcetshwayo.gov.za"; "makhathinisi@kingcetshwayo.gov.za"; "xabasa@kingcetshwayo.gov.za"; "buthelezint@kingcetshwayo.gov.za"; "camminga@iafrica.com"; "joe.muller@rbidz.co.za"; "theunis.roux@rbidz.co.za"; "percy.langa@rbidz.co.za"; "bobby@groundwork.org.za"; "robs@groundwork.org.za"; "gknott@cer.org.za"; "avena@groundwork.org.za"; "janeira@sdceango.co.za"; "richard@sdceango.co.za"; "tanica@sdceango.co.za"; "bradleyg@ewt.org.za"; "eia@ewt.org.za"; "constanth@ewt.org.za"; "garetht@ewt.org.za"; "ianl@ewt.org.za"; "wep@ewt.org.za"; "rob.crankshaw@amamarketing.co.za"; "Tembeka.Dambuza@wessa.co.za"; "Pieter@burgerip.co.za"; "jeansenogles@gmail.com"; "morgan.griffiths@wessa.co.za"; "conservation@birdlife.org.za"; "ceo@birdlife.org.za"; "melissa.lewis@birdlife.org.za"; "catherine@groundtruth.co.za"; "mmdamba@umhlathuze.co.za"; "jaridl55@gmail.com"; "info@gameranger.org"; "sec.gra@gmail.com"; "ngweduleforrest@gmail.com"; "cjforrest@netactive.co.za"; "mwplanit@mweb.co.za"; "conserva@global.co.za"; "schof@sai.co.za"; "thornhillh@thorn-ex.co.za"; "mark@wildlifeact.com"; "chris@wildlifeact.com"; "peterjm@mweb.co.za"; "kyouens@youensattorneys.co.za"; "kyouens@allrise.org.za"; "jtooley@allrise.org.za"; "jade@somkhele.co.za"; "chris@blackrock-env.co.za"; "nela@ukzn.ac.za"; "dijones@iafrica.com"; "rhugo@telkom.net"; "secretary@kznca.org.za"; "mary@violencemonitor.com"; "mary.dehaas@gmail.com"; "peterc@ioec.co.za"; "p.mungwe@gmail.com"; "rod@phelamanga.co.za"; "mkapa@cer.org.za"; "info@duct.org.za"; "info@wildtrust.co.za"; "admin@enviros.co.za"; "lbooysen@wwf.org.za"; "info@amafainstitute.org.za"; "bernadetp@amafapmb.co.za"; "archaeology@amafapmb.co.za"; "inprodev@mweb.co.za"; "melita.steele@greenpeace.org"; "johan.gouws1@gmail.com"; "mjvermaak@worldonline.co.za"; "jankapp@mweb.co.za"; "Chris.boshoff@afriforum.co.za"; "botsoc-kzn@mweb.co.za"; "brash@netactive.co.za"; "urusch@wwf.org.za"; "jflamand@wwf.org.za"; "gilbert@weareresouthafricans.com"; "cjcm@mweb.co.za"; "rose@biowatch.org.za"; "lawrence@biowatch.org.za"; "vanessa@biowatch.org.za"; "Tamlyn@zob.co.za"; "dave@zululandobserver.co.za"; "eliset@24.com"; "inkanyezi@caxton.co.za"; "tony.carnie@gmail.com"; "Siyabonga.Gadu@transnet.net"; "Daisy.Molamodi@transnet.net"; "Karabo.Chuene@transnet.net"; "Motlatso.Molapo@transnet.net"; "Fikile.Dlamini1@transnet.net"; "khathin@kingcetshwayo.gov.za"; "nokwazi@sdceango.co.za"; Desmond Dsa
Subject: REMINDER: Installation of a 22MW Dual Fuel Generator for the Transnet National Port - Draft Scoping Report available for review
Date: Thursday, 04 April 2024 12:57:00
Attachments: 23-0807 TNPA 22MW Generator RB - BID.pdf
Comment and Registration Form.docx

Dear stakeholders

We would like to remind you of the availability of the Draft Scoping Report for the application for the proposed Transnet National Port Authority (TNPA) installation of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the Port of Richards Bay.

As per the email below, the document is available until 11 April 2024.
Please refer to the information below and attached as a request for your comments.

We appreciate your participation.

Kind regards

Anelle Lötter
Stakeholder Engagement
GCS Water & Environmental

Tel +27 (0) 11 803 5726
Fax +27 (0) 11 803 5745
Cell
Email anellel@gcs-sa.biz / gerdab@gcs-sa.biz
Web www.gcs-sa.biz
Address 63 Wessel Road, Rivonia, Johannesburg, South Africa

From: Anelle Lotter <anellel@gcs-sa.biz>
Sent: Friday, March 8, 2024 9:46 AM
Cc: Gerda Bothma <gerdab@gcs-sa.biz>; Anelle Lotter <anellel@gcs-sa.biz>
Subject: Installation of a 22MW Dual Fuel Generator for the Transnet National Port - Draft Scoping Report available for review

Dear stakeholders

Transnet National Port Authority (TNPA) is proposing to install of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the Port of Richards Bay.

The purpose of this dual fuel generator will be to provide emergency power for the port activities. Due to the current insufficient power supply from the national grid, the port is required to provide alternative emergency power generation to be able to effectively manage the port activities.

GCS Environment SA (Pty) Ltd (GCS) has been appointed to undertake the environmental authorisation (EA) and a water use license (WUL) application process.
Should it be required, an Atmospheric Emissions License (AEL) may also be applied for.

Stakeholders are invited to review the Draft Scoping Report which is available for comment from **8 March to 11 April 2024** as follows:
Printed Copy: Richard's Bay Public Library (2 Krugerrand Grove Richard's Bay – Tel: 035 907 5840)
Electronic Copy: Website download https://www.gcs-sa.biz/public-documents/
Please send your written comments on the Draft Scoping Report to GCS by 11 April 2024.

Stakeholders are also requested to register as Interested and Affected Parties.
Please find attached a Background Information Document and a Comment and Registration form.

Your participation in this process is appreciated.

Kind regards

Anelle Lötter

Stakeholder Engagement

GCS Water & Environmental

Tel +27 (0) 11 803 5726
Fax +27 (0) 11 803 5745
Cell
Email anellel@gcs-sa.biz / gerdab@gcs-sa.biz
Web www.gcs-sa.biz
Address 63 Wessel Road, Rivonia,
Johannesburg, South Africa

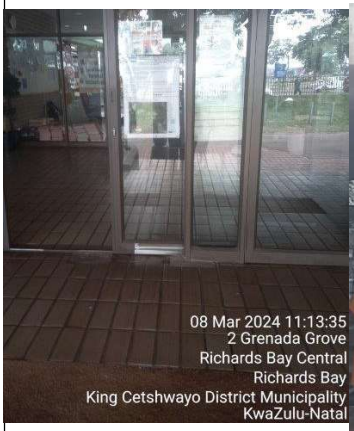
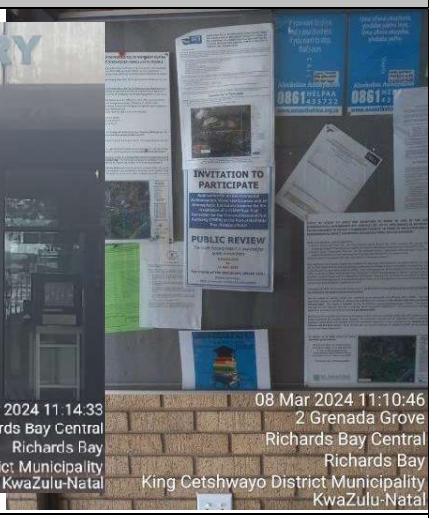
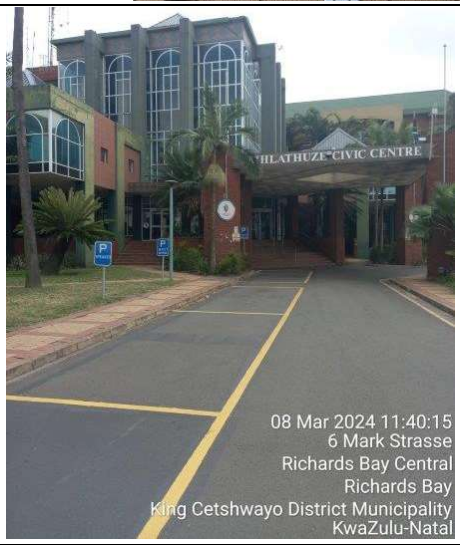
APPENDIX D: SITE NOTICES

Site notices were placed on 8 March 2024.

Application for an Environmental Authorisation and Water Use Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

Placement of site notices

8 March 2024

	Description	Photo
1.	At the Public Library in Richards Bay at 2 Grenada Grove.	  
2.	At the uMhlathuze municipality, Civic Centre, 6 Mark Strasse in Richards Bay Central	 
3.	On site, at the PoRB Canteen	 

	Description	Photo
4.	On site	
5.	Towards the entrance to the Port and the Richards Bay IDZ building	
6.	On Harbour Arterial Road in Richard Bay	

	Description	Photo
	At the entrance to PoRB	
	At the entrance to PoRB	

APPENDIX E: COMMENTS & RESPONSES REPORT

Application for an Environmental Authorisation, Water Use Licence and an Atmospheric Emissions Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

GCS Project Number: 23-0807

Comments and Responses Report (CRR)

April 2024

This Comments and Responses Report (CRR) provides a summary of the comments, questions and issues raised by stakeholders since the announcement of the application and the availability of the Draft Scoping Report for comment in March 2024.

Transnet National Port Authority is proposing to install of a dual fuel (diesel/Liquefied Natural Gas (LNG)/Compressed Natural Gas (CNG)) generator, a Natural Gas supply pipeline within the port, diesel/CNG storage area and ancillary infrastructure for the electricity generation of 22MW output next to their employee care centre offices at the Port of Richards Bay.

The purpose of this dual fuel generator will be to provide emergency power for the port activities. Due to the current insufficient power supply from the national grid, the port is required to provide alternative emergency power generation to be able to effectively manage the port activities.

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
COMMENTS RECEIVED ON THE ANNOUNCEMENT OF THE PROJECT AND OF THE AVAILABILITY OF THE DRAFT SCOPING REPORT				
Thank you for informing the Wildlife and Environment Society of South Africa (WESSA) of the opportunity to comment on this EIA application. Understanding the necessity of such installations, WESSA wishes to just make three comments/suggestions on this proposal: 1) That the fuel storage area has sufficient bunding to contain an entire fuel spill, with spill clean-up materials available on site. 2) That the generator exhausts have scrubber technology, if available for generators of such size, to limit air pollution. 3) That the generator's noise is suppressed/contained if possible.	Morgan Griffiths WESSA	08/03/2024	Email	WESSA's comments/suggestions is noted thank you. TNPA will ensure that appropriate measures are taken to contain potential spillage from all hazardous substances on site, additionally, construction and operation of the facility will be undertaken in accordance with the EMPr for the site. This EMPr will contain measures on the appropriate management of hazardous substances at the site. The Draft EMPr will be included in the Draft EIR for public review. Similarly, appropriate measures to manage potential air quality and noise pollution will be implemented.
DFFE Directorate: Biodiversity Conservation hereby acknowledge receipt of the invitation to review and comment on the project mentioned on the subject line. Kindly note that the project has been allocated to Mrs M Rabothata and Ms Lindiwe Dlamini (Copied on this email). In addition, kindly share the shapefiles of the development footprints/application site with the Case Officers. Please note: All Public Participation Process documents related to Biodiversity EIA review and any other Biodiversity EIA queries must be submitted to the Directorate: Biodiversity Conservation at Email: BCAdmin@dffe.gov.za for attention of Mr Seoka Lekota.	Tebego Kgaphola Directorate: Biodiversity Mainstreaming and EIA Branch: Biodiversity and Conservation	08/03/2024	Email	GSC has responded on 22/03/2023, acknowledging receipt of the email and providing the shapefiles of the proposed development.
The Application for Environmental Authorisation and Draft Scoping Report (SR) dated March 2024 and received by the Department (DFFE) on 08 March 2024, refer. This letter serves to inform you that the following information must be included to the Final Scoping Report: DFFE Reference: 14/12/16/3/3/2/2525	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
Listed Activities • The project description provided for activity 10 of Listing Notice (LN) 3 must be amended to indicate the distance of the proposed project within the estuarine functional zone as required by the sub listing (vi). • Project description provided for activity 12 of LN3 must also be amended to indicate the geographical sensitivity (i.e. CBA), as required by the listed activity. • Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. • It is imperative that the relevant authorities are continuously involved throughout the Scoping and EIA process as the development property possibly falls within geographically designated areas in terms of numerous GN R. 985 Activities. Written comments must be obtained from the relevant authorities and submitted to this Department. In addition, a graphical representation of the proposed development within the respective geographical areas must be provided.				The requested amendments to the project description has been affected in the Final Scoping Report and it is confirmed that all potential listed activities has been identified and included in the application process. The Public Participation Project Team will endeavour to elicit participation from all relevant authorities throughout the application process, proof thereof will be included in the submissions to the Department. Project information and description have been provided to possible commenting authorities. Comments have been received from the KZN Department of Economic Development, Tourism, and Environmental Affairs. The project information and request for comments were sent to other entities such as Emzemvelo Wildlife, South African Heritage Resource Agency and KZN Transport, along with several other possible I&APs.
Public Participation Process • The Public Participation Process must be conducted in terms of Regulation 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014, as amended. • Please ensure that all issues raised, and comments received during the circulation of the SR from registered I&APs and organs of state which have jurisdiction (including this Department's Biodiversity Section, Ocean and Coast Section, Air quality Section and Climate Change Section) in respect of the proposed activity are adequately addressed in the Final SR. Proof of correspondence with the various stakeholders must be included in the Final SR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. • A comments and response trail report (C&R) must be submitted with the final SR. The C&R report must incorporate all historical comments for this development. The C&R report must be a separate	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	The Public Participation Process underway is conducted in terms of Regulation 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014, as amended. The persons relevant as suggested will be included in the I&AP list and their comments will be obtained. A C&R as per the requirements stated will be compiled and submitted. The final SR (Public Participation Report) provides evidence that all identified and relevant competent authorities have been given an opportunity to comment on the proposed development.

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
document from the main report and the format must be in the table format as indicated in Appendix 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "Noted" is not regarded as an adequate response to I&AP's comments. • The final SR must provide evidence that all identified and relevant competent authorities have been given an opportunity to comment on the proposed development.				The FSR includes the entire Public Participation Process followed during the Scoping Phase. The report includes all the notifications sent out and the requests to provide comments on the project.
Specialist Assessments Please kindly ensure that the terms of reference for Specialist studies includes the following requirements: • A detailed description of their methodology, as well as indicate the locations and descriptions of all infrastructure positions, and all other associated infrastructures that they have assessed and are recommending for Authorisations. • A detailed description of all limitations to their studies. Please ensure that all specialist studies that are conducted have been commissioned in the right season, and providing that as a limitation will not be accepted. • Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas. • If the appointed specialists specify contradicting recommendations, the EAP must indicate the most reasonable recommendation and substantiate this with defendable reasons and where necessary, include further expertise advice. • All specialist studies must be final and provide detailed/practical mitigation measures for the preferred alternative and recommendations and must not recommend further studies to be completed post EA. Should a specialist recommend specific mitigation measures; these must be clearly indicated. • Regarding cumulative impacts: - Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	The Department's requirements regarding Specialist Assessments has been noted. The FSR has been updated accordingly and the specialists has been tasked to undertake the studies in accordance with the requirements stipulated.

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
indicated, i.e. hectares of cumulatively transformed land. - A detailed process flow to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project. - Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process. - The significance rating must also inform the need and desirability of the proposed development. - A cumulative impact environmental statement on whether the proposed development must proceed. • It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols"), and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species), have come into effect. • Please ensure that specialist assessments are conducted in accordance with these protocols, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned before the date on which the protocols came into effect, in which case Appendix 6 of the Environmental impact Assessment Regulations, 2014, as amended, will apply to such applications. Please indicate in the report whether the protocols were applied. • The screening tool report identified fourteen (14) specialist studies to be conducted for the proposed project and the site verification report included only six (06) specialist studies that will be conducted by the EIAr. The site verification report must be amended to				Noted. Protocols for specialists will be followed. Motivations have been included in the Site Verification Report

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
include motivation why other studies have not been identified as specialist studies to be conducted for the proposed project. • Kindly ensure to include, as part of the final SR, a table summarising the specialist studies required by the Screening Tool and the sensitivity rating of the Screening Tool (very high, high, medium, low), a column indicating the sensitivity of the site after the EAP/Specialist conducted the Site Verification Assessment and a column indicating whether these studies will be conducted or that compliance statement will be submitted during the EIAr phase. • For the themes that have been identified as low/medium which requires compliance statements, please ensure that these specialists must be identified as specialist to be conducted who compliance statements are to be included in the EIAr. • Please note that the protocols require certain specialists to be SACNASP registered. As such, the Specialist Declaration of Interest forms must also indicate the scientific organization registration/member number and status of registration/membership for each specialist.				The Table is included in the Site Verification Report. Noted. Compliance Statements and specialist studies will be included in the Environmental Impact Assessment Report. Noted. Will ensure that required specialists are SACNASP registered where required.
Cumulative Impacts • Should there be any other similar projects within a 30km radius of the proposed development site, the cumulative impact assessment for all identified and assessed impacts must be refined to indicate the following: - Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land. - Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	The Department's requirements regarding Cumulative Impacts has been noted and will be incorporated in the assessment process by the project team. The possible impacts of the project along with the cumulative impacts will be included in the Environmental Impact Assessment Report.

ISSUE OR CONCERN	CONTRIBUTOR	DATE OF CONTRIBUTION	MEANS OF CONTRIBUTION	RESPONSE
- The cumulative impacts significance rating must also inform the need and desirability of the proposed development. - A cumulative impact environmental statement on whether the proposed development must proceed.				
Layout and Sensitivity Maps • The SR must include layout map which indicate the following: - Position of all infrastructure (fuel generator, diesel fuel tank storage, transmission line, LNG pipeline, etc), - The location of sensitive environmental features on site e.g., CBAs, heritage sites, wetlands, drainage lines etc. that will be affected. - Buffer areas; and - All "no-go" areas. • The above map must be overlain with a sensitivity map and a cumulative map which shows neighbouring renewable energy developments. All available biodiversity information must be used in the finalisation of the map and infrastructure must not encroach on highly sensitive areas as far as possible. • Ensure that similar colours are not used to differentiate between infrastructures. i.e., items must be easily distinguishable in the Legend. • Google maps will not be accepted for decision-making purposes.	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	The Department's requirements regarding sensitivity mapping has been noted and the project team will ensure that the layout & sensitivity mapping for the assessment include all the required parameters. Note that the mapping will only be concluded when specialist studies has been concluded as part of the EIA Phase. Nonetheless, a preliminary Sensitivity Map can be seen as Figure 4-7 on page 34 of the Final Scoping Report. There are no known renewable energy projects neighbouring the TNPA 22MW Generator Project. Figure 4-6 and Figure 4-7 illustrates the sensitive areas that has been identified. The delineations and extent of each aspect will be determined during the specialist investigation being undertaken in the EIA Phase and will be included in the Draft EIA Report. Noted. Different colours have been used for the maps and maps have been generated on a Geoinformatics System.
General The SR must include the technical details of the proposed facility. In addition, please separate the appendices from the main report when submitting the final SR.	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	The Department's requirements regarding the content and format of the FSR is noted and the report will be submitted accordingly. The technical details of the facility are included in Section 2 of the Scoping Report.
You are further reminded to comply with Regulation 21(1) of the NEMA EIA Regulations 2014, as amended, which states that: "If S&EIR must be applied to an application, the applicant must, within 44 days of receipt of the application by the competent authority, submit to the competent authority a scoping report which has been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority"	Sabelo Malaza DFFE Chief Director: Integrated Environmental Authorisations	09/04/2024	Email and Letter	Cognisance of this requirement has been taken and the FSR is submitted within the calculated timeframe which ends on the 25th of April 2024, taking all public holidays into account.

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You are further reminded that the final SR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of Scoping reports in accordance with Appendix 2 and Regulation 21(1) of the EIA Regulations 2014, as amended. Further note that in terms of Regulation 45 of the EIA Regulations 2014, as amended, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7). You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.				
As no component of the proposed development falls below the high-water mark, SAHRA has no jurisdiction to provide comments on this development application. Please consult with AMAFA for comments in this regard.	Natasha Higgitt SAHRA	11/03/2024	Email	Case ID: 22267 was registered with SAHRA.
Please remove me from your database / contact list. I am no longer involved in EIA's, etc.	Jeremy Smith	11/03/2024	Email	J Smith was removed from the stakeholder database
Thank you for providing Ezemvelo KZN Wildlife (Ezemvelo) with the Background Information Document (BID) regarding the abovementioned project for review and comment. This email serves to acknowledge receipt of the BID, however, please provide Ezemvelo with a Google Earth .kml depicting the exact proposed layout of the project site. Please send it to the official IEM Section email address: IEM.App@kznwildlife.com, as soon as you can for us to finalize the processes required for the project to be tabled tomorrow to Ezemvelo's IEM Planning Committee and thereafter, begin with the review and comment process. Furthermore, for future applications, please note that: 1. To ensure all applications are received and attended to timeously by Ezemvelo's IEM Section, an official dedicated email account has been established. 2. Should you wish to submit digitally; you are kindly requested to send applications/submissions and notifications to IEM.App@kznwildlife.com. Should you have a central database that is used to notify Interested and Affected Parties, please ensure that only the official IEM Section contact email address is	Nolwazi V Nkosi (Miss) EZEMVELO KZN WILDLIFE IEM Technician Conservation and Planning	13/03/2024	Email	GCS has responded on 14/04/2024 and provided the shapefiles as requested. Receipt thereof was acknowledged by Ezemvelo.

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on this central system. You are therefore respectfully requested to replace all individual Ezemvelo planner/staff email addresses from any central emailing database with the IEM.App@kznwildlife.com email account. 3. It should be noted that going forward for all submissions made electronically, it is only submissions made to the official IEM.App@kznwildlife.com email address that will be considered as having been submitted to the IEM Section and that correspondence received by other staff in various divisions, are not considered officially received by the organisation. You are welcome to submit an application as a hardcopy, please refer to the attached interim document to assist you with the Process. However, it is emphasized that the required accompanying information detailed in the attached interim document applies to both digital and hardcopy submissions. The content of the document referred to above is a letter explaining the procedures to be followed when submissions are made to Ezemvelo KZN Wildlife.				
Please see attached, the completed comment & registration form. The draft SR will be downloaded, reviewed and comments provided by 11 April 2024. The following should be noted for further investigation: 1. Storage of large quantities of fuel, containment (or preventative measures) of fuel spillages both at the fuel depot / storage and at the generator itself; possible spills to nearby stormwater drains. 2. Is LN 2 activity 6 of the EIA Regulations, 2014 not applicable on this proposed development? 3. Confirmation on whether an AEL will be required for the project is required. 4. Maintenance programme for the generator is required. 5. Noise impacts and proposed mitigatory measures, including specialist studies to be undertaken. 6. Source of LNG, dimensions of the pipeline, storage of LNG on site, the type of environment that will be traversed by the LNG pipeline from the main LNG source to where the generator will be located / housed.	Felicia Mdamba Environmental Officer Environmental Planning unit KZN- EDTEA King Cetshwayo District	13/03/2024	Email and comment sheet	Response from GCS on 15/03/2024: Please see attached a Copy of the Draft Scoping Report for your information. Please see below the responses to the questions raised. 1. The management and mitigation measures for the storage of the fuel will be determined by the engineers and specialists during the studies currently underway and be included in the Environmental Impact Assessment Report. 2. The air quality specialist is currently conducting the Air Quality Impact Assessment, which will determine the need for an AEL. Should an AEL be required as per the findings of the specialist, an application for an AEL and inclusion of LN2 Activity 6 will be included. 3. The air quality specialist is currently conducting the Air Quality Impact Assessment, which will determine the need for an AEL. Should an AEL be required as per the findings of the specialist, an application for an AEL will be done. Control measures for emission of fuel gases. The control

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				measures and mitigation measures will be determined by the specialists and included in the Environmental Impact Assessment Report. 4. Maintenance program for the generator. This is determined by the manufacturer and the operational team on site and forms part of the engineering and maintenance departments and would be a condition in the Environmental Management Programme. 5. It has been determined that no noise impact study would be required due to the reasons set out below. Mitigation measures will be put in place to manage the noise from the generator, which will be included in the Environmental Management Programme (EMPr) in the EIA. The project is proposed in an existing industrial area where existing ambient sound levels are already elevated; SANS 10103:2008 will accept a rating level (noise limits) of up to 70 dBA during the day, and 60 dBA at night at the boundary of an industrial area; The closest receptors are further than 2,000m from the proposed generator location (see blue dots below). SANS 10328:2008 recommend a noise study if an industry are developed within 1,000m from a potential noise-sensitive receptor (clause 5.4(e)), and if a source of potential low frequency noise (such as the cooling fans from power plants) are located within 2,000m from a potential noise-sensitive receptor (clause 5.4(l)). The closest noise-sensitive receptor is well less than 2,000m from the proposed generator. 6. Source of LNG; dimensions of the pipeline, storage of the LNG on site, the type of environment that will be traversed by the LNG pipeline from the main LNG source to where the generator will be located/ housed. The pipeline will run within the port footprint and within the road reserves as far as possible to prevent traversing of sensitive areas. The specialist studies are currently underway to determine the

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				sensitivity of the traversing environment of the pipeline. The storage and pipeline designs will be determined by the specialist and engineers during the specialist studies being undertaken at this point and included in the Environmental Impact Assessment and Environmental Management Programme (EMPr).
Could you kindly, register me as an Interested & Affected Party (I&AP) for this project, as I would like to receive further information and documents for this project. The following are my issues and concerns: a) Risk plan, evacuation plan and risk mitigation – what are the plans? b) How does this project help us to achieve just energy transition away from renewables and towards renewable energies? c) Methane when released causes great damage to ozone layer in a shorter period of time than carbon dioxide. d) Proper public participation: transport, assessable venues, transparency and language e) Community health and how will you prevent corruption of the money needed for this kind of project? More information is required on the following: a) Air quality impacts b) Climate change risk c) Socio-economic assessment d) Alternatives / need desirability e) Vegetation f) Wetlands and aquatic impacts g) Traffic impacts h) Waste management.	Nokwazi Magubane Just Energy Transition & Environmental Justice Project Officer - Richards Bay	14/03/2024	Comment sheet	Responses to issues and concerns: a) Transnet, including the Port of Richards Bay implements International Standardisation Organisation (ISO) 9001, 14001 and 45001 standards as part of its management and governance systems. In order to maintain its certification status, hazards Identification and Risk Assessment have been developed for the port and they updated all the time when there is changes in the processes, introduction of new processes or identification of a new risk. Therefore, the hazards and risk as well as the mitigation measures associated with this project will be of the embedded into the current Risk management plans as well the emergency procedures of the port. b) Renewable energy options for the port have been investigated as part of the alternatives. Taking into consideration that on average, to generate 1MW of power, 1hectare of land is required for the solar panels, a total of 22 Hectares would be required to produce the amount of electricity required for the Port to operate. The surrounding area around the port is estuarine with natural and marine habitats. Removing 22 hectares of estuarine/natural/marine vegetation would have a major impact on the environment. Similarly using wind turbines would affect the birdlife found in the surrounding areas (Critical Biodiversity Area and estuary) located next to the port area. Due to the fluctuating cost of diesel and availability during certain events, it was decided to make use of a dual fuel generator that would also be able to use LNG as a fuel source as

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				a contingency to ensure that the generator would be able to operate throughout, when required. The cost of a dual fuel generator is higher than that of a single fuel generator but the required diesel storage areas are reduced and the operational cost can be reduced by using LNG as well. c) Refer to above. d) Concerns regarding accessibility and participation during the public consultation process has been noted and appropriate, accessible venues will be provided for public meetings. e) Transnet's procurement of consultant, suppliers and service providers is done in fair, equitable and transparent manner, Transnet is underpinned by several Acts and Policies which includes the National Anti-Corrupt Strategy to appraise its suppliers of their behaviour, conduct and expectations. Transnet is committed to its Code of Conduct through prohibition of bribes, kickbacks, unlawful payments and other corrupt practices. Transnet will not participate in any corrupt practices and therefore expects its suppliers to act in a similar manner. Where a consultant, suppliers or any service providers working under authority of Transnet is confronted with fraudulent or corrupt behaviour of Transnet representatives, the service providers are required to use the Transnet's Tip-offs Anonymous Hotline to report such acts. The Transnet Hotline is 0800 003 056. Please be advised that further information as per your request will be available in the Draft EIR Report which will be circulated for public review during June 2024.
Openserve (PTY) LTD has no objection to the proposal in terms of the Electronic Communications Act no. 36 of 2005, however telecommunications infrastructure owned by OPENSERVE may be affected. Once detailed plans of the relevant work are available	Neil Sookaloo Wayleave Officer Network Engineering and Build	15/03/2024	Email and letter	As and when detailed plans of the relevant work are available these will be submitted to Openserve to indicate existing / proposed underground and / or overhead services.

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these need to be submitted to Openserve to indicate existing / proposed underground and / or overhead services. Any existing services that may require to be relocated as a result of this proposal will be undertaken on a repayable basis. Approval is valid for six months. Several plans were submitted to GCS to indicate infrastructure.				
This correspondence serves as a notice of receipt of the documents and notices received on 18 March 2023. Should you require any further information, please do not hesitate to contact Amkela Chiya on (email address was provided).	Amanda Mkhungo Department of Forestry, Fisheries and Environment (DFFE)	19/03/2024	Email	Notice of acknowledgement of receipt is appreciated.
The South Durban Community Environmental Alliance ("SDCEA") is a non-governmental organisation representing 21 community and environmental organisations concerned with environmental justice and sustainable development in South Durban, Richards Bay and KwaZulu-Natal. We refer to the advertisement in the Zululand Observer dated 8th March 2024 by the company representative stating that the Transnet National Port Authority (TNPA) in Richards Bay, will be applying for an environmental authorization in respect to the Water Use License and an Atmospheric Emissions license for the installation of 22MW Dual Fuel Generator at Port of Richards Bay, KwaZulu-Natal. **Legislative Context** a) Our legislative framework on Section 24 of the Constitution and codified in the National Environmental Management Act, emphasises the duty of the state to protect the environment and to ensure when authorising potentially polluting activities, that an environment is not created that will be detrimental to our health and wellbeing. Based on the submissions contained in the Draft scoping report, the public living in the vicinity of the proposed TNPA area (in Richards Bay), anticipated being exposed to the consequences of general emissions, as well as gas leaks or explosions, and society as a whole will suffer from the LNG that is going to be used for this project since it is a fossil fuel (an increase in fossil fuel usage = an increase in climate change and therefore global warming). The question that a decision-maker must answer is whether the stated need and desirability of the activity justifies the risks, or should the project not proceed at	Desmond D'Sa Coordinator of the South Durban Community Environmental Alliance (SDCEA)	09/04/2024	Email and Letter	Your questions and comments are duly noted, and a full response is included within this correspondence. Please note that the generator complex would be located within the existing port boundary and that the project is currently in the Scoping Phase of the EIA Process, where the plan of study for the Environmental Impact Assessment Process is determined. The specific impacts, mitigation measures, management plans and cumulative impacts will be included in the Environmental Impact Assessment Report which will also be made available for public review and will address your concerns raised in question 5 of the letter. The TNPA 22 MW Generator Project for the Richards Bay Port has already been identified by the Department of Public Works and Infrastructure as a Strategic Infrastructure Project in terms of Schedule 2 (Section 17(2)) of the Infrastructure Development Act (Act No. 23 of 2014), which demonstrates the importance of an electricity generating project at the Richards Bay Port to ensure that the country benefits from the importing and exporting activities which take place from and to the port. In response to the first and second questions raised in your letter. Renewable energy options for the port have been investigated as part of the alternatives. Taking into consideration that on average, to generate 1MW of power, 1hectare of land is required

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all due to the fact that complete prevention of such a risk can never be promised. And to say that "TNPA must ensure that significant environmental impacts are avoided; and where impacts cannot altogether avoided, they must be minimised and mitigated throughout the lifecycle of the TNPA 22MW Generator Project". Is unclear, opened and needs to be more specific. b) It is submitted below that not only must the regulator now reject any fossil fuel source for future energy, given the severity of the climate catastrophe, but also that insufficient information about leakage and explosion risks is placed before the regulator to apply the best environmental practice and to make this decision, in a manner compliant with the regulatory scheme. The nature of a worst-case scenario from the TNPA as a profound threat to health and community safety triggers a regulatory duty on the licensing authority to minimise such emissions. This duty requires an assessment of the likely pollution levels, the impact (including socio-economic cost) that a catastrophic incident would have on the immediate environment, and whether there are other methods or activities that achieve what the project hopes to achieve, without these potential risks. The report fails to analyse these issues so as to enable the decision-maker to make a decision that is compliant. c) NEMA Section 23, which seeks to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities, requires that impacts on the environment are identified with a view to minimising negative impacts, maximizing benefits, and promoting compliance with the principles of environmental management set out in section 2. d) Relevant to the NEMA principles applicable to the granting of the environmental authorisation is principle 2(4)(a)(iii): consideration of factors so that pollution and degradation of the environment are avoided or where they cannot be avoided altogether, are minimised and remedied. e) Principle 2(4)(b) requires that the best practicable environmental option must be applied. f) Principle 2(4) (c) requires that the principle of environmental justice be applied to a decision of this nature. g) It follows that in granting the environmental authorisation under NEMA the decision-maker must not only ensure that there is compliance with prevailing legislation. It must also seek to				for the solar panels, a total of 22 Hectares would be required to produce the amount of electricity required for the Port to operate. The surrounding area around the port is estuarine with natural and marine habitats. Removing 22 hectares of estuarine/natural/marine vegetation would have a major impact on the environment. Similarly using wind turbines would affect the birdlife found in the surrounding areas (Critical Biodiversity Area and estuary) located next to the port area. Due to the fluctuating cost of diesel and availability during certain events, it was decided to make use of a dual fuel generator that would also be able to use LNG as a fuel source as a contingency to ensure that the generator would be able to operate throughout, when required. The cost of a dual fuel generator is higher than that of a single fuel generator but the required diesel storage areas are reduced and the operational cost can be reduced by using LNG as well. The TNPA 22MW generator project area is within the existing Richards Bay Port footprint area which would create no disruption in grazing or any other agricultural activities as the area is already cleared and within the security area of the Port. The LNG pipeline would be predominantly buried with crossings and maintenance areas exposed. The pipelines are connected and monitored by using pressure gauges that detect when there are leaks on the line which can then be attended to. The storage of LNG would not be required on site as there is an existing LNG distribution depot at the Richards Bay Industrial Zone next to the Port from where the LNG will be supplied via the pipeline. The LNG pipeline is situated over 400m away from any watercourse, estuary or the ocean which reduces the possibility of gas leaks affecting the marine and estuarine species. There will be no discharge of any water from the generator area.

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understand the level of impact that activity could have on the coastline, the coastal ecosystems, and the socio-economic impacts in a worst-case scenario, establish the cost thereof and then determine whether there is sufficient need and desirability to take on such risk using the best practicable environmental option. A few concern highlights: - Oil spills: gradual or massive spills. The potential consequences, poisoning ground and water, toxic fumes emission causing sickness, death and mental problems. - Pressure leaks disruption of crops and natural vegetation: The potential consequences, would be reduced food sources, disturbed ecosystem, prevent farmers from earning an income. - Disruption of cattle grazing land and destruction of natural vegetation: Fewer lean cattle, preventing farmers from earning a living and the disruption of the natural vegetation, could mean a disturbance of the ecosystem, affects plants that produce fruits, oxygenate the area, prevent animal life erosion – affects animals that depend on the natural vegetation. - Increased risk of disaster: Large explosions/fires led to extreme pollution, devastate air quality, greenhouse gas emission. - Poor Transnet history of monitoring/compensation: Pipelines leaks often discovered by people living in the area after damage has been done, adequate compensation is unlikely. - Land use restriction: Proximity to pipeline limits what landowners can legally do with their property. **Liquified Natural Gas (LNG)** 'Natural gas' has long been advertised by the fossil fuel industry as clean, green, and an answer to our climate woes. But gas is a fossil fuel and we can attain the at this is a form of greenwashing. Wikipedia defines fossil gas or liquid Natural Gas (LNG) as "A natural gas (predominantly methane, CH_4, with some mixture of ethane, C_2H_6) that has been cooled down to liquid form for ease and safety of non-pressurized storage or transport. It takes up about 1/600th the volume of natural gas in the gaseous state (at standard conditions for temperature and pressure). LNG is odourless, colourless, non-toxic, and non-				The "Just Transitioning plan" as mentioned in your letter, for the country is to create jobs and social justice while transitioning to a low-emission economy. Importing and exporting plays an important role in our economy and provide thousands of jobs directly at the Port operations as well as indirectly through businesses that produce products for exporting and from imported goods. With the current loss in operations, due to power outages and loadshedding operational time is lost which reduces the capacity of the port and contributes to financial losses to the Port as well as its clients resulting in possible job losses and loss of income into the country. The proposed generator would also eliminate the need for each operation to operate its own generator to continue with operations, as is currently required. In response to your fourth question, note that there are several specialist studies being undertaken for the project and includes services of an estuarine specialist, biodiversity specialist, soils and land-use specialist, geohydrological specialist, air quality specialist and a heritage specialist. All their findings and recommendations will be included in the Environmental Impact Assessment Report, which will be available for the public to review.

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corrosive. Hazards include flammability after vaporization into a gaseous state, freezing, and asphyxia.Natural gas has long been considered by many to be a “bridge fuel,” a safer, cleaner alternative to coal and oil, and an incremental step to reduce the greenhouse gas (GHG) emissions that are driving climate change. It is true that, compared with coal, burning gas emits just half as much carbon dioxide, the GHG that is the primary driver of climate change. However, gas extraction, processing, and transport also emits GHGs, including large amounts of methane from leaks and intentional releases at wells, pipelines, storage, and processing facilities.Methane, which is the principal component of gas, does not persist in the atmosphere as long as carbon dioxide, but its climate impact is more than 80 times stronger in the short-term (20-year) time frame and 28 times stronger over the long-term (100-year) time frame; it is the second-biggest driver of climate change. Gas production systems are already the second-largest emitters of methane in the country.LNG and methane in general are marketed as “clean” fossil fuels, but this is a relative term and applies only when comparing the combustion emissions of methane to the combustion of coal, a notorious polluter.A full assessment of LNG’s pollution impacts must consider the upstream effects of methane extraction, processing, and transport.This fossil gas growth is incompatible with a healthy climate. In order to achieve the Paris Agreement goal of keeping warming under 1.5 degrees Celsius – a goal scientists warn must be achieved to avoid the worst impacts of the climate crisis – gas production and consumption must drop by 40% worldwide over the next decade. Furthermore, the main problem with LNG from a climate perspective is that the liquefaction process uses tremendous amounts of energy which directly or indirectly emits a lot of greenhouse gases. This erases virtually all the climate benefits of natural gas relative to coal and oil. **Natural Gas** Natural gas is a fossil energy source that formed deep beneath the earth's surface. Natural gas contains many different compounds. The largest component of natural gas is methane. It is a highly flammable gas and is used mostly for fuel. **Disadvantages of Natural Gas include:** - Natural Gas is Highly Combustible: Though natural gas is lighter than air, one cannot deny the fact that is it highly				

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combustible. As natural gas is odourless, it is difficult to detect a leakage as well. - Natural Gas is a Non-Renewable Source of Energy: It is a non-renewable source of energy. Experts state that natural gas will be depleted in the future and we will have to import it from other nations. - Natural Gas Emits Carbon Dioxide: One of the biggest disadvantages of natural gas is that it emits carbon dioxide which is bad for our atmosphere. Constant introduction of carbon dioxide into our atmosphere will lead to climate change and also global warming. - Long Processing Process: As natural gas has other components that has to be removed before using it for residential or commercial purposes, it takes a lot of time and manpower to process it. - Leakage: A big danger with natural gas is that since it is colourless, odourless and tasteless, should it start leaking, detection of the leak is very hard. - Storage: Even though natural gas is easier to store and transport, it has one big disadvantage. Its volume happens to be four times that of petrol which makes it more expensive to store since more needs to be spent on additional storage. **Methane** Methane is a fast-acting greenhouse gas with enormous short-term impacts on climate. It leaks at every stage of the natural gas production and transportation process. Methane leakage may make natural gas as bad as coal, but it's not the reason gas has no future. While gas itself is less carbon-intensive than coal, if enough methane leaks during its production, its greenhouse gas advantages are wiped out.The concentration of methane in our atmosphere is steadily increasing, reaching record-high levels in 2019 that were nearly 15 percent higher than in the 1980s. Methane persists in the atmosphere for less time than carbon dioxide but traps much more heat. Will there be gas meters installed at regular intervals on the pipeline? How often will they be checked and monitored? At high exposure levels of LNG, oxygen to the brain is reduced and this can lead to dizziness, fatigue, nausea, and even loss of consciousness or death. The other major health hazard related to natural gas, or methane as it's called, is that it is extremely flammable.The most severe				

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factor increasing the risk of negative socio-environmental development is air pollution. There is evidence that suggests that air contamination has a significant negative effect on people's thoughts and moods, thereby lowering the level of happiness and elevating the danger to a person with depression. The local pollution associated with combustion on the Arboretum will adversely affect Richards Bay, which is an industrial area with many industries already contributing to the poor air quality and air pollution-related health impacts. Particulate matter, especially PM 2.5 and smaller particles, contributes to heart disease and is implicated in strokes, asthma, and cancer. Nitrogen oxides are reactive chemicals that can combine with VOCs to form ground-level ozone, which contributes to lung diseases, and asthma attacks and can aggravate pre-existing heart diseases. Nitrogen oxides also contribute to the formation of nitric acid vapor, acid rain, particulate matter, and other harmful chemicals. Emissions of methane and toxic gases can occur when gas is transported via pipelines, which are subject to leaks and explosions. Leaks can also occur from compressor stations and pipelines. Little public research has been conducted as to where the by-products of the concentration or "purification" process goes. These chemicals may cause serious harm. Mercury is a well-known neurotoxin; exposure in utero can result in lifelong impairments in cognitive thinking, memory, language, and attention. **Air Emission Impacts** We require to know if a cumulative air quality assessment has been done for the current air quality report of Transnet, in terms of air readings – the specific chemicals and dust that is being emitted by Transnet. This is to ensure proper fence line monitoring of all the chemical emissions. We also require the assessment of the increase in the number of vehicle emissions from the development, both land and sea transportation. We also require the current and proposed cumulative emissions, storage tanks, effluent and sludge dams, onsite traffic, fugitive leaks (facility-wide), in-stack monitoring, and flaring emissions. They need to assess what the worst-case scenario is and the risk assessment approach to be done not just on the fence line community but on the inside of the harbour. **Safety and Security Threats**				

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LNG is a volatile and potentially explosive material, so this development poses challenges to safety. There are serious gaps in oversight of LNG. Leaks often go unreported because when it comes into contact with air it evaporates, thus the leaks are never reported as "spills". We also require a functional emergency plan with mitigation measures for all these extreme weather scenarios, and must also include alternative routes, and safety zones. What communication methods will you have to let people know in the event of an emergency and at what radius will there be an evacuation? In the case of an explosion of a certain part of the vessel, what is your first layer of protection, and what is the next step of protection to prevent other parts from exploding? The CO2-equivalent output of LNG depends upon the degree of systemic gas leakage – and again, the origins of this development. There is rising scientific concern regarding the climate-related damage done from methane (CH4), whose global warming potential is more than 100 times that of the same mass of CO2 in a 20-year time frame with aerosol impacts included. The CH4 leakage and other greenhouse gas emissions associated with the development's generation are of crucial importance for South Africa, which has an extremely constrained carbon budget it must stay within to avert global climate catastrophe. It is unacceptable that this development trivialises these concerns when they are urgent to address to avert our and other species' extinction. Rather than confront this reality, this report is simply in denial about the climate crisis, aside from recognizing that South Africa's Indian Ocean Coast has been subject to extreme storms. **Impacts on Marine Ecology** LNG is toxic to fish and shellfish. Many people think that natural gas would just bubble up to the surface and quickly evaporate off but in fact, a significant portion dissolves in the water and is highly toxic to marine life. The gas can rapidly penetrate the bodies of fish, doing direct damage to gills, skin, chemoreceptors, and eyes, and filling up the gas bladder, making the fish unable to control its buoyancy. At concentrations of 0.02 – 0.05 mg/l, gas will be sensed by fish and they will move away. If, however, fish are exposed to concentrations above 1 mg/l they become excited within seconds of contact, then disoriented and unable to flee. Within 15 – 20 minutes fish exposed to such concentrations show signs of acute poisoning,				

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and they die within 1-2 days of exposure. Shellfish are also killed by exposure to gas. Zooplankton and phytoplankton can tolerate higher concentrations of gas than fish or shellfish can (i.e., they die at 2 – 5 mg/l). Accidental gas releases on a migratory route of fish such as salmon, either in the sea or from a pipeline close to a river, can block a spawning migration. A localized release can thus have a regional impact. The discharge of heated water into the environment is unacceptable as it constitutes the discharge of thermal loads into a sensitive ecological system. In the Estuarine and Coastal Impacts report it is "… recommended that key nursery environments are avoided …" but it is only a recommendation and need not be heeded. What would be the environmental impacts if the nursery environments are not avoided? Which marine organisms are most likely to be lost? What would be the impact of the loss on the functioning of the ecosystem and on the entire food web? How can you guarantee that there will be no significant impacts on the marine ecosystem? Will there be monitoring and evaluation of marine ecology? Will it be continuously monitored? We require a comprehensive study of the marine ecosystem of that coastal area, including birds. What would be the impact of a leaking pipeline on the birdlife and other wildlife on the sandspit and adjacent vegetated areas and wetlands? Birds are far more susceptible to toxic gases than humans. **LNG and Climate Change** The booming LNG industry could be as bad for the climate as coal and will play at least as big a role as new coal investments in bringing on a climate crisis. The one-piece of good news is that most of these projects are in the pre-construction stage so there is still time for a moratorium on LNG infrastructure before we lock ourselves into even more irreversible climate damage. LNG is neither clean nor particularly low in emissions. In addition, the massive investments in new infrastructure to support this industry, including pipelines, liquefaction facilities, export terminals, and tankers, lock in fossil fuel dependence, making the transition to actual low-carbon and no-carbon energy even more difficult. In a time when the world aims for zero-carbon emissions and those who move toward a Just Transition, this kind of gas project moves South Africa in the opposite direction. LNG is not an effective climate strategy. Analysis shows that using LNG to replace other, dirtier fossil fuels, is not				

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an effective strategy to reduce climate-warming emissions. In fact, if the LNG export industry expands as projected, it is likely to make it nearly impossible to keep global temperatures from increasing above the 1.5 degrees Celsius threshold for catastrophic climate impacts. - The greenhouse gas (GHG) emissions from the extraction, transport, liquefaction, and re-gasification of LNG can be almost equal to the emissions produced from the actual burning of the gas, effectively doubling the climate impact of each unit of energy created from gas transported overseas. - The liquefaction, tanker transport, and re-gasification steps required for overseas export can account for up to 21 percent of total life-cycle emissions for LNG. - Leaks and intentional releases of methane, a potent GHG, during the extraction and transport of the LNG can constitute up to 14 percent of LNG's life-cycle emissions. - Methane has a much stronger and more immediate climate impact than coal, the near-term climate effect (over the next 20 years) of LNG is close to that of coal, just 27 to 33 percent lower. This is the same 20-year period during which the Intergovernmental Panel on Climate Change has concluded that emissions must be cut by about 75 percent to avoid catastrophic climate impacts. - Compared with clean, renewable energy sources, LNG falls far short. (Life-cycle GHG emissions for solar power are less than 7 percent of LNG emissions; emissions for wind power are even lower, less than 2 percent of LNG emissions. **Public Participation Process** There is a lack of public consultation, which should have been a priority due to the widespread effect a project like this will have. This is in terms of when it comes to language barrier – the report, public notice on both newspaper were in English, in an area that has a large number of isiZulu speaking. The newspapers should be in any of the free communal newspapers and not the ones where you have to go out and pay for it. This process needs to be more transparent – language, accessible venues and accessible venues. **Questions from the SDCEA:** 1. What are the eco-friendlier alternatives?				

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2. What are the cost differences between this project and the alternatives mentioned above? 3. How will this project help achieve a Just Transition in SA? 4. Has land and biodiversity studies been done? How will you offset damages? 5. How will you guarantee the prevention of gas leaks? Risk plan, evacuation plan and mitigation plan. 6. How will you prevent corruption?				
Please can you send me a detailed to scale layout plan on an A3 size.	Judy Reddy KZN Transport	11/04/2024	Email	A detailed plan in the requested size was sent to J Reddy on 12/04/2024 with the following response: Please find attached an A3 size map of the Layout Plan for the proposed Generator and new pipelines as well as the distribution lines which will be utilised. The detailed layout of the storage and generator orientation is currently being investigated during the specialist stage by the operational and engineering specialist and will be included in the Draft Environmental Impact Assessment which will also be made available to you during the Public Participation Period for EIA Report. Please feel free to contact us should you have any questions or uncertainties.
Please find attached comment from the Richards Bay Clean Air Association. The comments provided below are based on the Richards Bay Clean Air Association (RBCAA) review of the Draft Scoping Report for the proposed TNPA Dual Fuel Generator, prepared by GCS and dated 7 March 2024. **AIR QUALITY SPECIALIST STUDY** The DSR falls short in identifying the current major sources of particulate emissions. Farmland and farming activities appear to be referenced in a way that implies that the area has significant farming activities. The reference to fires in the residential area of Brackenham is not understood. The major source of particulate emissions is from industrial activities, with emissions from Port operations having the most significant impacts on the environment and residential areas. This is well documented and supported by monitoring data.	Sandy Camminga, Director & Founder Member - Richards Bay Clean Air Association [NGO]	11/04/2024	Email and Letter	Please note that further detail regarding air quality will be available in the Draft EIR and the associated specialist investigations. Your comments raised has been provided to the specialists for incorporation into their investigations.

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The Air Quality Impact Assessment must include the following; 1. Dispersion modelling of Cumulative Impacts. 2. The worst-case scenario which would be the use of only diesel as a fuel source. This should be assessed against the impacts of using only LNG. 3. Emissions inventory to include nitrogen oxides (NOx), carbon monoxide (CO) and greenhouse gases. 4. Implementation of emission control devices. Thank you for affording the RBCAA the opportunity to comment.				
Kindly receive the attached BID comments from DFFE-Forestry branch, for the Application for an Environmental Authorisation and Water Use Licence for the Installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu Natal. The Department of Forestry, Fisheries and the Environment (DFFE) appreciates the opportunity given to review and comment on the above-mentioned project. DFFE through the sub-directorate Forest Resource Protection is the authority mandated to implement the National Forests Act No. 84 of 1998 by regulating the use of natural forests1 and protected tree species listed under the said Act. The purpose of this Act is to promote sustainable forest management and the development of forests for the benefit of all. Upon review of the document received the applicant wishes to apply for an Environmental Authorisation and Water Use Authorisation for the installation of a dual fuel generator within the Port, storage area and ancillary infrastructure for the electricity generator output next to their employee care centre offices at the Port of Richards Bay, KwaZulu-Natal. The proposed development will have potential impacts on floral species hence it is brought to your attention that DFFE's concern pertains to the potential of the project impacting upon existing natural forest(s) and protected tree species. Therefore, the Department requests that a biodiversity assessment study be conducted. This study should include the condition and the type of vegetation and species found on the site as well as the extent to which these will be impacted upon. The Department further requests that the study addresses the potential impacts of the proposed project on natural forest(s) and/or protected trees occurring within or in close proximity to	Khululiwe Hlongwane Department of Forestry, Fisheries, & the Environment, KZN: Directorate: Forestry Resource Protection	12/04/2023	Email and Letter	Please note that further detail regarding biodiversity will be available in the Draft EIR and the associated specialist investigations. Your comments raised has been provided to the specialists for incorporation into their investigations.

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the proposed project site. Substantial comments will be issued upon receipt and review of the EIA document inclusive of the vegetation assessment study. This letter does not exempt you from considering other environmental legislations. Should any further information be required, please do not hesitate to contact this office.				
The City of uMhlathuze has reviewed the Draft Scoping Report, dated 08 March 2024, in respect of the application. We accordingly submit the following: **1. General:** • The City of uMhlathuze notes that TNPA needs to generate backup electricity which will assist during power outages and prevent revenue and operational time loss due to power outages as such the proposed project is being explored. • The proposed project is located within an environmentally sensitive area, its location being the estuarine functional zone which consist of sensitive habitats. **2. Land Use Management** • The proposed site is located within the Ports Authority, zoned as Harbour. The proposed 22MW Dual Fuel Generator is freely permitted under this zone. • The applicant is advised to submit building plans to the Municipality for approval prior to commencement of construction activities. • Should there be new servitudes erected, the registration process must be complied with in accordance to relevant legislation. **3. Stormwater** • Additional information regarding the drain facility for the Diesel and sludge storage areas are required. • It is advised that the applicant develop a chemical spillage mitigation plan and stormwater contamination prevention plan. The applicant is reminded that the proposed project is located within a Critical Biodiversity Area (CBA) as such necessary mitigation measures must be implemented to reduce potential impacts on the surrounding environments. Further comments will be provided upon circulation of the Draft Environmental Impact Report and Specialist Studies.	Nontsundu Ndonga Deputy City Manager: City Development	11/04/2024	Email and Letter	Your concern regarding the sensitive nature of the project location is noted and will be thoroughly investigated in the EIA Phase. TNPA commits to provide appropriate building plans to the municipality when they have been finalised, prior to commencement of construction. The Draft EMPr which will form part of the Draft EIR, will be inclusive of management measures for all hazardous substances. These reports will be published for public review and your comment.

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APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION AND WATER USE LICENCE FOR THE INSTALLATION OF A 22MW DUAL FUEL GENERATOR FOR THE TRANSNET NATIONAL PORT RICHARDS BAY 1. Your letter dated 8 March 2024 refers. 2. The application was received 8 March 2024. 3. You are advised that the application is in the process of being investigated and that you will be advised accordingly of this Department's comments. 4. Applications are treated in the order of time they are received to ensure an equitable reviewal process for all applicants. Apologies for any delays caused, we are currently reviewing applications on a first come first serve basis. 5. When communicating with this office, PLEASE QUOTE the abovementioned file reference, T10/2/2/524/181	J Reddy Department of Transport (KZN)	12/04/2024	Email and Letter	Noted thank you, we await your comment and we will ensure that future communication references your file number.

APPENDIX C2: EIA Phase PPP

APPENDIX C2-1: SITE NOTICES

APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION, WATER USE LICENCE AND AN ATMOSPHERIC EMISSIONS LICENCE FOR THE INSTALLATION OF A 22MW DUAL FUEL GENERATOR FOR THE TRANSNET NATIONAL PORT AUTHORITY (TNPA) AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

GCS Ref. No: 23-0807 **DWS Ref. No.: WU36387**

DRAFT REPORTS AVAILABLE FOR PUBLIC REVIEW FROM 25 JUNE TO 25 JULY 2024

The Transnet National Ports Authority (TNPA) has appointed GCS Environment SA (Pty) Ltd (GCS) to assist with the applications for an Environmental Authorisation (EA), Water Use Licence (WUL) and an Atmospheric Emissions Licence (AEL) for the proposed installation of a dual fuel generator for the electricity generation of 22MW output at the Port of Richards Bay. The port is situated within the uMhlathuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal.

The proposed project site is located at the Port's main entrance and at the Employee Care Centre in the Bayvue Precinct. The project will consist of:

- 22MW generator capable to operate on either diesel fuel or liquified natural gas;
- Start-up generator, switching station(s) and internal reticulation;
- LNG supply pipeline;
- CNG / Diesel fuel tank storage area;
- Demineralised water treatment plant and storage tank area;
- Underground evacuation power lines to various substations;
- Auxiliary pit & drain facility for used diesel and sludge;
- Perimeter fencing and access control.

The following potential Listed Activities in terms of the NEMA EIA Regulations (2014, as amended) will be applied for from the Department of Forestry, Fisheries and Environment (DFFE):

- GN R325, 07 April 2017, Listing Notice 2 – Activities 2, 4 and 6
- GN R324, 07 April 2017, Listing Notice 3 – Activities 10 and 12

A General Authorisation (GA) application, to be administered by the Department of Water and Sanitation (DWS) will be lodged for the following water uses:

- Section 21 (b) and (j) of the NWA.

An application for an Atmospheric Emissions Licence (AEL) as per the requirements of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) Government Gazette, 24 February 2005 (No. 27318) will be submitted to the District Municipality, should it be required.

ISICELO SOKUGUNYAZWA KWEZEMVELO (I-ENVIRONMENTAL AUTHORISATION), NEMVUME YOKUSEBENZISA AMANZI (I-WATER USE LICENCE) KANYE NENEMVUME YOKUKHISHWA KWEZINGCOLISAMKHATHI (I- ATMOSPHERIC EMISSIONS LICENCE) UMA KUFAKWA IJENEREYTHA YEZIPHEHLIMANDLA EZIMBILI ENGAMA-22MW KUSIPHATHIMANDLA SASECHWEBENI KUZWELONKE KWA-TRANSNET (I-TNPA) ECHWEBENI LASE-RICHARDS BAY, KWAZULU-NATAL

GCS Ref. No: 23-0807 **DWS Ref. No.: WU36387**

UMBIKO OHLONGOZWAYO UYATHOLAKALA UKUTHI UBHEKWE UMPHAKATHI KUSUKA MHLA ZINGAMA-25 KUJUNI UKUYA ZINGAMA-25 KUJULAYI 2024

Isiphathimandla Sasechwebeni Kuzwelonke e-Transnet (i-TNPA) sesiqoke inkampani i-GCS Environment SA (Pty) Ltd (GCS) ukuthi isize ngesicelo Sokugunyazwa Kwezemvelo (i-EA), Nemvume Yokusebenzisa Amanzi (i-WUL) kanye neMvume Yokukhishwa Kwezingcolisimkhathi (i-AEL) uma kufakwa ijenereytha esebenzisa iziphehlimandla ezimbili okuhlongozwayo ukuphehla ugesi ongama-22MW ozokwenziwa eChwebeni lase-Richards Bay. Ichweba litholakala kuMasipala Wendawo YaseMhlathuze kanye noMasipala Wesifunda i-King Cetshwayo, KwaZulu-Natal.

Indawo yephrojekthi ehlongozwayo itholakala esangweni elikhulu lechweba kanye nasesiKhungweni Sokunakekelwa Kwabasebenzi e-Bayvue Precinct. Iphrojekthi izoba:

- nejenereytha angama-22MW ekwazi ukusebenza isiphehlimandla sodizili noma segesi yemvelo ewuketshezi;
- Yijenereytha yokuqalisa, ukushintsha iziteshi kanye nokuhleleka ngaphakathi;
- Yipayipi lokuhambisa i-LNG;
- Yi-CNG / yindawo yokugcina ithangi ledizili;
- Yindawo yokuhlanza amanzi akhishwe amaminerali nendawo yokugcina ithangi;
- Yizintambo ezingaphansi komhlaba ezihambisa ugesi eziteshini ezahlukahlukene;
- umgodo owusizo kanye nendawo yokukhipha udizili osebenzile nodaka;
- Uthago olubiyele kanye nokulawulwa kokungena nokuphuma.

Imisebenzi elandelayo engaba sohlwini ngokweMithethonqubo yokuCwaningwa kweMthelela yeZemvelo i-EIA (yonyaka wezi-2014, njengoba ichitshiyelwe) engaphansi koMthetho kaZwelonke wokulawulwa kweMvelo (i-NEMA),) izofakelwa isicelo eMnyangweni Wezamahlathi, Ezokudoba Nezemvelo (i-DFFE):

- i-GN R325, yomhla ziyisi-07 Ku-Ephreli 2017, yeSaziso Sohlu lesi-2 – Semisebenzi wesi-2, owesi-4 nowesi-6
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Isicelo Sokugunyaza Jikelele (i-GA) sizophathwa uMnyango Wezamanzi neZenhlanzeko (i-DWS) sizofakelwa ukusetshenziswa kwamanzi okulandelayo:

- Isigaba sama-21 (b) no (j) soMthetho wezokuPhathwa kwaManzi kaZwelonke (i-NWA).

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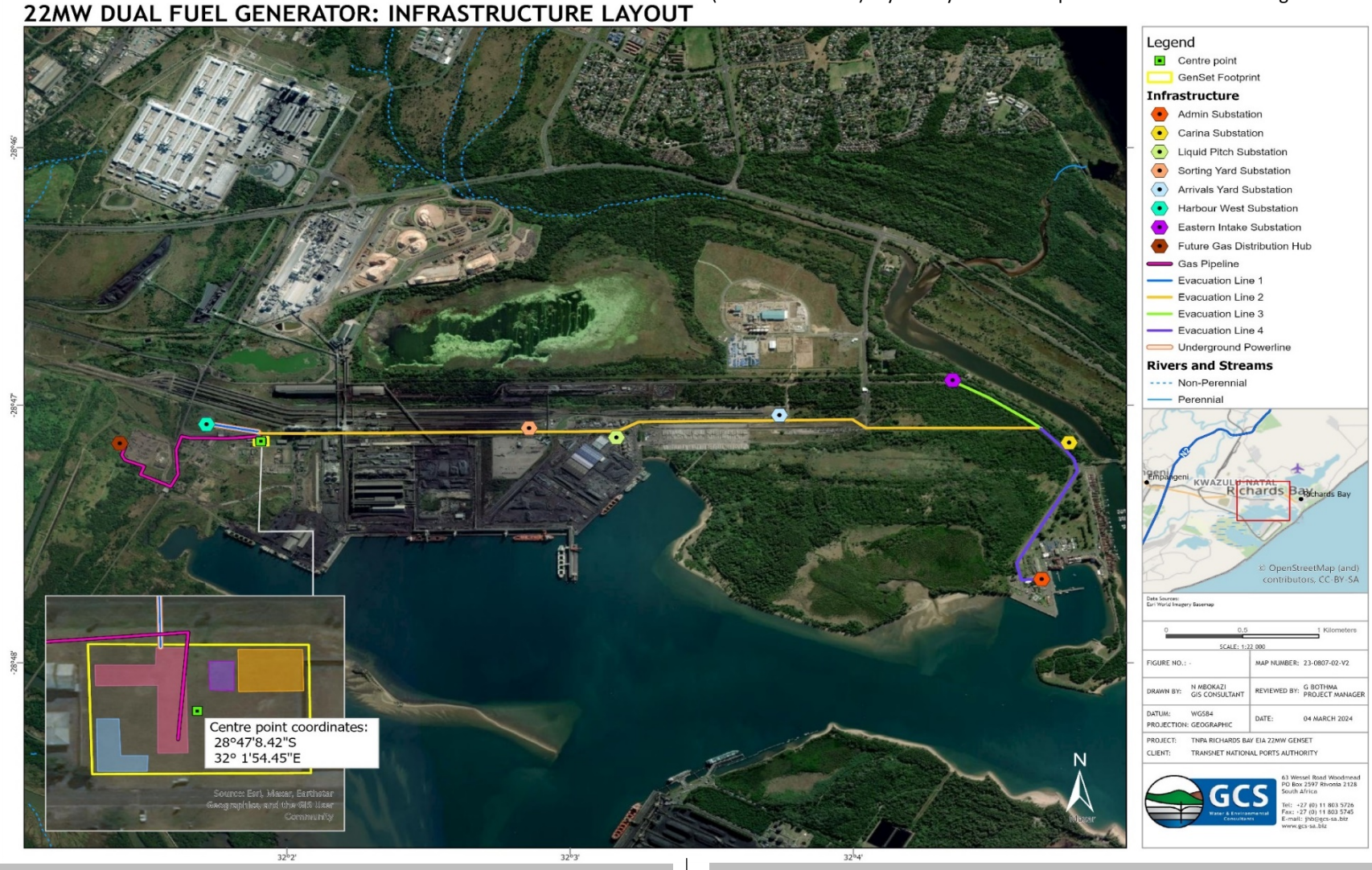
22MW DUAL FUEL GENERATOR: INFRASTRUCTURE LAYOUT



OPPORTUNITY TO PARTICIPATE

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A meeting to discuss the above reports will be held on Tuesday, 16 July 2024 at 15:00 at the John Ross College.

To register for the meeting and to obtain more information contact GCS:
Anelle Lötter / Gerda Bothma; Tel: 011 803 5726; Fax: 011 803 5745;
E-mail: anellel@gcs-sa.biz / gerdab@gcs-sa.biz; Mail: P O Box 2597, Rivonia, 2128.

Publication Date: 21 June 2024

ITHUBA LOKUBAMBIQHAZA

Abantu abathintekayo nabanetshisekelo (I&APs) bayamenywa ukubamba iqhaza ngokuthi anikeze imibono ebhaliwe nokuthi baphakamise izinto ezibakhathazayo.

Imibiko elandelayo iyatholakala ukuthi ibhekwe kuphawulwe ngayo ukusuka mhla **zingama-25 kuJuni ukuya zingama-25 kuJulayi 2024** eMtapweni Wolwazi e-Richard's Bay (e-2 Krugerrand Grove Richard's Bay – Inamba yocingo: 035 907 5840):

- Umbiko Ohlongozwayo Womthelela Kwezemvelo (i-DEIR)
- Umbiko Ohlongozwayo Wohlelo Lokuphathwa Kwemvelo (i-EMPr)

Amakhophi ekhompyutha aledokhumenti ayatholakala ku: https://www.gcs-sa.biz/public-documents/

Umhlangano wokuxoxa ngemibiko engenhla uzoba ngoLwesibili, ziyi-16 kuJulayi 2024 ngehora le-15:00 at John Ross College.

Ukubhalisela umhlangano nokuthi uthole ulwazi olwengeziwe ungaxhumana no-GCS:
uAnelle Lötter / uGerda Bothma; Ucingo: 011 803 5726; iFeksi: 011 803 5745;
i-imeyli: anellel@gcs-sa.biz / gerdab@gcs-sa.biz; noma ubhalele ku: P O Box 2597, Rivonia, 2128.

Appendix C2-2: Newspaper Advert

Richards Bay port statistics down in May

Gugu Myeni

WITH a total of 17.5 million tonnes of cargo shifted across the country's ports in May, Richards Bay recorded 6.4 million tonnes - down from 7.4 million in April.

This is according to the latest statistics released by Transnet National Ports Authority (TNPA).

While dry bulk accounted for the highest cargo tonnage across the ports, the biggest share was through the Richards Bay port with a total of 6.3 million tonnes handled.

The local port has the largest dry bulk terminal in SA and handles approximately 54% of the country's total dry bulk cargo demand.

Of the 6.4 million tonnes of cargo moved last month at the Port of Richards Bay, 169 044 were liquid bulk and 76 973 breakbulk.

With 105 vessel arrivals with a gross tonnage of 4 543 620, six were tankers transporting oil and chemicals, while two passenger vessels also called at the port in May.

The latest figures come amid major developments planned for Richards Bay as efforts continue to reposition the port in line with global competitors.

TNPA aims to reposition the ports of Durban and Richards Bay to increase the capacity of handling container, automotive, dry bulk and liquid bulk commodities.

"Our continued investment in infrastructure and the repositioning of the two ports is pivotal in meeting the demands of the maritime industry - in particular, the increasing size of container vessels calling at our ports and introducing new energy mix within the port system," said TNPA portfolio director for KZN Logistics Hub, Dr Bridgette GasaToboti.

The Port of Richards Bay recorded a decline in cargo volumes in May

Richards Bay 035 753 2086
Empangeni 071 1744746
eShowe 035 474 4169

Application for an Environmental Authorisation, Water Use Licence and an Atmospheric Emissions Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

GCS Ref No: 23-0807

DRAFT REPORTS AVAILABLE FOR PUBLIC REVIEW FROM 25 JUNE TO 25 JULY 2024

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The proposed project site is located at the Port's main entrance and at the Employee Care Centre in the Bayvue Precinct. The project will consist of:

- 22MW generator capable to operate on either diesel fuel or liquified natural gas;
- Start-up generator, switching station(s) and internal reticulation;
- LNG supply pipeline;
- CNG / Diesel fuel tank storage area;
- Demineralised water treatment plant and storage tank area;
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- Perimeter fencing and access control.

The following potential Listed Activities in terms of the NEMA EIA Regulations (2014, as amended) will be applied for from the Department of Forestry, Fisheries and Environment (DFFE):

- GN R325, 07 April 2017, Listing Notice 2 – Activities 2, 4 and 6
- GN R324, 07 April 2017, Listing Notice 3 – Activities 10 and 12

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OPPORTUNITY TO PARTICIPATE

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Isicelo Sokugunyazwa Abezemvelo Ngemvume Yokusebenzisa Amanzi kanye neMvume Yokukhishwa Kwezingcolisamkhathi uma kufakwa iJenereytha Yeziphehlimandla Ezimbili engama-22MW kuSiphathimandla Sasochwebeni Kuzwelonke Kwa-Transnet (i-TNPA) eChwebeni lase-Richards Bay, KwaZulu-Natal

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noma ubhalele ku: P O Box 2597, Rivonia, 2128.

ama-I&AP ayamenywa ukuthi abambe iqhaza ngokuthi anikeze imibono ebhaliwe nokuthi baphakamise izinto ezibakhathazayo.

GCS

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RSVP: Sizo Dlamini mrbpelo@melomed.co.za

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Application for an Environmental Authorisation, Water Use Licence and an Atmospheric Emissions Licence for the installation of a 22MW Dual Fuel Generator for the Transnet National Port Authority (TNPA) at the Port of Richards Bay, KwaZulu-Natal

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ama-I&AP ayamenywa ukuthi abambe iqhaza ngokuthi anikeze imibono ebhaliwe nokuthi baphakamise izinto ezibakhathazayo.

SANRAL SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
BUILDING SOUTH AFRICA THROUGH BETTER ROADS

WBHO

SUBCONTRACT NO.003-020-2017/7
UNDER CONTRACT SANRAL N.003-020-2017/7
FOR THE REALIGNMENT OF NATIONAL ROUTE 3, SECTION 2 FROM KEY RIDGE (KM2.8) TO HAMMARSDALE (KM 8.825)

T1.1 TENDER NOTICE AND INVITATION TO TENDER (SBD1)

WBHO CONSTRUCTION (PTY) LTD invites tenders from experienced EME/QSE suppliers for Contract SANRAL N.003-020-2017/7 FOR THE REALIGNMENT OF NATIONAL ROUTE 3, SECTION 2 FROM KEY RIDGE (KM 2.8) TO HAMMARSDALE (KM 8.825) endorsed by The South African National Roads Agency SOC Limited (SANRAL). This project is in the province of KwaZulu Natal and in the eThekwini Municipality.

The approximate duration for this work package will vary. Only tenderers who are registered on the National Treasury Central Supplier Database at the closing date for tender submissions and who comply with the definition of a Targeted Enterprise under clause C.2.1.1 and are at least 51% Black owned and who is an EME or QSE or cooperative, are eligible to tender.

Only tenderers that meet all the eligibility criteria under clause C.2.1.1 of the Tender Data will be considered. Only tenderers who meet the minimum functionality score as stated in clause C.3.11 will be evaluated further on price and preference

SUBCONTRACT TENDER DOCUMENTS

Tender documents are available at no cost in electronic format via share drive from 3pm on 24th June 2024. Tenderers must have access to Microsoft Office © 2013 and Acrobat Adobe © 9.0, or similar compatible software.

TENDERERS' BRIEFING AND TRAINING

A tender clarification briefing pre-recorded video and training presentation are available to be downloaded via share drive from 3pm on 24 June 2024.

COMPLETION AND DELIVERY OF TENDERS

The closing time for receipt of tenders is 15:00 on 8th July 2024. Only tender offers submitted electronically uploaded to share drive as specified in the Tender Data will be accepted. Tenders may only be submitted in the format as stated in the Tender Data.

Queries relating to issues arising from the tenderer's clarification briefing video or these documents may be addressed to the following:

Enquiries	
Contact Person:	Mthe Sikhosana
Fax No:	N/A
E-mail:	helpdesk@keyridge.co.za

Below are the Work Packages on offer:

1. Work Package Description: KR-D06a – Landscape & Planting Trees (all Phases) – Minimum CIDB Grade Required is 6SH
Download Link: https://drive.google.com/drive/folders/1UGJLXIZoZnmS2qnwdQTSCitJ21ma50vA?usp=drive_link **Upload Link**: https://app.smartsheet.com/b/form/cad3addbddd341d98915e0772ee182d
2. Work Package Description: KR-E04c –Asphalt + Other Works (Alt Routes) rv1 - Minimum CIDB Grade Required is 7CE
Download Link: https://drive.google.com/drive/folders/1UGJLXIZoZnmS2qnwdQTSCitJ21ma50vA?usp=drive_link **Upload Link:** https://app.smartsheet.com/b/form/cad3addbddd341d98915e0772ee182d5
3. Work Package Description: KR-E10a – Road Restraint systems (excl. barriers) Ph1 – Minimum CIDB Grade Required is 3CE
Download Link: https://drive.google.com/drive/folders/1UGJLXIZoZnmS2qnwdQTSCitJ21ma50vA?usp=drive_link **Upload Link:** https://app.smartsheet.com/b/form/cad3addbddd341d98915e0772ee182d5
4. Work Package Description: KR-F13b – Supply of Fuel (complete project)
Download Link: https://drive.google.com/drive/folders/1UGJLXIZoZnmS2qnwdQTSCitJ21ma50vA?usp=drive_link **Upload Link:** https://app.smartsheet.com/b/form/cad3addbddd341d98915e0772ee182d5
5. Work Package Description: KR-F14 – Staging – B293 A&B –(LABOUR ONLY)
Download Link: https://drive.google.com/drive/folders/1UGJLXIZoZnmS2qnwdQTSCitJ21ma50vA?usp=drive_link **Upload Link:** https://app.smartsheet.com/b/form/cad3addbddd341d98915e0772ee182d5

ACM/ 364004

703 COURT ORDERS | 714 PUBLIC NOTICES | 714 PUBLIC NOTICES | 714 PUBLIC NOTICES | 714 PUBLIC NOTICES

IN THE HIGH COURT OF SOUTH AFRICA KWAZULU-NATAL DIVISION, PIETERMARITZBURG
In the matter between:
Case No: 17355/23P

THE STANDARD BANK OF SOUTH AFRICA LIMITED
(Registration Number. 1962/000738/06)
Applicant
and
NTETHELELO DLADLA
(Identity Number: 960503 5884 086)
Respondent

1. The Applicant has instituted action against the Respondent for return of the motor vehicle described as **HYUNDAI ACCENT 1.6 GL/MOTION 2016** with Chassis Number: **KMHCT41DLHU149877** and Engine Number: **G4FCGU565089** together with ancillary relief and costs.
2. The Respondent is granted 10 days to enter an appearance to defend.
3. A complete copy of the Combined Summons and Notice in Terms of Rule 41A can be obtained from Venns Attorneys – 0333553291/ lervashni@venns.co.za.

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P.O. Box 52 MTUBATUBA 3935 Tel: (035) 550 0069 / 550 0050 Fax: (035) 550 0060
10/06/2024 Enquiries: Office of the Municipal Manager

PUBLIC NOTICE
ADOPTION OF THE 2024/25 FINAL IDP

Notice is hereby given that Inkosi uMtubatuba Local Municipality has successfully adopted the 2024/25 IDP as required in terms of Section 25(4)(a) of the Municipal Systems Act No. 32 of 2000. It was tabled before the Council meeting that was held on the 24th May 2024.

Copies of the adopted 2024/25 IDP are available for public inspection at the municipal offices located at Lot 105 Inkosi Mtubatuba Road in Mtubatuba, Kwa-Msane municipal offices including the municipal website www.mtubatuba.gov.za and all municipal libraries.

Enquiries regarding the above-mentioned documentation may be directed to the Manager IDP/PMS, Ms NV Ngobese on 087 106 9700 or e-mail to idp@mtubatuba.gov.za

Mr TV Xulu
Municipal Manager

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LoMmeli obhalwe ngenhla ushonile.
Kucelwa wonke amaklayenti akhe axhumane nomnyango Wethu wakwa Risk and Compliance Mayelana nokulanda amafayela noma Ukubuyiselwa izimali zawo.
Legal Practice Council-KZN Tel: 033-3451304
200 Hoosen Haffejee Street, Pietermaritzburg
curatorkzn@lpc.org.za

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APPENDIX D: AUTHORITY CORRESPONDENCE

Rona Schroder

From: Salome Mambane <SMAMBANE@dffe.gov.za>
Sent: Tuesday, 12 March 2024 13:27
To: Rona Schroder
Cc: EIAadmin; Zama Langa; Nosicelo.Biyana@transnet.net; dennis.mqadi@transnet.net; Muzi.Mdamba@kznedtea.gov.za; Gazug@umhlathuze.gov.za
Subject: FW: 14/12/16/3/3/2/2525

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT OF THE NEW APPLICATION FORM AND DRAFT SCOPING REPORT TNPA 22MW DUAL FUEL GENERATOR INSTALLATION AT THE PORT OF RICHARDS BAY, LOCATED IN THE UMHLATHUZE LOCAL MUNICIPALITY WHICH FALLS UNDER THE KING CETSHWAYO DISTRICT MUNICIPALITY, IN THE KWAZULU-NATAL PROVINCE.

The Department confirms having received the Application Form and Draft Scoping Report for Environmental Authorisation for the abovementioned project on 08 March 2024. You have submitted these documents to comply with the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.

Kindly note that your application for Environmental Authorisation falls within the ambit of an application applied for in terms of Part 3 of Chapter 4 of the EIA Regulations, 2014, as amended. You are therefore referred to Regulation 21 of the EIA Regulations, 2014 as amended.

Please take note of Regulation 40(3) of the EIA Regulations, 2014, as amended, which states that potential Interested & Affected Parties, including the Competent Authority, may be provided with an opportunity to comment on reports and plans contemplated in Regulation 40(1) of the EIA Regulations, 2014, as amended, prior to the submission of an application but **must** be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority.

Note that in terms of Regulation 45 of the EIA Regulations, 2014, as amended, this application will lapse if the applicant fails to meet any of the time-frames prescribed in terms of these Regulations, unless an extension has been granted by the Department in terms of Regulation 3(7) of the EIA Regulations, 2014, as amended.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.

Kind Regards,
Salome Mambane
Integrated Environmental Authorisations:
Priority Infrastructure Developments
Tel: 012 399 9385
Cell: 063 684 5431
Email: SMambane@dffe.gov.za

forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA 0001· Environment House 473 Steve Biko Road, Arcadia,· PRETORIA

DFFE Reference: 14/12/16/3/3/2/2525
Enquiries: Ms Nyiko Nkosi
Telephone: (012) 399 9392 **E-mail:** nnkosi@dffe.gov.za

Ms Rona Schroder
GCS Environment South Africa (Pty) Ltd
PO Box 2597
RIVONIA
2128

Telephone Number: 011 803 5726
Email Address: ronas@gcs-sa.biz

PER MAIL / E-MAIL

Dear Ms Schroder

COMMENTS ON THE DRAFT SCOPING REPORT FOR THE PROPOSED TRANSNET NATIONAL PORTS AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR INSTALLATION AT THE PORT OF RICHARDS BAY, IN THE UMHLATHUZE LOCAL MUNICIPALITY, KWAZULU-NATAL PROVINCE

The Application for Environmental Authorisation and Draft Scoping Report (SR) dated March 2024 and received by the Department on 08 March 2024, refer.

This letter serves to inform you that the following information must be included to the Final Scoping Report:

(a) Listed Activities

- The project description provided for activity 10 of Listing Notice (LN) 3 must be amended to indicate the distance of the proposed project within the estuarine functional zone as required by the sub listing (vi).
- Project description provided for activity 12 of LN3 must also be amended to indicate the geographical sensitivity (i.e. CBA), as required by the listed activity.
- Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description.
- It is imperative that the relevant authorities are continuously involved throughout the Scoping and EIA process as the development property possibly falls within geographically designated areas in terms of numerous GN R. 985 Activities. Written comments must be obtained from the relevant authorities and submitted to this Department. In addition, a graphical representation of the proposed development within the respective geographical areas must be provided.

(b) Public Participation Process

- The Public Participation Process must be conducted in terms of Regulation 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014, as amended.
- Please ensure that all issues raised, and comments received during the circulation of the SR from registered I&APs and organs of state which have jurisdiction (**including this Department's Biodiversity Section, Ocean and Coast Section, Air quality Section and Climate Change Section**) in respect of the proposed activity are adequately addressed in the Final SR. Proof of correspondence

N.N

with the various stakeholders must be included in the Final SR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments.

- A comments and response trail report (C&R) must be submitted with the final SR. The C&R report must incorporate all historical comments for this development. The C&R report must be a separate document from the main report and the format must be in the table format as indicated in Appendix 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "Noted" is not regarded as an adequate response to I&AP's comments.
- The final SR must provide evidence that all identified and relevant competent authorities have been given an opportunity to comment on the proposed development.

(c) <u>Specialist Assessments</u>

- Please kindly ensure that the terms of reference for Specialist studies includes the following requirements:

➢ A detailed description of their methodology, as well as indicate the locations and descriptions of all infrastructure positions, and all other associated infrastructures that they have assessed and are recommending for Authorisations.

➢ a detailed description of all limitations to their studies. Please ensure that all specialist studies that are conducted have been commissioned in the right season, and providing that as a limitation will not be accepted.

➢ Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas.

➢ If the appointed specialists specify contradicting recommendations, the EAP must indicate the most reasonable recommendation and substantiate this with defendable reasons and where necessary, include further expertise advice.

➢ All specialist studies must be final and provide detailed/practical mitigation measures for the preferred alternative and recommendations and must not recommend further studies to be completed post EAShould a specialist recommend specific mitigation measures; these must be clearly indicated.

➢ Regarding cumulative impacts:

  - Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.
  - A detailed process flow to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
  - Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process.
  - The significance rating must also inform the need and desirability of the proposed development.
  - A cumulative impact environmental statement on whether the proposed development must proceed.

➢ It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols"), and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species), have come into effect.

➢ Please ensure that specialist assessments are conducted in accordance with these protocols, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned before the date on which the protocols came into effect, in

which case Appendix 6 of the Environmental impact Assessment Regulations, 2014, as amended, will apply to such applications. Please indicate in the report whether the protocols were applied.

- The screening tool report identified fourteen (14) specialist studies to be conducted for the proposed project and the site verification report included only six (06) specialist studies that will be conducted by the EIAr. The site verification report must be amended to include motivation why other studies have not been identified as specialist studies to be conducted for the proposed project.
- Kindly ensure to include, as part of the final SR, a table summarising the specialist studies required by the Screening Tool and the sensitivity rating of the Screening Tool (very high, high, medium, low), a column indicating the sensitivity of the site after the EAP/Specialist conducted the Site Verification Assessment and a column indicating whether these studies will be conducted or that compliance statement will be submitted during the EIAr phase.
- For the themes that have been identified as low/medium which requires compliance statements, please ensure that these specialists must be identified as specialist to be conducted who compliance statements are to be included in the EIAr.
- Please note that the protocols require certain specialists to be SACNASP registered. As such, the Specialist Declaration of Interest forms must also indicate the scientific organization registration/member number and status of registration/membership for each specialist.

(d) <u>Cumulative Impacts</u>

- Should there be any other similar projects within a 30km radius of the proposed development site, the cumulative impact assessment for all identified and assessed impacts must be refined to indicate the following:
  - Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.
  - Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
  - The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
  - A cumulative impact environmental statement on whether the proposed development must proceed.

(e) <u>Layout & Sensitivity Maps</u>

- The SR must include layout map which indicate the following:
  - Position of all infrastructure (fuel generator, diesel fuel tank storage, transmission line, LNG pipeline, etc),
  - The location of sensitive environmental features on site e.g., CBAs, heritage sites, wetlands, drainage lines etc. that will be affected.
  - Buffer areas; and
  - All "no-go" areas.
- The above map must be overlain with a sensitivity map and a cumulative map which shows neighbouring renewable energy developments. All available biodiversity information must be used in the finalisation of the map and infrastructure must not encroach on highly sensitive areas as far as possible.
- Ensure that similar colours are not used to differentiate between infrastructures. i.e., items must be easily distinguishable in the Legend.
- Google maps will not be accepted for decision-making purposes.

<u>General</u>

The SR must include the technical details of the proposed facility. In addition please separate the appendices from the main report when submitting the final SR.

You are further reminded to comply with Regulation 21(1) of the NEMA EIA Regulations 2014, as amended, which states that:

"If S&EIR must be applied to an application, the applicant must, within 44 days of receipt of the application by the competent authority, submit to the competent authority a scoping report which has been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority"

You are are further reminded that the final SR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of Scoping reports in accordance with Appendix 2 and Regulation 21(1) of the EIA Regulations 2014, as amended.

Further note that in terms of Regulation 45 of the EIA Regulations 2014, as amended, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7).

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.

Yours sincerely

Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment
Signed by: Ms Nyiko Nkosi
Designation: Control Environmental Officer: National Integrated Authorisations Projects
Date: 09/04/2024

cc:	Ms Nosicelo Biyana	Transnet National Ports Authority (TNPA)	Email: Nosicelo.Biyana@transnet.net

Annexure 1

Format for Comments and Response Trail Report:

Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
Pule Joseph Lenong Department of Water and Sanitation (DWS) Email correspondence: 07 February 2022	On behalf of the Provincial Head of the Department of Water and Sanitation: Free State, I hereby would like to acknowledge receipt your e-mail with kindness. The contents are receiving attention. In future, if you do not mind, please send your EIA directly to this office. Mr George Nel is copied here and myself	The comment raised by the DWS has been noted. In addition, George Nel has been added onto the database for all future correspondence.

63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

Our Reference 23-0807

Your Reference **14/12/16/3/3/2/2525**

23 April 2024

Department of Forests, Fisheries and the Environment

Environment House
473 Steve Biko Road,
Arcadia,·
PRETORIA

Attention: Nyiko Nkosi

RE: COMMENTS ON THE DRAFT SCOPING REPORT FOR THE PROPOSED TRANSNET NATIONAL PORTS AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR INSTALLATION AT THE PORT OF RICHARDS BAY, IN THE UMHLATHUZE LOCAL MUNICIPALITY, KWAZULU-NATAL PROVINCE

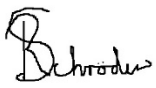
Your comments on the Draft Scoping Report for the above project, sent on the 9th of Apil 2024 bear reference.

We appreciate and have incorporated your comments into our final submission and where applicable included in the process going forward.

Please see the table below in response to each comment as received from the Department to allow for easier reference.

I trust you will find it in order. Please do not hesitate to contact us should you require further clarification.

Kind regards,



Rona Schröder
Environmnetal Assessment Practitioner
ronas@gcs-sa.biz

(a) Listed Activities	
• *The project description provided for activity 10 of Listing Notice (LN) 3 must be amended to indicate the distance of the proposed project within the estuarine functional zone as required by the sub listing (vi).*	The distance has been included in the description as requested.
• *Project description provided for activity 12 of LN3 must also be amended to indicate the geographical sensitivity (i.e. CBA), as required by the listed activity.*	The activity description for activity 12 of LN 3 has been amended to indicate the geographical sensitivity.
• *Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description.*	The activities included in the project have been included in the project description and have been linked to the specific development.
• *It is imperative that the relevant authorities are continuously involved throughout the Scoping and EIA process as the development property possibly falls within geographically designated areas in terms of numerous GN R. 985 Activities. Written comments must be obtained from the relevant authorities and submitted to this Department. In addition, a graphical representation of the proposed development within the respective geographical areas must be provided.*	Project information and description have been provided to possible commenting authorities. Comments have been received from the KZN Department of Economic Development, Tourism, and Environmental Affairs. The project information and request for comments were sent to other entities such as Emzemvelo Wildlife, South African Heritage Resource Agency and KZN Transport, along with several other possible I&APs.
(b) Public Participation Process	
• *The Public Participation Process must be conducted in terms of Regulation 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014, as amended.*	See the Public Participation Report attached to the Final Scoping Report.
• *Please ensure that all issues raised, and comments received during the circulation of the SR from registered I&APs and organs of state which have jurisdiction (**including this Department's Biodiversity Section, Ocean and Coast Section, Air quality Section and Climate Change Section**) in respect of the proposed activity are adequately addressed in the Final SR. Proof of correspondence with the various stakeholders must be included in the Final SR. Should you be unable to obtain*	The Public Participation Report with all of the supporting documents and proof of placements and notifications during the Scoping Phase will accompany the Final Scoping Report.

comments, proof should be submitted to the Department of the attempts that were made to obtain comments.	
• *A comments and response trail report (C&R) must be submitted with the final SR. The C&R report must incorporate all historical comments for this development. The C&R report must be a separate document from the main report and the format must be in the table format as indicated in Appendix 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "Noted" is not regarded as an adequate response to I&AP's comments.*	The Comments and Response Report is submitted with the Final Scoping Report and includes the comments received during the Scoping Phase along with the responses provided to the I&APs.
• *The final SR must provide evidence that all identified and relevant competent authorities have been given an opportunity to comment on the proposed development.*	The Final Scoping Report includes the entire Public Participation Process followed during the Scoping Phase. The report includes all the notifications sent out and the requests to provide comments on the project.
(c) Specialist Assessments	
• *Please kindly ensure that the terms of reference for Specialist studies includes the following requirements:* ➢ *A detailed description of their methodology, as well as indicate the locations and descriptions of all infrastructure positions, and all other associated infrastructures that they have assessed and are recommending for Authorisations.* ➢ *a detailed description of all limitations to their studies. Please ensure that all specialist studies that are conducted have been commissioned in the right season, and providing that as a limitation will not be accepted.* ➢ *Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas.*	Will be included in the Specialist Studies during the EIA Process.

➢ *If the appointed specialists specify contradicting recommendations, the EAP must indicate the most reasonable recommendation and substantiate this with defendable reasons and where necessary,* o *include further expertise advice.* ➢ *All specialist studies must be final and provide detailed/practical mitigation measures for the preferred alternative and recommendations and must not recommend further studies to be completed post EAShould a specialist recommend specific mitigation measures; these must be clearly indicated.* ➢ *Regarding cumulative impacts:* *o Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.* *o A detailed process flow to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.* *o Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process.* *o The significance rating must also inform the need and desirability of the proposed development.* *o A cumulative impact environmental statement on whether the proposed development must proceed.*	
➢ *It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were*	Noted. Protocols for specialists should be followed.

promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols"), and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species), have come into effect.	
➢ *Please ensure that specialist assessments are conducted in accordance with these protocols, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned before the date on which the protocols came into effect, in which case Appendix 6 of the Environmental impact Assessment Regulations, 2014, as amended, will apply to such applications. Please indicate in the report whether the protocols were applied.*	Noted. Protocols for specialists should be followed.
➢ *The screening tool report identified fourteen (14) specialist studies to be conducted for the proposed project and the site verification report included only six (06) specialist studies that will be conducted by the EIAr. The site verification report must be amended to include motivation why other studies have not been identified as specialist studies to be conducted for the proposed project.*	Motivations have been included in the Site Verification Report
➢ *Kindly ensure to include, as part of the final SR, a table summarising the specialist studies required by the Screening Tool and the sensitivity rating of the Screening Tool (very high, high, medium, low), a column indicating the sensitivity of the site after the EAP/Specialist conducted the Site Verification Assessment and a column indicating whether these studies will be conducted or that compliance statement will be submitted during the EIAr phase.*	The Table is included in the Site Verification Report.
➢ *For the themes that have been identified as low/medium which requires compliance statements, please ensure that these specialists must be identified as specialist to be conducted who compliance statements are to be included in the EIAr.*	Noted. Compliance Statements and specialist studies will be included in the Environmental Impact Assessment Report.
Please note that the protocols require certain specialists to be SACNASP registered. As such, the Specialist Declaration of Interest forms must also	Noted. Will ensure that required specialists are SACNASP registered where required.

indicate the scientific organization registration/member number and status of registration/membership for each specialist	
(d) <u>Cumulative Impacts</u>	
• *Should there be any other similar projects within a 30km radius of the proposed development site, the cumulative impact assessment for all identified and assessed impacts must be refined to indicate the following:* ➢ *Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.* ➢ *Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.* ➢ *The cumulative impacts significance rating must also inform the need and desirability of the proposed development.* ➢ *A cumulative impact environmental statement on whether the proposed development must proceed.*	The possible impacts of the project along with the cumulative impacts will be included in the Environmental Impact Assessment Report.
(e) <u>Layout & Sensitivity Maps</u>	
• *The SR must include layout map which indicate the following:* ➢ *Position of all infrastructure (fuel generator, diesel fuel tank storage, transmission line, LNG pipeline, etc),* ➢ *The location of sensitive environmental features on site e.g., CBAs, heritage sites, wetlands, drainage lines etc. that will be affected.* ➢ *Buffer areas; and* ➢ *All "no-go" areas.*	The Sentivity Map can be seen as Figure 4-7 on page 34 of the Final Scoping Report.

• *The above map must be overlain with a sensitivity map and a cumulative map which shows neighbouring renewable energy developments. All available biodiversity information must be used in the finalisation of the map and infrastructure must not encroach on highly sensitive areas as far as possible.*	There are no known renewable energy projects neighbouring the TNPA 22MW Generator Project. Figure 4-6 and Figure 4-7 illustrates the sentifive areas that has been identified. The delineations and extent of each aspect will be determined during the specialist investigation being undertaken in the EIA Phase and will be included in the Draft EIA Report.
• *Ensure that similar colours are not used to differentiate between infrastructures. i.e., items must be easily distinguishable in the Legend.*	Noted. Different colours have been used for the maps.
• *Google maps will not be accepted for decision-making purposes.*	Noted. Maps have been generated on a Geoinformatic System.
The SR must include the technical details of the proposed facility. In addition please separate the appendices from the main report when submitting the final SR.	The technical details of the facility are included in Section 2 of the Scoping Report.

APPENDIX E: SPECIALIST INVESTIGATIONS

APPENDIX E1: Air Quality Impact Statement

2024

Atmospheric Impact Report for the proposed TNPA Power Generation Project at the Port of Richards Bay

Transnet National Ports Authority

uMOYA-NILU

TNPA
13/06/2024

Report Details

Client:	Transnet National Ports Authority
Report title:	Atmospheric Impact Report for the proposed TNPA Power Generation Project at the Port of Richards Bay
Project number:	uMN878-24
Report number:	uMN157-24
Version:	Draft 13 June 2024
Prepared by:	uMoya-NILU Consulting (Pty) Ltd, P O Box 20622, Durban North 4016, South Africa
Authors:	Atham Raghunandan, Mark Zunckel, Nopasika Xulu

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uMoya-NILU (2024): Atmospheric Impact Report for the proposed TNPA Power Generation Project at the Port of Richards Bay, Report No.: uMN157-24, June 2024.

EXECUTIVE SUMMARY

The Port of Richards Bay is one of the largest commercial ports in South Africa that is managed by the Transnet National Ports Authority (TNPA). The Eskom power utility is currently challenged to supply the country's contracted electricity demand. This has resulted in rolling power cuts that have severely affected business and port operations. Due to the electricity challenges faced by the port, TNPA proposes to procure and install a duel-fuel 22 MW generator at the Port of Richards Bay to support port operations. The proposed project will generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss during these events.

The generator is capable of producing electricity using diesel or liquefied natural gas (LNG). Liquid Fuel Combustion Installations used primarily for steam raising or electricity generation is a Listed Activity under Category 1: Combustion Installations, and sub-category 1.2: Liquid Fuel Combustion Installations. Gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation is a Listed Activity under Category 1: Combustion Installations, and sub-category 1.4: Gas combustion. The Minimum Emission Standards for these two Category 1 Listed Activities are presented in Table E-1.

It must be noted that the combustion of liquid fuel for steam production or electricity generation; and the combustion of gaseous fuel for steam production or electricity generation in a turbine is applied to units with a capacity of more than 50 MW heat input per unit. The regulations for small boilers apply specifically to boilers with a heat input more than 10 MW, but less than 50 MW. It appears therefore that emission standards are not prescribed for gas turbines with a capacity of less than 50 MW.

Table E-1: Minimum Emission Standards for Category 1 Listed Activities according to GN 248 (DEA, 2010) and its revisions (DEA, 2013c, 2019)

Substance or mixture of substances		**Minimum Emission Standards (mg/Nm^3) under normal conditions of 15% O_2, 273 Kelvin and 101.3 kPa.**
Common name	**Chemical symbol**	
1.2: Liquid fuel combustion installation		
Particulate matter	N/A	50
Sulphur dioxide	SO_2	500
Oxides of nitrogen[a]	NO_X	250
1.4: Gas combustion installation		
Particulate matter	N/A	10
Sulphur dioxide	SO_2	400
Oxides of nitrogen[a]	NO_X	50

a: expressed as NO_2

In this assessment only stack emissions are considered for the dispersion modelling. Emissions from supporting infrastructure (such as storage tanks) and trucks are regarded as fugitive emissions which are negligible. Fugitive emissions are therefore not included in the modelling. Stack emissions resulting from the proposed TNPA Power Generation Project are listed in Table E-2 for the diesel-fired and gas-fired option.

Table E-2: Stack emission concentrations (mg/Nm^3) and emission rates (tonnes/annum) for the diesel-fired and gas-fired option

Substance	Emission concentration (mg/Nm^3)	Emission rate (tonnes/annum)	Listed Activity sub-category
SO_2	500	865.40	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	400	705.96	1.4: Gas combustion (gas-fired option)
NO_X	250	432.70	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	50	88.24	1.4: Gas combustion (gas-fired option)
PM_{10}	50	86.54	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	10	17.65	1.4: Gas combustion (gas-fired option)
CO*	65.9	114.06	diesel-fired option (Not stipulated in MES)
	132.2	233.32	gas-fired option (Not stipulated in MES)

* CO emission data provided by General Electric via TNPA

The CALPUFF dispersion model is used to predict ambient concentrations of SO_2, NO_2, PM_{10} and CO resulting from the proposed TNPA Power Generation Project emissions for the diesel-fired and gas-fired option. Modelling is done according to the modelling regulations and 3-years of hourly surface and upper air meteorological data are used.

The maximum predicted annual SO_2, NO_2, PM_{10} and CO concentrations and the 99th percentile concentration of the 24-hour, 8-hour and 1-hour predicted concentrations are very low relative to the NAAQS (Table E-3). The highest predicted concentrations occur within a 3 km radius to the west and north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas.

Table E-3: Maximum predicted ambient annual SO_2, NO_2, PM_{10} and CO concentrations in µg/m³ and the predicted 99th percentile concentrations for 24-hour, 8-hour and 1-hour averaging periods, with the South African NAAQS

Description	Scenario	Pollutant and averaging period			
		SO_2			
		Annual	24-hour	8-hour	1-hour
Predicted maximum SO_2	Scenario 1 – Diesel Fuel	0.38	3.07		7.38
	Scenario 2 – LNG Fuel	0.31	2.53		6.07
NAAQS		50	125		350
		NO_2			
Predicted maximum NO_2	Scenario 1 – Diesel Fuel	0.15			2.95
	Scenario 2 – LNG Fuel	0.03			0.61
NAAQS		40			200
		PM_{10}			
Predicted maximum PM_{10}	Scenario 1 – Diesel Fuel	0.04	0.31		
	Scenario 2 – LNG Fuel	0.01	0.06		
NAAQS		40	75		
		CO			
Predicted maximum CO	Scenario 1 – Diesel Fuel			0.81	0.97
	Scenario 2 – LNG Fuel			1.66	2.01
NAAQS				10 000	30 000

The impact assessment was assessed for cumulative impacts of the proposed TNPA Power Generation Project with existing sources. The following points are noteworthy:

- Monitoring data for 2021-2023 has shown that ambient SO_2 concentrations are relatively high in Richards Bay, with many exceedances of the 1-hour and 24-hour NAAQS. The additive effect of the contribution of SO_2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient SO_2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS.
- Monitoring data for 2021-2023 is not available for NO_2 in Richards Bay. Despite this, the additive effect of the contribution of NO_2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient NO_2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS.
- Monitoring data for 2021-2023 has shown that ambient PM_{10} concentrations are relatively high in Richards Bay because of high regional background concentrations, with one exceedance of the 24-hour NAAQS. The additive effect of the contribution of PM_{10} from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient PM_{10} concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS.
- Monitoring data for 2021-2023 is not available for CO in Richards Bay. Despite this, the additive effect of the contribution of CO from the proposed TNPA Power Generation

Project is predicted to be very small and the potential increase in ambient CO concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS.

Besides the proposed TNPA Power Generation Project, it is reasonable to expect that other electricity generation projects may operate in Richards Bay in the future. It is therefore relevant to assess the potential cumulative effects of such projects on ambient air quality in Richards Bay together with the proposed TNPA Power Generation Project. Six potential projects have been identified for the assessment of these cumulative impacts:

- RBGP2 400 MW Gas-to-Power Project
- Richards Bay Combined Cycle Power Plant (CCPP)
- Phinda 320 MW Emergency Risk Mitigation Power Plant (RMPP)
- Nseleni Independent Floating Power Plant (NIFPP)
- Phakwe RBGP3 2000 MW Gas-to-Power Project (RBGP3)
- Karpowership 450 MW Gas-to-Power Powership Project at the Port of Richards Bay

The following points are noteworthy:

- Emissions of SO_2, NO_X, PM_{10} and CO from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects will result in an increase in ambient concentrations of SO_2, NO_2, PM_{10} and CO.
- The significance of impact relating to emissions from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects is predicted to be medium (negative) for SO_2 because of predicted exceedances of ambient SO_2 concentrations when diesel is used as an emergency back-up fuel on the Richards Bay CCPP Project and low (negative) for NO_2, PM_{10} and CO.

Dust emissions were not estimated for the construction and decommissioning/closure phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during the construction and decommissioning/closure phase is therefore qualitative. The findings for both phases are similar.

- Dust generated in both phases are generally coarse and impacts manifest as a nuisance rather than a health issue.
- The magnitude of the impact is considered to be low.
- Activities are likely to endure for a maximum of 6-12 months and impacts may only occur during this period. The duration is therefore short-term.
- Dust emissions are released close to ground level with little or no buoyancy. This implies that their dispersion is limited and the extent of potential impacts will be limited to the proposed site.
- There is a low probability of potential impacts occurring as a result of the activities.
- The significance of the impact for the construction and decommissioning/closure phase on air quality is low (negative).

A summary of the air quality impact assessment is presented in Table E-4 in terms of consequence , likelihood or probability and significance. Consequence is a function of the severity, duration, and spatial scale of an impact. The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. The significance is a function of consequence and likelihood.

Table E-4: Air quality impact scores

Description	Pollutants	Consequence	Likelihood	Significance
Construction Phase	Dust	5	13	Low (-65)
Operational Phase: TNPA Power Generation Project in isolation	SO_2	7	13	Low (-91)
	NO_2	7	13	Low (-91)
	PM_{10}	7	13	Low (-91)
	CO	7	13	Low (-91)
Operational Phase: TNPA Power Generation Project with existing sources (cumulative)	SO_2	7	13	Low (-91)
	NO_2	7	13	Low (-91)
	PM_{10}	7	13	Low (-91)
	CO	7	13	Low (-91)
Operational Phase: TNPA Power Generation Project with other gas-to-power projects (cumulative)	SO_2	14	16	Medium (-224)
	NO_2	7	13	Low (-91)
	PM_{10}	7	13	Low (-91)
	CO	7	13	Low (-91)
Decommissioning Phase	Dust	5	13	Low – 65

Air quality management interventions in the form of the control of emission have been considered in all aspects of design and operation. Further emission reduction interventions are deemed to be unnecessary considering the low impact of the proposed project on air quality. From an air quality perspective, it is the reasonable opinion of the authors that the proposed TNPA Power Generation Project should be authorised considering the findings of this AIR.

GLOSSARY OF TERMS AND ACRONYMS

AEL	Atmospheric Emission Licence
AIR	Atmospheric Impact Report
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
EIA	Environmental Impact Assessment
g/s	Grams per second
kPa	Kilo Pascal
LNG	Liquefied Natural Gas
MES	Minimum Emission Standards
mg/Nm^3	Milligrams per normal cubic meter refers to emission concentration, i.e. mass per volume at normal temperature and pressure, defined as air at 20°C (293.15 K) and 1 atm (101.325 kPa)
NAAQS	National Ambient Air Quality Standards
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM-AQA	National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004)
ULM	Umhlatuze Local Municipality
USEPA	United States Environmental Protection Agency
µm	1 µm = Micro meter 1 µm = 10^{-6} m
WHO	World Health Organisation

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1. INTRODUCTION

Background

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay is one of the country's largest ports, with a total land and water surface of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for ensuring that the ports are economic hubs for the country while ensuring that they also comply with the South African Laws and Regulations which is governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The Port of Richards Bay is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. Approximately half of the Port of Richards Bay has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity.

Need and desirability of project

Eskom has a nominal generation capacity of over 45 000 Megawatt (MW); however, the power utility is challenged to supply the country's contracted demand of 22 500 MW. The ever-growing electricity demand with the lower generation capabilities has resulted in rolling power cuts that have severely affected business and port operations. It has become imperative for TNPA to provide reliable utility services such as electricity in a cost-effective and consistent manner.

The current electricity crisis could result in TNPA not fulfilling its responsibility of ensuring that the regulated services are provided and the shortage of electricity supply in the port can affect other basic services such as water supply and sewer. The Port of Richards Bay shows a significant future electricity demand requirement and in alignment with the Port Regulator's assertion that TNPA shall build capacity before demand, this would be necessary for guaranteed business continuity. Thus, it is appropriate that an interim solution be implemented to reduce the impact caused by load shedding and power shortages.

The current electricity demand for the Port of Richards Bay is 11 MW and in line with short-term port planning, it is anticipated that the future demand will be 17.9 MW. The Port of Richards Bay has approximately 10% of current available back-up and/or standby supply for current electricity demand, which is mainly used for offices and not operations, leaving a shortage of 90% of unsecured power and exposure of operational stand-still during load shedding. The South African power utility's strategy of increased levels of planned maintenance to improve reliability is putting additional strain on the plants availability and this strategy has not yielded visible benefits to date. The loss over a period of load shedding when the port is on a stand still have ripple effects on the chrome, ferro alloys, magnetite,

alumina, export coal, woodchips, sulphur, and import coal lines. Thus, this will have an impact on both internal and external stakeholders such as leasing tenants, Transnet Freight Rail (TFR) and Transnet Port Terminal (TPT). TNPA needs to secure electricity supply to its operations and stakeholders in the face of escalating scheduled power outages due to declining supply availability as well as the increasing unreliability from both Eskom and the Municipal electricity supply networks.

TNPA is therefore accelerating the introduction of renewable energy into the port systems, however there is a need for an immediate solution to be deployed within the 2023/24 Financial Year to avert the current Eskom risks and crisis that could cost TNPA billions of income per annum. The crisis does not only affect the business revenue but has a negative reputational impact and poses a safety concern due to lack of visibility as the ports' operations are continuous over a 24-hour period. Due to the electricity challenges faced by the port, the strategic interim solution implemented by TNPA is to procure and install a 22 MW output generator to support port operations. The installation of the generator in the Port of Richards Bay is registered under the Strategic Integrate Projects (SIP) of the Infrastructure Development Act (IDA), Act 23 of 2014.

GCS Environment South Africa (Pty) Ltd (GCS SA) was appointed by Transnet SOC Ltd to facilitate the required environmental authorisation in accordance with the requirements of the National Environmental Management Act (NEMA) (DEA, 2014a) and to undertake the required Environmental Impact Assessment (EIA). uMoya-NILU Consulting (Pty) Ltd was appointed by GCS SA to undertake the air quality specialist study and to prepare an Atmospheric Impact Report (AIR) according to the regulations prescribing the format and content of an AIR (DEA, 2013a).

The NEMA EIA Regulations of 2014 (as amended) specify the information that must be contained in a specialist study report (Appendix 6 (1) of the Regulations). Table A-1 in Annexure 1 indicates where this information is included in the AIR.

2. ENTERPRISE DETAILS

2.1 Detailed Project Description

2.1 Key components/infrastructure of the proposed development

The proposed development will entail the construction of the following key components/infrastructure within the existing port area (which are discussed in more detail below):

- A dual fuel generator for the electricity generation of 22 MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) with a total storage capacity of 600 m^3;
- The installation of a 200 m^3 tank for storage of demineralised water;

- Evacuation lines to the substations;
- Fencing for the proposed site;
- An auxiliary pit;
- A drain facility for used diesel and sludge;
- Installation of a transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the gas hub to the proposed generator site.

22 MW Generator

The generator is designed by General Electric (GE Gas Power) who are the Original Equipment Manufacturer (OEM). The generator is dual fuel and can operate on either diesel fuel or liquified natural gas (LNG). The generator model is TM2500+ GEN 4 (Figure 2-1), the latest generation of one of the world's most experienced, reliable gas turbine solutions.

The gas turbine is a General Electric Model TM2500 that is ISO rated for continuous duty and configured for operation on either natural gas or liquid fuel (diesel 50 ppm). Altitude, humidity and inlet and exhaust losses will affect power output, heat rate and fuel efficiency. In addition to the inlet air filter, the engine is equipped with a stainless-steel mesh screen in the inlet air stream for "last chance" protection against foreign object damage.

Figure 2-1: Generator model for TM2500+ GEN 4
(Source: https://www.aprenergy.com)

Diesel storage tanks

Diesel storage tanks(s) with a combined capacity of 600 m^3 will be installed on the proposed site to store diesel used by the generator. The tanks will be housed within a bunded facility and drains will be in place for possible spills.

Demineralised water storage

A water storage tank with a capacity of 200 m^3 will be installed on site to store demineralised water. The water will be used for the generator and therefore has to be demineralised to prevent a build-up of impurities which would decrease the lifetime of the generator.

Substation transmission lines

A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed to allow for power distribution within the port.

Auxiliary pit

An auxiliary pit will be constructed to manage noise emanating from the generator, and to mitigate noise impacts from the generator.

Fencing

Although access control is in place at the Port of Richards Bay, the generator area will be fenced off. The generator fence is mainly for the protection of the generator infrastructure and diesel; and is a safety requirement when working with high voltage equipment.

Installation of the liquid natural gas (LNG) pipeline

Pipelines for liquid natural gas (LNG) will be installed as a supporting fuel source for the generator. The generator can be fuelled with diesel or LNG. The LNG pipeline will be installed from the planned future distribution hub and would reduce the need for diesel which is a non-renewable fuel source. The pipelines would be buried where possible to prevent vandalism and theft. The installation of the pipeline will require vegetation removal. The disturbed areas would be revegetated at a later stage.

The possibility to use LNG as well as diesel ensures that there will be available resources to generate power even when there is a delay or problem sourcing one of the materials. There is an existing LNG distribution line situated in the Richards Bay Industrial Development Zone (RBIDZ) to which a pipeline will be connected.

2.1 Site location and infrastructure layout of the proposed development

The site location and infrastructure layout of the proposed TNPA Power Generation Project at the Port of Richards Bay is presented in Figure 2-2 and Figure 2-3 respectively.

Figure 2-2: Proposed site location of the TNPA Power Generation Project at the Port of Richards Bay

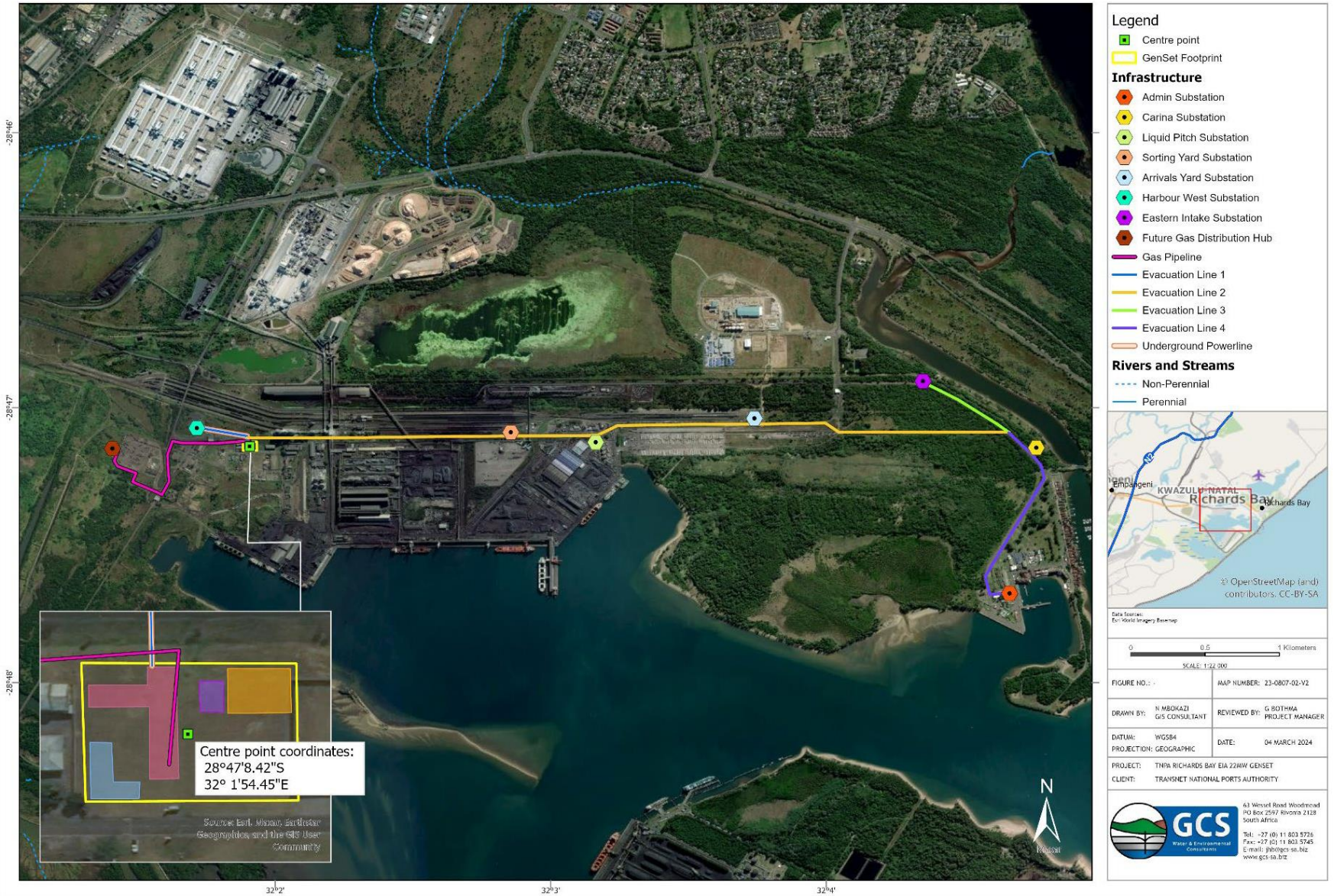

Figure 2-3: Infrastructure layout of the proposed TNPA Power Generation Project at the Port of Richards Bay

2.2 Enterprise Details

The enterprise details for the proposed TNPA Power Generation Project are listed in Table 2-1.

Table 2-1: Enterprise details

Entity Name:	Transnet National Ports Authority (TNPA)
Trading as:	Transnet National Ports Authority (TNPA)
Type of Enterprise, e.g. Company/Close Corporation/Trust, etc.:	Company
Company/Close Corporation/Trust Registration Number (Registration Numbers if Joint Venture):	1990/000900/30
Registered Address:	TNPA Administration Building, Port of Richards Bay, Alton, Richards Bay, South Africa
Postal Address:	P O Box 181, Richards Bay 3900, South Africa
Telephone Number (General):	035 905 3203
Fax Number (General):	No fax
Company Website:	https://www.transnetnationalportsauthority.net
Industry Type/Nature of Trade:	Energy generation
Land Use Zoning as per Town Planning Scheme:	Industrial
Land Use Rights if outside Town Planning Scheme:	N/A
Responsible Person:	Nosicelo Biyana
Emissions Control Officer:	Nosicelo Biyana
Telephone Number:	067 367 0110
Cell Phone Number:	067 367 0110
Fax Number:	No fax
Email Address:	Nosicelo.Biyana@transnet.net
After Hours Contact Details:	Cell phone and email as above

2.3 Location and extent of development

The proposed project is located at the Port of Richards Bay within the City of uMhlathuze Local Municipality and King Cetshwayo District Municipality in KwaZulu Natal, approximately 160 km to the north-east of Durban and 465 km south of Maputo. The proposed project site location falls within the main Port entrance and the Employee Care Centre in the Bayvue Precinct. The GPS coordinates for the proposed site are 28°47'8.42"S and 32° 1'54.45"E. The proposed location of proposed project site at the Port of Richards Bay is shown in Figure 2-2. Site information is listed in Table 2-2.

Table 2-2: Site information

Physical Address of the Licensed Premises:	Port of Richards Bay
Description of Site:	Port of Richards Bay
Property Registration Number (Surveyor-General Code):	Erf 397 of Township Richards Bay
Coordinates (latitude, longitude) Centre of Operations (Decimal Degrees):	TNPA Power Generation Project Dec. Deg.: Latitude: -28. 785672° Longitude: 32. 031792° TNPA Power Generation Project DDMMSS: Latitude: 28°47'8.42"S Longitude: 32° 1'54.45"E
Coordinates (UTM) Centre of Operations (UTM 35S):	TNPA Power Generation Project: X: 405500.27 m E (Easting) Y: 6815375.18 m S (Northing)
Extent (km²):	0.5 Ha
Elevation Above Mean Sea Level (m):	9.1 m
Province:	KwaZulu-Natal
District/Metropolitan Municipality:	King Cetshwayo District Municipality
Local Municipality:	Umhlatuze Local Municipality
Designated Priority Area (if applicable):	N/A

2.4 Description of surrounding land use (within 5 km radius)

The proposed TNPA Power Generation Project site which is located at the Port of Richards Bay is presented in Figure 2-4, showing the surrounding land use.

According to the USEPA, sensitive receptors include, but are not limited to, hospitals, schools, day care facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Extra care must be taken when dealing with contaminants and pollutants in close proximity to areas recognised as sensitive receptors.

Industrial areas may be classified as receptors, but not necessarily sensitive receptors. Higher pollutant concentrations are normally expected in industrial areas and this is reflected in the NAAQS (e.g. dust fallout limit value of 1 200 mg/m^2/day for industrial areas versus 600 mg/m^2/day for residential areas).

There are no residential areas at the Port of Richards Bay. The closest residential area to the proposed project site is Arboretum, which is located approximately 3 km to the northeast of the proposed project site. Arboretum is a moderately populated township. It is identified as a sensitive receptor due to the presence of schools, hospitals, crèches, and other similar facilities. Other residential areas include, Meer En See which is located approximately 6 km

to the west, Birdswood which is located 6.3 km to the northeast and Bhiliya which is located 8.5 km to the southwest of the proposed project site. Other residential areas are located much further away from the proposed project site.

2.5 Emission Control Officer

The TNPA Power Generation Project Emission Control Officer (ECO) is Nosicelo Biyana (Mobile: 067 367 0110 and Email: Nosicelo.Biyana@transnet.net).

2.6 Atmospheric Emission License (AEL) and other Authorisations

An Atmospheric Emissions Licence (AEL) nor any other authorisations have been issued for the proposed TNPA Power Generation Project (Table 2-3).

Table 2-3: Current authorisations related to air quality

Atmospheric Emission License	Date of Registration Certificate	Listed Activity Subcategory	Category of Listed Activity	Listed Activity Process Description
No record				

2.7 Modelling contractor

The dispersion modelling for this AIR is conducted by:

Company: uMoya-NILU Consulting (Pty) Ltd
Modellers: Dr Mark Zunckel and Atham Raghunandan
Contact details: Tel: 031 262 3265
Cell: 083 690 2728
email: mark@umoya-nilu.co.za or atham@umoya-nilu.co.za

See Annexure 2 for abridged CV's

Figure 2-4: Relative location of the proposed TNPA Power Generation Project site (the circle indicates a 5 km radius around the site (Google Earth, 2024)

2.8 Terms of Reference

The application for Environmental Authorisation for the proposed TNPA Power Generation Project requires the compilation of an Atmospheric Impact Report (AIR). To achieve this objective, the Terms of Reference are to:

- Prepare a Plan of Study report to provide an overview of the assessment process and submit this to the Licensing Authority for comment and input.
- Use available data and information to describe of current state of the receiving atmospheric environment. This description will consider meteorology, air quality and the surrounding land use. Data will be sourced from relevant authorities via the South African Air Quality Information System (SAAQIS), the Richards Bay Clean Air Association (RBCAA), and the South African Weather Service (SAWS).
- Provide an overview of the legal requirements including regulations under the NEM:AQA and the requirements for an Atmospheric Emission License from the licensing authority.
- Develop an atmospheric emission inventory for the proposed project. Compounds that are regulated will be included in the emission inventory. These include sulphur dioxide (SO_2), oxides of nitrogen (NO_X), PM_{10}, carbon monoxide (CO), total volatile organic compounds, including benzene, toluene, ethylbenzene and xylene (BTEX).
- The emission inventory and the estimation of emissions for the 22 MW Dual Fuel generator will be based on the process and plant design, fuel type, fuel consumption, emission factors and efficiency of the emission control devices. The US-EPA TANKS emission model will be used to estimate emissions from fuel storage.
- Predict ambient concentrations of the pollutants resulting from the emissions using the US-EPA approved and DEA recommended CALPUFF dispersion model and working according to the DEA guideline for dispersion modelling (DEA, 2012).
- Assess potential air quality impacts of emissions resulting from the proposed project and the implications for human health by evaluating model predicted ambient concentrations of the listed air pollutants with National Ambient Air Quality Standard (NAAQS) and/or internationally accepted air quality guidelines and standards. Impact assessment criteria provided by GCS will be used in the assessment.
- Assess cumulative impacts of the proposed project by considering existing ambient concentrations of air pollutants (available measured data) and the predicted concentrations (model results), i.e. the added effect of the proposed project to air quality currently experienced in the area.
- Prepare and submit a draft AIR to GCS for review with TNPA.
- Finalise the AIR.

2.9 Assumptions

The following assumptions are relevant to this AIR:

- No ambient monitoring is done in this assessment, rather available ambient air quality data is used.
- The assessment of potential human health impacts is based on model predicted ambient concentrations of SO_2, NO_2, PM_{10} and CO and the health-based National Ambient Air Quality Standards (NAAQS).

3. NATURE OF THE PROCESS

3.1 Listed Activity or Activities

As a measure to reduce emissions from industrial sources and to improve ambient air quality, Listed Activities and associated Minimum Emission Standards (MES) were initially published in 2010 in Government Notice 248 (DEA, 2010) with the most recent revision applicable in 2019 (Government Notice 867, DEA, 2019).

Liquid Fuel Combustion Installations used primarily for steam raising or electricity generation and gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation are Listed Activities. The storage of liquid fuels over a specified storage capacity is also a Listed Activity. Details of the Listed Activities are shown in Table 3-1. The MES for Listed Activity sub-categories are listed in Table 3-2 and Table 3-3.

The generation capacity of the gas turbine used for the proposed TNPA Power Generation Project is rated at 22 MW.

It must be noted that the combustion of liquid fuel for steam production or electricity generation; and the combustion of gaseous fuel for steam production or electricity generation in a turbine is applied to units with a capacity of more than 50 MW heat input per unit. The regulations for small boilers (DEA, 2013b) apply specifically to boilers with a heat input more than 10 MW, but less than 50 MW. It appears therefore that emission standards are not prescribed for gas turbines with a capacity of less than 50 MW.

Table 3-1: Details of the Listed Activity for the proposed TNPA Power Generation Project according to GN 248 (DEA, 2010) and its revisions (DEA, 2013c, 2019)

Category of Listed Activity	Sub-category of the Listed Activity and Description	Application of the Listed Activity
Category 1: Combustion Installations	1.2: Liquid Fuel Combustion Installations (Liquid fuels combustion installations used primarily for steam raising or electricity generation)	All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used
Category 1: Combustion Installations	Sub-category 1.4: Gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation	All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used
Category 2: Petroleum industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass	Sub-category 2.4: Storage and Handling of Petroleum Products (Petroleum products storage tanks and product transfer facilities)	All permanent immobile liquid storage facilities at a single site with a combined storage capacity greater than 1000 m^3.

Table 3-2: Minimum Emission Standards for Category 1 Listed Activities according to GN 248 (DEA, 2010) and its revisions (DEA, 2013c, 2019)

Substance or mixture of substances		Minimum Emission Standards (mg/Nm^3) under normal conditions of 15% O_2, 273 Kelvin and 101.3 kPa.
Common name	**Chemical symbol**	
1.2: Liquid fuel combustion installation		
Particulate matter	N/A	50
Sulphur dioxide	SO_2	500
Oxides of nitrogen[a]	NO_X	250
1.4: Gas combustion installation		
Particulate matter	N/A	10
Sulphur dioxide	SO_2	400
Oxides of nitrogen[a]	NO_X	50
a: expressed as NO_2		

Table 3-3: Minimum Emission Standards for Category 2 Listed Activities according to GN 248 (DEA, 2010) and its revisions (DEA, 2013c, 2019)

2.4: Storage and Handling of Petroleum Products			
Application		All permanent immobile liquid Storage facilities at a single site with a combined storage capacity of greater than 1 000 m^3	
True vapour pressure of contents at product storage temperature		**Type of tank or vessel**	
Type 1: Up to 14 kPa		Fixed-roof tank vented to atmosphere, or as per Type 2 and 3	
Type 2: Above 14 kPa and up to 91 kPa with a throughput of less than 50 000 m^3 per annum		Fixed-roof tank with Pressure Vacuum Vents fitted as a minimum, to prevent "breathing" losses, or as per Type 3	
Type 3: Above 14 kPa and up to 91 kPa with a throughput greater than 50 000 m^3 per annum		a) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20 m, or b) fixed-roof tank with internal floating deck / roof fitted with primary seal, or c) fixed-roof tank with vapour recovery system.	
Type 4: Above 91 kPa		Pressure vessel	
Description:		**Vapour Recovery Units**	
Application:		**All loading/ offloading facilities with a throughput greater than 50 000 m^3**	
Substance or mixture of substances		**Plant status**	**mg/Nm^3 under normal conditions of 273 Kelvin and 101.3 kPa**
Common Name	**Chemical Symbol**		
Total volatile organic compounds from vapour recovery/ destruction units using thermal treatment	N/A	New	150
		Existing	150
Total volatile organic compounds from vapour recovery/ destruction units using non-thermal treatment	N/A	New	40 000
		Existing	40 000

3.2 Process Description

3.2.1 Diesel

Diesel is distilled from crude oil and is refined until it is 'clean' enough to use in engines. Diesel consist primarily of hydrocarbons with smaller amounts of hydrogen, nitrogen, sulphur, and volatile organic compounds. Diesel has a sulphur content of 500 ppm or less. Combustion of diesel results in emissions of sulphur dioxide (SO_2), oxides of nitrogen (NO and NO_2, referred to as NO_X), particulates and carbon monoxide (CO).

3.2.2 Liquefied natural gas (LNG)

Natural gas used for energy generation is primarily methane, with low concentrations of other hydrocarbons, water, carbon dioxide, nitrogen, oxygen and some sulphur compounds. Liquefied Natural Gas (LNG) is natural gas which has been cooled below its boiling point of minus 161 °C in a process known as liquefaction. The process of liquefaction involves extracting most of the impurities in raw natural gas. The remaining natural gas is primarily methane with only small amounts of other hydrocarbons and consequently is widely considered a clean fossil fuel.

3.2.3 Power generation

The dual-fuel generator proposed for the TNPA Power Generation Project can operate on either diesel fuel or liquified natural gas (LNG). A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed to allow for power distribution within the port.

A flow diagram for power generation with gas turbine power generators is shown in Figure 3-1. A gas turbine mixes compressed air with either natural gas or liquid fuels (diesel or aviation fuel) then ignites it, producing high-speed exhaust gases that rotate turbine blades connected to a shaft that powers a generator or other machinery. Although the operations of a gas turbine are complex, there are three essential parts: the compressor, the combustion system, and the turbine. The compressor, which draws air into the engine, pressurizes it, and feeds it to the combustion chamber at speeds of hundreds of kilometres per hour. The combustion system is typically made up of a ring of fuel injectors that inject a steady stream of fuel into combustion chambers where it mixes with the air. The mixture is burned at temperatures of more than 1 000 degC. The combustion produces a high temperature, high pressure gas stream that enters and expands through the turbine section. The turbine is an intricate array of alternate stationary and rotating aerofoil-section blades. As hot combustion gas expands through the turbine, it spins the rotating blades. The rotating blades perform a dual function: they drive the compressor to draw more pressurized air into the combustion section, and they spin a generator to produce electricity.

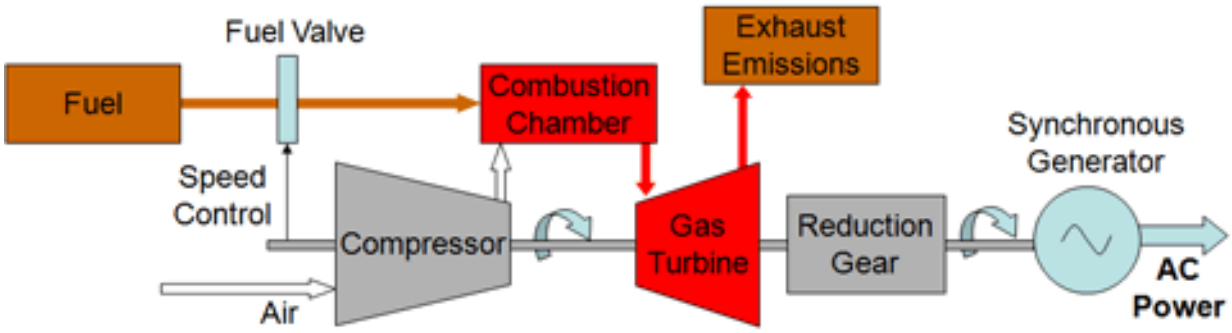

Figure 3-1: A flow diagram for power generation with gas turbine power generators used in simple system configuration consisting of the gas turbine driving an electrical power generator

3.2.4 Air pollutants resulting from the process

3.2.4.1 Overview

The quantity and nature of emissions to the atmosphere from diesel and LNG combustion depends on the quality of the fuel, fuel consumption, the combustion device, and the air pollution control devices.

The main pollutants resulting from the combustion of diesel are oxides of nitrogen (NO_X), total organic compounds (TOCs), carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants which include hydrocarbons, CO and smoke are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulphur oxides (SO_X) also appear in the exhaust. The sulphur compounds, mainly sulphur dioxide, are directly related to the sulphur content of the fuel.

The combustion of LNG results in gaseous emissions of sulphur dioxide (SO_2), oxides of nitrogen ($NO + NO_2 = NO_X$), carbon monoxide (CO), and some particulate matter (PM). SO_2 is produced from the combustion of sulphur in the LNG. NO_X is produced from thermal fixation of atmospheric nitrogen in the combustion flame and from oxidation of nitrogen bound in the LNG. The quantity of NO_x produced is directly proportional to the temperature of the flame. The non-combustible portion of the fuel remains as solid waste and emitted as PM.

Carbon dioxide (CO_2) is the main greenhouse gas resulting from diesel and LNG combustion. CO_2 emissions are considered in the Carbon Footprint assessment.

3.2.4.2 National Ambient Air Quality Standards

The effects of air pollutants on human health occur in different ways of ways with short-term, or acute effects, and chronic, or long-term, effects. Different groups of people are affected differently, depending on their level of sensitivity, with the elderly and young children being more susceptible. Factors that link the concentration of an air pollutant to an observed health effect are the concentration and the duration of the exposure to that particular air pollutant.

Criteria pollutants occur ubiquitously in urban and industrial environments. Their effects on human health and the environment are well documented by the World Health Organisation (WHO) (e.g. WHO, 1999; 2003; 2005). South Africa has accordingly established NAAQS for SO_2, NO_2, CO, and respirable particulate matter (PM_{10}), amongst others (DEA, 2009).

The NAAQS consists of a 'limit' value and a permitted frequency of exceedance. The limit value is the fixed concentration level aimed at reducing the harmful effects of a pollutant. The permitted frequency of exceedance represents the acceptable number of exceedances of the limit value expressed as the 99^{th} percentile. Compliance with the ambient standard implies that the frequency of exceedance of the limit value does not exceed the permitted tolerance.

Being a health-based standard, ambient concentrations below the standard imply that air quality poses an acceptable risk to human health, while exposure to ambient concentrations above the standard implies that there is an unacceptable risk to human health. The NAAQS for SO_2, NO_2, PM_{10}, $PM_{2.5}$ and benzene are presented in Table 3-4.

Table 3-4: NAAQS for pollutants relevant to the TNPA Power Generation Project

Pollutant	Averaging period	Limit value (µg/m³)	Tolerance
SO_2	1-hour	350	88
	24-hour	125	4
	Annual	50	0
NO_2	1-hour	200	88
	Annual	40	0
PM_{10}	24-hour	75	4
	Annual	40	0
$PM_{2..5}$	24 hour	40	0
	Annual	20	0
CO	1-hour	30 000	88
	8-hour running mean	10 000	11
Benzene	Annual	5	0

CO_2 is a Greenhouse Gas and ambient air quality standards do not apply. However, it is a priority pollutant (DEA, 2016). Emissions must be accounted for and reported. CO_2 emissions are considered in the Carbon Footprint assessment.

3.2.4.3 Air pollutants and health implications

The path of exposure to air pollutants is inhalation, although some exposure may occur through dermal contact with surfaces where air pollutants settle. The sections below provide a short literature review of air pollutants from an air quality and human health perspective. Note that the text below is for general background information and is not related directly to the proposed TNPA Power Generation Project.

Sulphur dioxide (SO_2)

Dominant sources of SO_2 include fossil fuel combustion from industry and power plants. SO_2 is emitted when coal is burnt for energy. The combustion of fuel oil also results in high SO_2 emissions. Domestic coal or kerosene burning can thus also result in the release of SO_2. Motor vehicles also emit SO_2, in particular diesel vehicles due to the higher sulphur content of diesel fuel. Smelting of mineral ores can also result in the production of SO_2, because metals usually exist as sulphides within the ore.

On inhalation, most SO_2 only penetrates as far as the nose and throat, with minimal amounts reaching the lungs, unless the person is breathing heavily, breathing only through the mouth, or if the concentration of SO_2 is high (CCINFO, 1998). The acute response to SO_2 is rapid, within 10 minutes in people suffering from asthma (WHO, 2005). Effects such as a reduction in lung function, an increase in airway resistance, wheezing and shortness of breath, are enhanced by exercise that increases the volume of air inspired, as it allows SO_2 to penetrate

further into the respiratory tract (WHO, 1999). SO_2 reacts with cell moisture in the respiratory system to form sulphuric acid. This can lead to impaired cell function and effects such as coughing, broncho-constriction, exacerbation of asthma and reduced lung function. For example an exposure of 5 to 10 min to 200 to 300 ppb (520 to 780 µg/m^3) may reduce lung function (measured as Forced Expiratory Volume in the first second (FEV_1)) by more than 15% (US-EPA, 2009). There is however, uncertainty about exposure-response effects below concentrations of 200 ppb (520 µg/m^3). For SO_2 exposure short-term peak concentrations are therefore important (US-EPA, 2009). Re-analysis of the effects of SO_2 done post-2005 has found evidence suggesting that the departure point for setting the 10-minute guideline needs an additional uncertainty factor, indicating that the guideline may have to be lowered when it is re-evaluated (WHO, 2013).

Nitrogen dioxide (NO_2)

Nitrogen dioxide (NO_2) and nitric oxide (NO) are formed simultaneously in combustion processes and other high temperature operations such as metallurgical furnaces, blast furnaces, plasma furnaces, and kilns. NO_X is a term commonly used to refer to the combination of NO and NO_2. NO_X can also be released from nitric acid plants and other types of industrial processes involving the generation and/or use of nitric acid. NO_X also forms naturally through de-nitrification by anaerobic bacteria in soils and plants. Lightning is also a source of NO_X.

The route of exposure to NO_2 is inhalation and the seriousness of the effects depend more on the concentration than on the length of exposure. The site of deposition for NO_2 is the distal lung where NO_2 reacts with moisture in the fluids of the respiratory tract to form nitrous and nitric acids. About 80 to 90% of inhaled nitrogen dioxide is absorbed through the lungs (CCINFO, 1998). Nitrogen dioxide (present in the blood as the nitrite ion) oxidises unsaturated membrane lipids and proteins, which then results in the loss of control of cell permeability. Nitrogen dioxide causes decrements in lung function, particularly increased airway resistance. Inflammatory reactions were observed at NO_2 concentrations between 200 and 1000 ppb (380 to 1880 µg/m^3) when individuals were exposed under controlled conditions for periods that varied between 15 minutes and six hours (WHO, 2013). However, the results had been inconsistent below 1000 ppb but were much more evident at concentrations higher than 1000 ppb (1880 µg/m^3) (WHO, 2013). Below 1000 ppb healthy individuals did not show inflammatory reactions and for those with respiratory diseases (asthma and chronic obstructive pulmonary disease), inflammation was not induced below 600 ppb, except for one study that reported individuals responded at 260 ppb (500 µg/m^3) (Hesterberg et al., 2009). A review study (on 50 publications) published in 2009 by Hesterberg et al. focussed on short-term exposure to NO_2 and adverse health effects on humans. The authors came to the conclusion that a short-term exposure standard of not more than 200 ppb would protect all individuals, including sensitive individuals. People with chronic respiratory problems and people who work or exercise outside will be more at risk to NO_2 exposure.

Chronic exposure to NO_2 increases susceptibility to respiratory infections (WHO, 1997).

However, a review study of 50 publications found no consistent evidence that short-term exposure below 200 ppb increased susceptibility to viral infections (Hesterberg et al., 2009).

The WHO has reviewed studies published between 2004 and 2011 on adverse health effects after short-term and long-term exposure to NO_2 (WHO, 2013). The health effects from short-term exposure are more evident than from long-term (chronic) exposure, because in many studies a high correlation was found between NO_2 and other pollutants (WHO, 2013). However, some epidemiology studies suggested an association between NO_2 and respiratory mortality and an association with respiratory effects in children, including effects on children's lung function (WHO, 2013).

Particulate Matter

Particulate Matter (PM) is a broad term used to describe the fine particles found in the atmosphere, including soil dust, dirt, soot, smoke, pollen, ash, aerosols and liquid droplets. With PM, it is not just the chemical composition that is important but also the particle size. Particle size has the greatest influence on the behaviour of PM in the atmosphere with smaller particles tending to have longer residence times than larger ones. PM is categorised, according to particle size, into TSP, PM_{10} and $PM_{2.5}$.

Total suspended particulates (TSP) consist of all particles smaller than 100 µm suspended within the air. TSP is useful for understanding nuisance effects of PM, e.g. settling on houses, deposition on and discolouration of buildings, and reduction in visibility.

PM_{10} describes all particulate matter in the atmosphere with a diameter equal to or less than 10 µm. Sometimes referred to simply as coarse particles, they are generally emitted from motor vehicles, factory and utility smokestacks, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood. Natural sources include sea spray, windblown dust and volcanoes. Coarse particles tend to have relatively short residence times as they settle out rapidly and PM_{10} is generally found relatively close to the source except in strong winds.

$PM_{2.5}$ describes all particulate matter in the atmosphere with a diameter equal to or less than 2.5 µm. They are often called fine particles, and are mostly related to combustion (motor vehicles, smelting, incinerators), rather than mechanical processes as is the case with PM_{10}. $PM_{2.5}$ may be suspended in the atmosphere for long periods and can be transported over large distances. Fine particles can form in the atmosphere in three ways: when particles form from the gas phase, when gas molecules aggregate or cluster together without the aid of an existing surface to form a new particle, or from reactions of gases to form vapours that nucleate to form particles.

Particulate matter may contain both organic and inorganic pollutants. The extent to which particulates are considered harmful depends on their chemical composition and size, e.g. particulates emitted from diesel vehicle exhausts mainly contain unburned fuel oil and hydrocarbons that are known to be carcinogenic. Very fine particulates pose the greatest

health risk as they can penetrate deep into the lung, as opposed to larger particles that may be filtered out through the airways' natural mechanisms.

In normal nasal breathing, particles larger than 10 µm are typically removed from the air stream as it passes through the nose and upper respiratory airways, and particles between 3 µm and 10 µm are deposited on the mucociliary escalator in the upper airways. Particles in the range of 1 µm to 2 µm penetrate deeper where deposition in the alveoli of the lung can occur (WHO, 2003). Coarse particles (PM_{10} to $PM_{2.5}$) can accumulate in the respiratory system and aggravate health problems such as asthma. $PM_{2.5}$, which can penetrate deeply into the lungs, are more likely to contribute to the health effects (e.g. premature mortality and hospital admissions (WHO, 2003).

The WHO has reviewed many studies since 2005 to update information on health effects on PM (WHO, 2013). Studies have once again confirmed that PM (not only PM_{10} but fine and ultra-fine PM as well), has short and long-term (both immediate and delayed) adverse health effects such as cardiovascular effects, but new associations with diseases such as atherosclerosis (thickening of artery walls), birth defects and respiratory illness in children have also been found (WHO, 2013). In addition, some studies have suggested a possible link between PM and diabetes and effects on the central nervous system (WHO, 2013). The increase in daily mortality (between 0.4% and 1%) from exposure to PM_{10} was also confirmed in several studies since 2005 (WHO, 2013).

Carbon monoxide

CO is an odourless, colourless and toxic gas. People with pre-existing heart and respiratory conditions, blood disorders and anaemia are sensitive to the effects of CO. Health effects of CO are mainly experienced in the neurological system and the cardiovascular system (WHO, 1999). The binding of CO with haemoglobin reduces the oxygen-carrying capacity of the blood and impairs the release of oxygen from haemoglobin to extravascular tissues. These are the main causes of tissue hypoxia produced by CO at low exposure levels. The toxic effects of CO become evident in organs and tissues with high oxygen consumption such as the brain, the heart, exercising skeletal muscle and the developing fetus.

Benzene

Benzene (C_6H_6) is a natural component of crude oil, petrol, diesel and other liquid fuels and is emitted when these fuels are combusted. Diesel exhaust emissions therefore contain benzene. After exposure to benzene, several factors determine whether harmful health effects will occur, as well as the type and severity of such health effects. These factors include the amount of benzene to which an individual is exposed and the length of time of the exposure. For example, brief exposure (5–10 minutes) to very high levels of benzene (14000 – 28000 µg/m^3) can result in death (ATSDR, 2007). Lower levels (980 – 4200 µg/m^3) can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion and unconsciousness. In most cases, people will stop feeling these effects when they are no longer exposed and begin to breathe fresh air. Inhalation of benzene for long periods may

result in harmful effects in the tissues that form blood cells, especially the bone marrow. These effects can disrupt normal blood production and cause a decrease in important blood components. Excessive exposure to benzene can be harmful to the immune system, increasing the chance for infection. Both the International Agency for Cancer Research and the US-EPA have determined that benzene is carcinogenic to humans as long-term exposure to benzene can cause leukaemia, a cancer of the blood-forming organs.

3.3 Unit Processes

The proposed TNPA Power Generation Project at the Port of Richards Bay will comprise the gas turbine, start-up diesel generator, LNG regasification unit, the LNG/CNG and diesel pipelines, the LNG/CNG and diesel tanker trucks, LNG/CNG and diesel storage tanks and lubricating oil storage tank. The unit processes that apply to the proposed project are listed in Table 3-5.

Table 3-5: Unit processes for the TNPA Power Generation Project

Name of the Unit Process	Unit Process Function	Batch or Continuous
22 MW Gas Turbine 1	Generation of electricity	Continuous
Start-up Diesel Generator	Gas turbine kick-start	Batch
LNG Regasification Unit 1	Conversion of LNG to NG	Continuous
LNG/CNG Tanker Truck Receiving	Receiving LNG/CNG via road tankers	Batch
LNG/CNG Pipeline Receiving	Receiving LNG/CNG via pipeline	Batch
LNG/CNG Storage Tank 1-4	Storage of LNG/CNG	Continuous
Diesel Tanker Truck Receiving	Receiving diesel via road tankers	Batch
Diesel Pipeline Receiving	Receiving diesel via pipeline	Batch
Diesel Storage Tank 1	Storage of diesel	Continuous
Lubricating Oil Storage Tank	Storage of lubricating oil	Continuous

4. TECHNICAL INFORMATION

4.1 Raw Materials Used

The proposed TNPA Power Generation Project will use diesel or LNG to generate 22 MW of electricity, depending on fuel-type availability. The raw materials consumption rate, production rate and the energy consumption are listed in Table 4-1 to Table 4-3. No by-products are produced.

Table 4-1: Raw material used by the proposed TNPA Power Generation Project

Material Type	Maximum consumption rate	Units
Diesel[1]	51 719	tonnes/annum
LNG[2]	45 819	tonnes/annum
Lubricating oil	XXX	tonnes/annum

1: Based on diesel-fired option 2: Based on gas-fired option

Table 4-2: Production rate

Product	Maximum production rate	Units
Electricity	22	MW

Table 4-3: Energy sources used

Energy source	Sulphur content of fuel (%)	Ash content of fuel (%)	Maximum consumption rate	Units
Diesel	xxx	xxx	51 719	tonnes/annum
LNG	xxx	xxx	45 819	tonnes/annum
Electricity	-	-	xxx	MWh/annum

4.2 Appliances and Abatement Equipment Control Technology

Most technologies, including diesel technology, goes through iterations of continuous improvement. The refining sector is continuously seeking ways to reduce sulphur content, thereby further lowering the sulphur content. Notably, low sulphur diesel (50 ppm) has greatly reduced sulphur dioxide and particulate matter emissions, both of which play a major role in air pollution. LNG is regarded as one of the most clean fuels, with very low SO_2 and particulate emissions. No emission abatement will be installed for the control of SO_2 and particulate emissions on the gas turbine.

The quantity of NO_X produced is directly proportional to the temperature of the process. The generator will be fitted with a water injection metering system to reduce NO_X emissions for gaseous fuel (LNG in this case) or liquid fuel (diesel in this case) operation. This is known as Direct Water Injection (DWI) (Table 4-4). Demineralised water is injected into the combustor through ports in the fuel nozzles to produce NO_X suppression. Water is supplied to the nozzles by a special water manifold. Water injection can reduce NO_X emissions to 25 ppm (51 mg/Nm^3) for gaseous fuels and to 42 ppm (86 mg/Nm^3) for liquid fuels.

Table 4-4: Appliances and abatement equipment and control technology

Appliance Name	Appliance Type/Description	Appliance Function/Purpose
Direct Water Injection	This is a method used for reduction of NO_X emissions by the injection of water directly into the combustion chamber via a separate nozzle. The key element in the design concept is the combined injection valve through which both fuel and water are injected. One needle in the combined nozzle is used for water injection, and the other one for fuel injection. Water injection starts before fuel injection in order to cool down the combustion space to ensure low NO_X formation before fuel ignition.	Control of NO_X emissions

5. ATMOSPHERIC EMISSIONS

5.1 Point Source Parameters

The proposed TNPA Power Generation Project will be located at approximately -28.785672°; 32. 031792° at the Port of Richards Bay. The generator will have a single stack which will be located at approximately -28.785529°; 32.031688° and a base elevation of approximately 9.1 m above mean sea level. Stack parameters are shown in Table 5-1.

Table 5-1: Stack parameters

Source name	Stack Height (m)	Stack Diameter (m)	Stack Exit Velocity (m/s)	Stack Temp. (°C)	Stack Flowrate (Am^3/hr)	Stack Flowrate (Nm^3/hr)
Stack 1 (diesel-fired option)	27.43	2.59	30.48	543.50	564 911	197 580
Stack 1 (gas-fired option)	27.43	2.59	30.48	526.49	564 495	201 471

5.2 Point Source Maximum Emission Rates (Normal Operating Conditions)

Emission rates from the point source (stack) are presented in Table 5-2.

Table 5-2: Stack emission concentrations (mg/Nm³) and emission rates (tonnes/annum) for the diesel-fired and gas-fired option

Substance	Emission concentration (mg/Nm³)	Emission rate (tonnes/annum)	Listed Activity sub-category
SO_2	500	865.40	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	400	705.96	1.4: Gas combustion (gas-fired option)
NO_X	250	432.70	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	50	88.24	1.4: Gas combustion (gas-fired option)
PM_{10}	50	86.54	1.2: Liquid Fuel Combustion Installations (diesel-fired option)
	10	17.65	1.4: Gas combustion (gas-fired option)
CO*	65.9	114.06	diesel-fired option (Not stipulated in MES)
	132.2	233.32	gas-fired option (Not stipulated in MES)

* CO emission data provided by General Electric via TNPA

The annual emissions presented above assume that operations are continuous, i.e. 24 hours per day for 365 days. This is a worst-case assumption as operations are likely to be for a few hours per day, during emergency situations, which is mainly during loadshedding or in the event of power failures.

5.3 Point Source Maximum Emission Rates (Start Up, Shut-Down, Upset and Maintenance Conditions)

It is expected that the generator will only be used during emergency situations, which is mainly during loadshedding or in the event of power failures. It is therefore uncertain how many start-up and shutdown events could be required.

Emission from start-up, shut-down and upset conditions depend on a wide variety of factors, including the generation technology, fuel consumption, and the frequency of events. Information is not available at this early stage, so the emission and emission profile have been excluded from this assessment. It must be noted that a start-up diesel generator will be used to kick-start the gas turbine into operation, implying that it will not be operated for more than 5 minutes.

The generator that will be used for the proposed TNPA Power Generation Project is designed for maximum efficiency during start-up and shutdown. General Electric gas turbines offer ultra-fast, non-spinning grid reserve for any contingency situation or grid black start. They can generate electricity for the TNPA grid speedily from start-up and reach full load in less than 10 minutes. They are designed to start and stop at the push of a button.

The gas turbine, using diesel or LNG during start-up and ramp-up to full power takes a maximum of 10 minutes. It is not possible with the available dispersion models to assess or predict ambient concentrations during the 10-minute start-up. Only SO_2 has a 10-minute standard. Model predicted SO_2 concentrations resulting from both the diesel-fired and gas-fired model simulations have been shown to be extremely low. Based on the low model predicted results, emissions of SO_2, NO_X, PM_{10} and CO during the 10-minute start-up are not expected to exceed the MES or result in exceedances of the NAAQS. Shutdown is instantaneous, equating to switching off the generator. Emissions to the atmosphere will stop immediately.

Planned maintenance will be done routinely, as per manufacturers specifications.

5.4 Fugitive Emissions

For the purposes of this assessment, emissions from the following components of the proposed project are regarded as fugitive emissions:

- Storage of diesel and lubricating oil at the proposed project site:
    - Fugitive emission will result from the handling and storage of diesel and lubricating oil. Diesel and lubricating oil have a very low Reid vapour pressure (< 1 kPa). According to the special arrangements for the fuel storage (DEA, 2010), products with a vapour pressure up to 14 kPa must be stored in a fixed roof tank which vents to the atmosphere (see Table 3-3).
    - Emissions of VOCs from fixed roof tanks are from standing storage losses and working losses. Standing storage loss is the expulsion of vapour from tanks through vapour expansion and contraction, which is the result of changes in temperature and barometric pressure. This loss occurs without any change in liquid level in the tank. The loss from filling and emptying the tank is called working loss. Evaporation during filling operations is a result of an increase in the liquid level in the tank. As the liquid level increases, the pressure inside the tank exceeds the relief pressure and vapours are expelled from the tank. Evaporative loss during emptying occurs when air drawn into the tank during liquid removal becomes saturated with organic vapour and expands, thus exceeding the capacity of the vapour space.
    - It is expected that VOC emissions from the storage of diesel and lubricating oil at the proposed project site will be negligible, considering that both diesel and lubricating oil will be stored in fixed roof storage tanks and both have a low vapour pressure. Emissions from diesel storage tanks are therefore not considered in this assessment.
- Storage of LNG with associated regasification unit at the proposed project site:

  - It is expected that VOC emissions from the storage of LNG and the associated regasification unit will be negligible. Emissions from LNG storage and transfer are therefore not considered in this assessment.
- Diesel and of LNG pipeline at the proposed project site:
  - It is expected that VOC emissions from pipelines bringing diesel and LNG to the proposed project site will be negligible. Emissions from pipelines are therefore not considered in this assessment.
- Start-up diesel generator:
  - It is expected that exhaust emissions of SO_2, NO_X, PM_{10} and CO from the start-up generator will be negligible, and is therefore not considered in this assessment.
- Transport of diesel and LNG by road tanker trucks from the fuel depot to the proposed project site:
  - Truck exhaust emissions from the main road to the proposed project site are presented in Table 5-3. Emissions are based on a worst-case scenario where 4-5 tanker trucks are expected to deliver diesel or LNG on a daily basis. It is evident that emissions are very small, and therefore have not been included in the dispersion modelling.

Table 5-3: Fugitive emissions (kg/annum) from truck exhaust

Fugitive Source	SO_2	NO_X	PM_{10}	CO
Truck Exhaust	0.13	9.68	0.20	1.75

- Transfer of diesel from road tanker trucks or from onsite storage tanks to generator fuel line:
  - VOC and BTEX emissions during transfer of diesel into generator fuel line at the proposed project site are presented in Table 5-4. Emissions are based on a worst-case scenario where it is assumed that the generator will be operating continuously. It is evident that emissions are very small, and therefore have not been included in the dispersion modelling.

Table 5-4: Fugitive emissions (kg/annum) during diesel fuel transfer

Fugitive Source	VOC	Benzene	Toluene	Ethyl-benzene	Xylene
Diesel fuel transfer	0.14	0.000001	0.000045	0.000018	0.000408

5.5 Emergency Incidents

The project is being proposed. Therefore no emergency incidents have occurred.

6. IMPACT OF ENTERPRISE ON THE RECEIVING ENVIRONMENT

6.1 Baseline conditions

6.1.1 Climate and meteorology

The Richards Bay climate is best described by the South African Weather Bureau (now South African Weather Service) long-term climate statistics (SAWB, 1992 and 1998). The Richards Bay region has a warm temperate climate and the temperature range is not extreme, although high temperatures can occur during summer. Averages of daily minimum, maximum and mean temperatures, and average monthly rainfall are presented in Figure 6-1. The average summer maximums exceed 27 °C from December to March, when it is also very humid. Winters are mild with average minimum temperatures of 14 °C in June and July (SAWS, 1998). The average annual rainfall at Richards Bay is 1 212 mm (SAWB, 1992). The majority of rainfall occurs from late September to March and this period is usually associated with convective summer storms. The winter rainfall is not uncommon and associated with the passage of cold fronts.

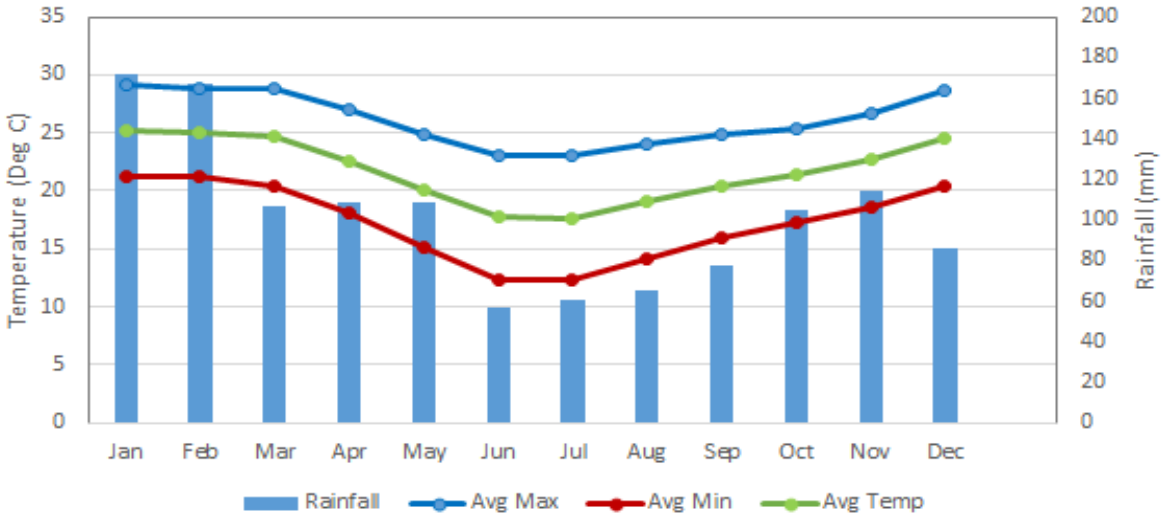

Figure 6-1: Average monthly maximum, minimum and daily temperature at Richards Bay (SAWB, 1992) and the average monthly rainfall (in mm) (SAWB, 1998)

The South African Weather Services (SAWS) station at the Richards Bay Airport provides a good representation of the prevailing wind direction across the region. The windrose at Richards Bay Airport for a 5-year period 1 January 2010 to 31 December 2014 is shown in Figure 6-2. Wind roses simultaneously depict the frequency of occurrence of wind from the 16 cardinal wind directions and wind speed classes, for a single site. Wind direction is given as the direction from which the wind blows, i.e., southwesterly winds blow from the

southwest. Wind speed is given in meters per second (m/s), and each arc represents a percentage frequency of occurrence (5% in this case).

The predominant winds are associated with the Indian Ocean high pressure system and its seasonal movement relative to Richards Bay, with coastal lows and the passage of frontal systems having some influence. The winds are generally aligned with the coastline, and at Richards Bay winds occur predominantly in the sector north to north-northeast and in the sector south to southwest. 32% of all winds occur from the northerly sector. Most of these winds are light to moderate with just 6% exceeding 8.8 m/s. The winds from the south to south-west account for 17% of all winds. While these winds are generally light to moderate, they are strong at times and exceed 11.1 m/s on occasions. These strong winds are usually associated with the passage of deep coastal lows ahead of cold frontal systems.

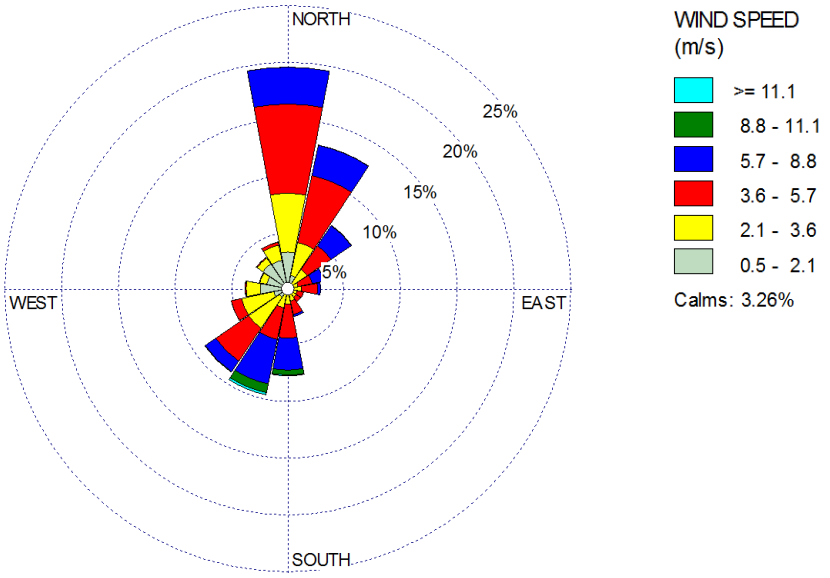

Figure 6-2: Annual wind rose for Richards Bay Airport, for 2010 to 2014 (SAWB, 1998)

The windrose also indicates mesoscale time land and sea breeze circulation. The land breeze is shown by the light off-shore winds from the west and northwest. These occur mostly at night time in the winter. The sea breeze is also a winter time feature and is shown by the onshore easterly to northeasterly winds. The sea breeze is a daytime feature and is somewhat stronger than the land breeze.

The poorest atmospheric dispersion conditions occur with inversion conditions and calm or light winds. Greater surface cooling in winter is conducive to the formation of surface temperature inversions and a shallow mixing layer, particularly at night. Pollutants that are released into the inversion layer are typically trapped between the surface and the top of the inversion. Under light wind conditions, pollutants will tend to accumulate. It is under these conditions for May to August when the highest ground level concentrations of pollutants may be expected in the area.

6.1.2 Ambient Air Quality

6.1.2.1 Long-term trends

The Richards Bay Clean Air Association (RBCAA, http://www.rbcaa.org.za/) has undertaken ambient air quality monitoring in the area since 2004, measuring SO_2 and PM_{10}. Okello et al. (2018) used the RBCAA data to describe air quality in the Richards Bay area over the period 2004 to 2017. Findings from this comprehensive analysis are highlighted here.

PM_{10} monitoring data indicates a downward trend at 4 stations (Brakenham, CBD, Esikhaleni and Felixton) (Figure 6-3). Mtunzini and St. Lucia, the reference sites, had upward trends. The CBD and Brakenham have higher PM_{10} values compared to the other stations. All measurements were within the stipulated NAAQS annual average limit of 50 $\mu g/m^3$.

Esikhaleni is a highly populated area with mostly low income households and fewer industries compared to areas around the CBD. The source of PM_{10} are different and are likely to be indoor compared to outdoor. St. Lucia and Mtunzini were the reference site with PM_{10} levels averaging at 20.8 $\mu g/m^3$ and 22.3 $\mu g/m^3$ respectively. This is deemed to be a good indication of the background PM_{10} concentration of the whole study area as both sites are relatively unaffected by local sources. The background in both cases is above the WHO guideline value indicating the potential contribution of other sources such as pollen and sea salts.

SO_2 measurements in all seven monitoring stations where data was available was within the NAAQS of 50 $\mu g/m^3$ (Figure 6-4). Downward trends were observed in Arboretum, Brakenham, CBD and Felixton. Harbour West had no observable trend. Esikhaleni showed an upward trend although with ambient concentrations well below the annual limit value. Scorpio had the least favourable SO_2 trends attributable to their close vicinity to industry.

Data taken over the long term (1997 to 2017) for SO_2 indicate a slightly upward trend. From 2013 to 2017 however, a significant downward trend is observed. The Scorpio and Harbour West Stations have consistently been above the 20-year average. This can be attributed mostly to emissions from the surrounding industry. The CBD had SO_2 annual average ambient concentration just below the 20-year regional annual average. Measurement from residential areas such as Arboretum, Mtunzini and Esikhaleni showed low concentrations of SO_2.

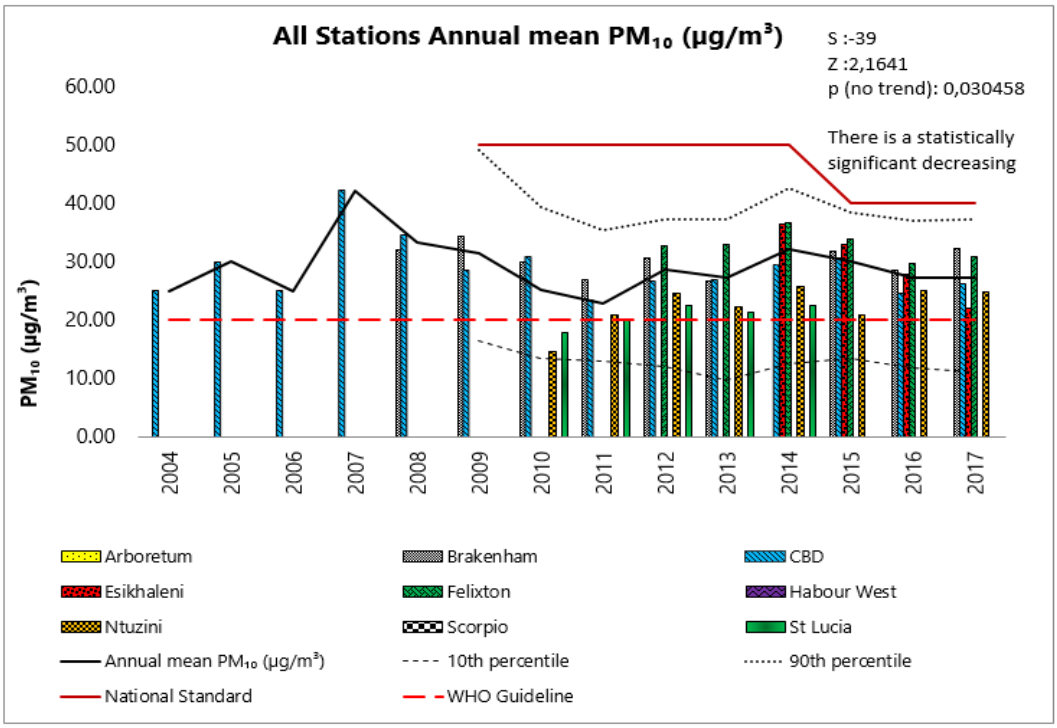

Figure 6-3: Annual average PM_{10} monitored concentrations (Okello et al., 2018)

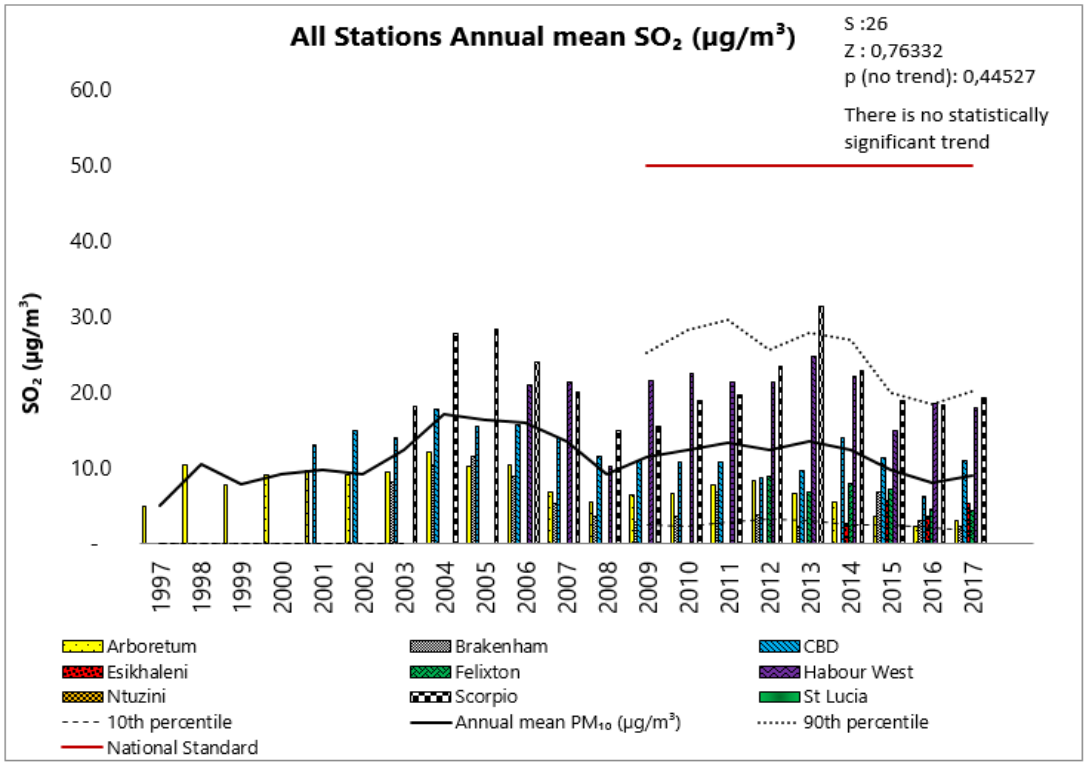

Figure 6-4: Annual average SO_2 monitored concentrations (Okello et al., 2018)

6.1.2.2 Ambient monitoring data from 2021-2023

Ambient air quality monitoring is undertaken in Richards Bay by the City of uMhlathuze and the RBCAA . Ambient air quality is generally influenced by a number of air pollution sources. Some of the local air pollution sources within the study area include emissions from industrial activities, vehicles exhaust, dust from mining activities, forest burning and coal dust from coal stockpiles. Numerous complaints have been reported between 2021-2023.

The current ambient air quality conditions were evaluated using the available air quality monitoring data from air quality monitoring stations (AQMS) in the area. Ambient data was only available for SO_2, PM_{10} and $PM_{2.5}$. Available hourly data was downloaded from the South African Air Quality Information System (SAAQIS) (http://saaqis.environment.co.za). SO_2 data was obtained from the Harbour AQMS, located close to the proposed project site. PM_{10} data was obtained from the CBD AQMS, approximately 5 km north of the proposed project site. $PM_{2.5}$ was obtained from the Brackenham AQMS, approximately 6.6 km north of the study site.

On average, data capture for 2021-2023 is 91% (Table 6-1) and thus may be considered representative for the baseline air quality conditions in the study area.

Table 6-1: Data Capture for data obtained from respective monitoring stations between 2021-2023

Pollutant	Data Capture (%)	Station
SO_2	96	Harbour
PM_{10}	92	CBD
$PM_{2.5}$	84	Brackenham
Average	91	

Sulphur dioxide (SO_2)

Ambient SO_2 concentrations may be attributed mostly to local industrial sources. Hourly average SO_2 concentrations at the Harbour AQMS ranged between 0.003 ppb and 425.2 ppb (Figure 6-5), whereas daily average SO_2 concentrations ranged between 0.07 and 330.47 ppb (Figure 6-6). There were 53 exceedances of the hourly standard (134 ppb) and 37 exceedances of the daily standard (48 ppb). In terms of the South African NAAQS, 88 exceedances of the hourly limit are permitted, whereas 4 exceedances of daily limit are permitted within a calendar year. Therefore, SO_2 levels measured at the Harbour AQMS between 2021-2023 exceeded the daily air quality standard. Annual average SO_2 concentrations ranged between 6.78 ppb and 9.59 ppb. No exceedances of the SO_2 annual standard (19 ppb) were observed during the monitoring period.

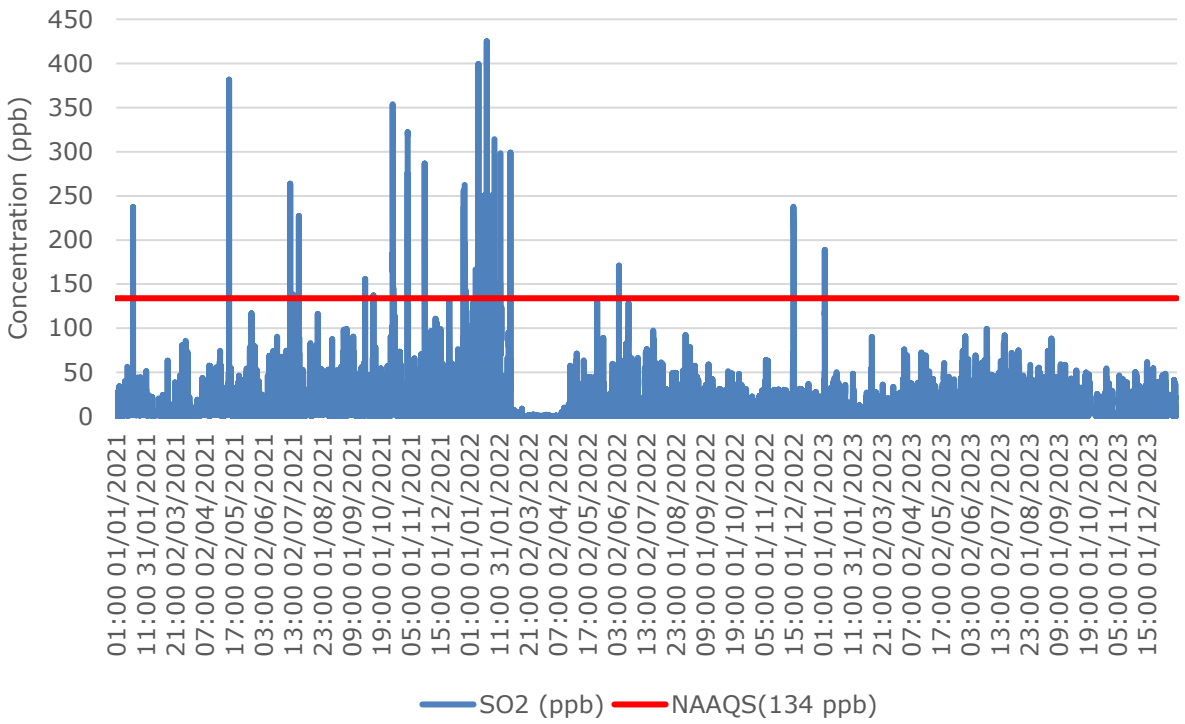

Figure 6-5: Hourly average SO_2 concentrations (ppb) measured at the Harbour AQMS

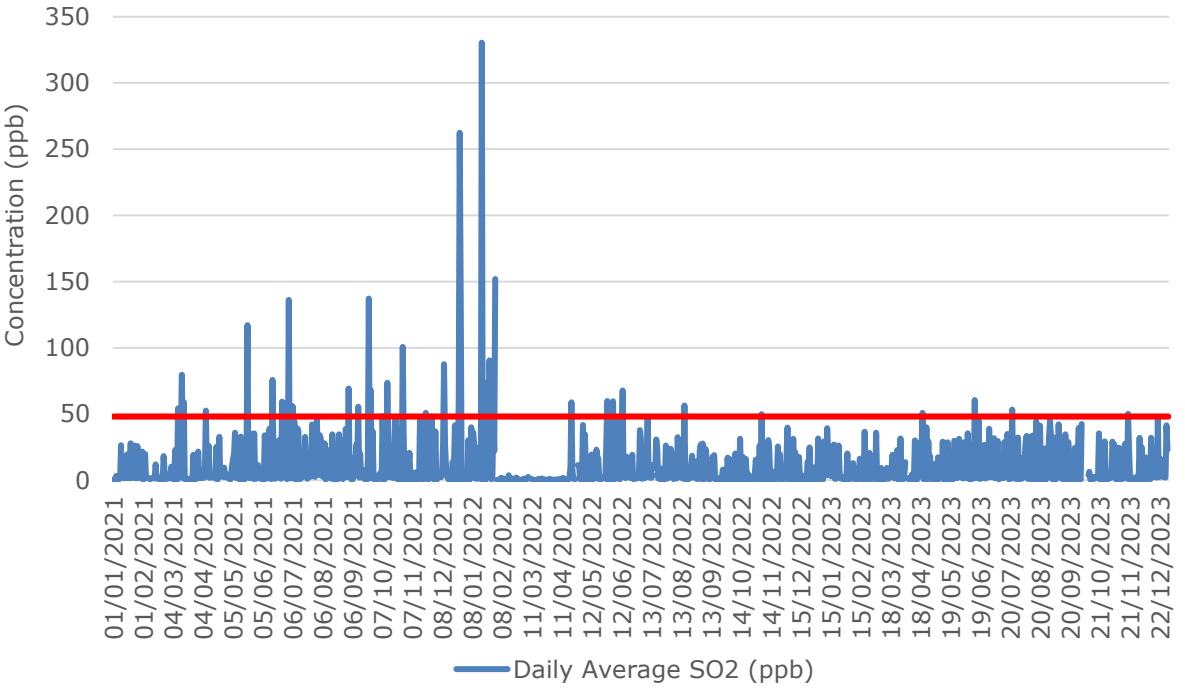

Figure 6-6: Daily average SO_2 concentrations (ppb) measured at the Harbour AQMS

Particulate matter (PM_{10})

PM_{10} is a regional pollutant with a regional background concentration in Richards Bay of more than 20 µg/m³ (Okello et al, 2018). Ambient PM_{10} concentrations may be attributed mostly to the high regional background with some contribution from local sources.

Daily average PM_{10} concentrations at the CBD AQMS ranged between 1.99 µg/m³ and 182.69 µg/m³, with an average of 11.8 µg/m³. Only 1 exceedance of the PM_{10} daily standard (75 µg/m³) was observed during the monitoring period (Figure 6-7). In terms of the South African NAAQS, 4 exceedances of the PM_{10} 24-hour standard are permitted within a calendar year. Therefore, PM_{10} concentrations measured between 2021-2023 at the CBD AQMS are below the standard. Annual average PM_{10} concentrations ranged between 10.48 µg/m³ and 18.21 µg/m³, with an average of 13.32 µg/m³. PM_{10} annual levels were therefore below the annual standard of 40 µg/m³.

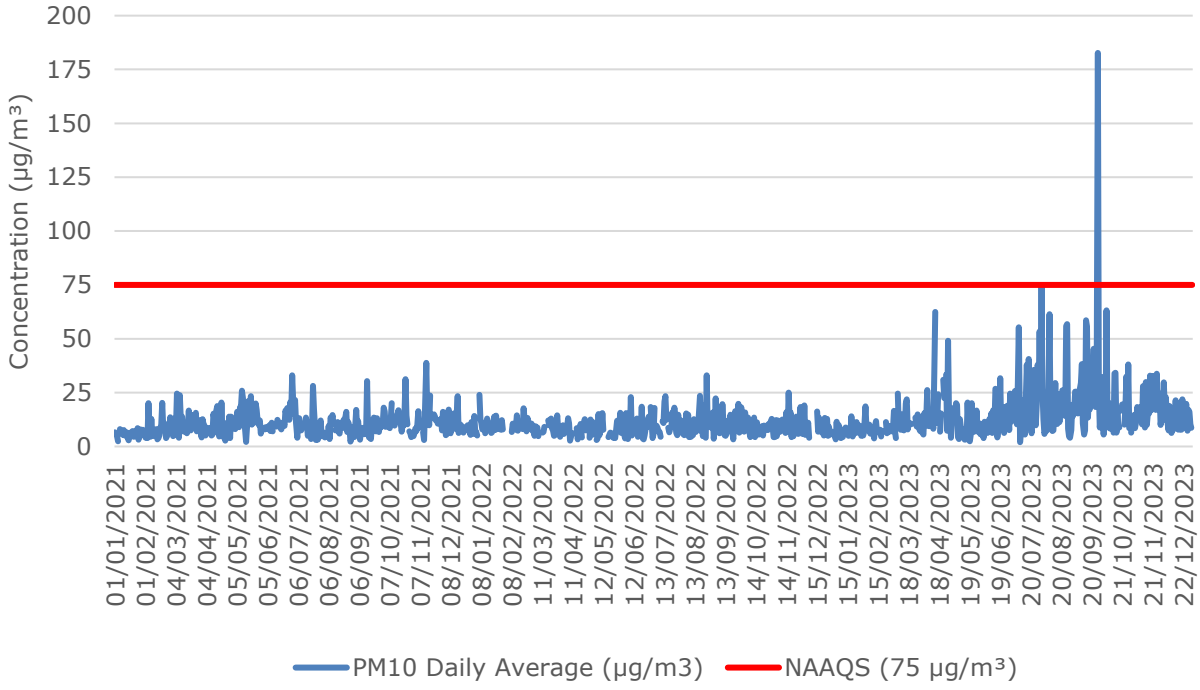

Figure 6-7: Daily average PM_{10} concentrations (µg/m³) measured at the CBD AQMS

Particulate matter (PM_{10})

Daily average $PM_{2.5}$ concentrations at the Brackenham AQMS range between 2 µg/m^3 to 50 µg/m^3, with an average of 11.43 µg/m^3. A total of 9 exceedances of the $PM_{2.5}$ daily standard (i.e. 40 µg/m^3) were observed during the monitoring period (Figure 6-8). In terms of the South African NAAQS, no exceedances of the $PM_{2.5}$ 24-hour standard are permitted within a calendar year. $PM_{2.5}$ concentrations measured at the Brackenham AQMS are therefore not in compliance with the standard. Annual average $PM_{2.5}$ concentrations ranged between 12.21 µg/m^3 to 13.30 µg/m^3, with an average of 12.65 µg/m^3. $PM_{2.5}$ annual levels were therefore below the annual standard of 20 µg/m^3.

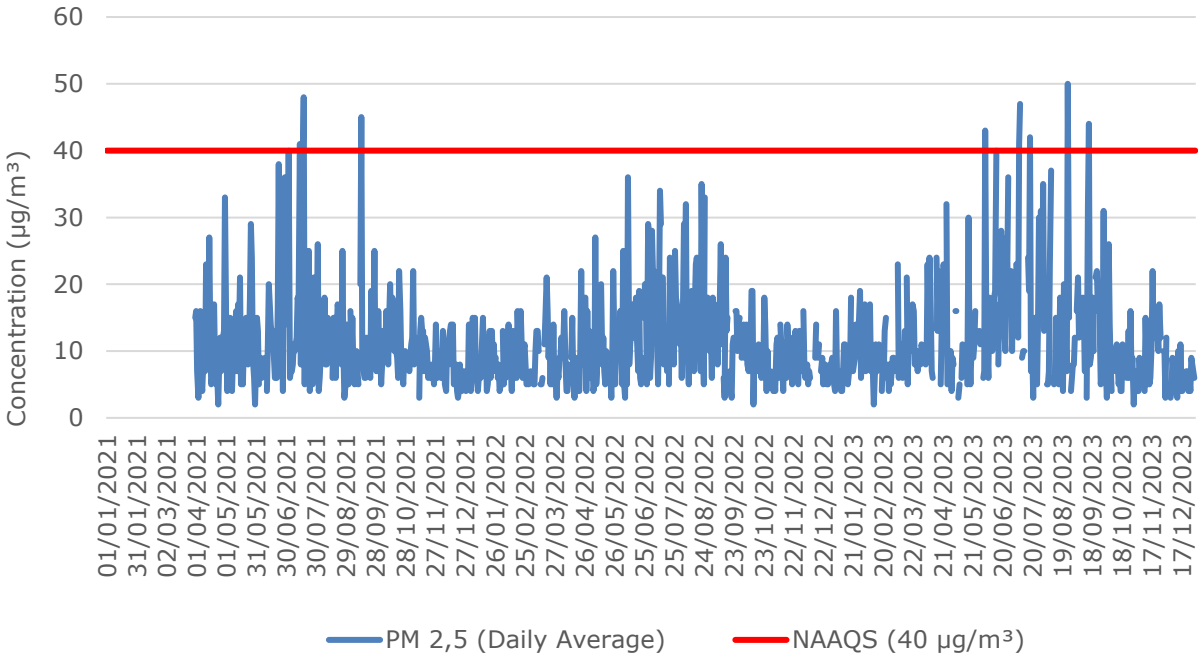

Figure 6-8: Daily average $PM_{2.5}$ concentrations (µg/m^3) measured at the Brackenham AQMS

6.1.2.3 Coal dust

A review of complaints listed in the RBCAA's monthly report for September 2022 (https://rbcaa.org.za/) highlights the negative impacts of coal dust on health and property in Arboretum, Alton, Birdswood, Veldenvlei, amongst others. There has been a significant demand internationally for coal which resulted in an increase in the amount of coal being brought to Richards Bay. It is stored and handled in open coal yards before being exported through the Port of Richards Bay. Fugitive emissions of coal dust from storage, handling and wind entrainment are sources of coal dust.

6.1.2.4 WSP cumulative dispersion modelling

WSP Environment and Energy conducted a dispersion modelling study in Richards Bay to assess the cumulative effects of industrial operations. The report is considered by the RBCAA

to be the most comprehensive modelling assessment for sources in Richards Bay. The modelling however has a number of notable shortcomings (pers. comm., Dr Lisa Ramsay, WSP, 31 March 2021). The shortcomings are:

i) The emissions inventory was compiled in 2015 and includes emissions for various industrial sources (point and area sources).
ii) Emissions data was extracted from the various AELs and other reports (e.g. AQIAs) from 2012 to 2015, depending on applicability.
iii) Some industrial sources were excluded. Other notable exclusions were vehicle emissions and sugarcane burning.
iv) Three years of meteorological data was used, 2011 to 2013.
v) The emission profile in Richards Bay has changed since the modelling was done. Some industries have since closed and on 01 April 2020 all Listed Activities had to comply with Minimum Emission Standards (MES) for new plants. Changes in emission as a result of the MES regulations are not captured in the WSP modelling.

The results of the WSP cumulative dispersion modelling are indicative of dispersion and ambient concentrations of SO_2, NO_2 and PM_{10} in 2015. Predicted annual SO_2 and NO_2 concentrations were well below the NAAQS of 50 µg/m^3 and 40 µg/m^3 respectively and the highest concentrations were predicted in the CDB, Alton and Brakenham. Predicted ambient PM_{10} concentrations exceeded the annual NAAQS of 40 µg/m^3 over parts of the Port and adjacent areas and were attribute mainly to coal storage and handling.

The short comings of the cumulative dispersion modelling assessment must be noted. As a result of these it must be emphasised that the findings, while indicative, are not representative of the current airshed.

6.2 Dispersion Modelling

6.2.1 Models used

A Level 3 air quality assessment must be conducted in situations where the purpose of the assessment requires a detailed understanding of the air quality impacts (time and space variation of concentrations) and when it is important to account for causality effects, calms, non-linear plume trajectories, spatial variations in turbulent mixing, multiple source types and chemical transformations (DEA, 2014b). A Level 3 assessment may be used in situations where there is a need to evaluate air quality consequences under a permitting or environmental assessment process for large industrial developments that have considerable social, economic and potential environmental consequences. Under these circumstances, the proposed TNPA Power Generation Project clearly demonstrates the need for a Level 3 assessment.

The CALPUFF suite of models are approved by the US EPA (http://www.src.com/calpuff/calpuff1.htm) and by the DEA for Level 3 assessments (DEA, 2014b). It consists of a meteorological pre-processor, CALMET, the dispersion model,

CALPUFF, and the post-processor, CALPOST. It is an appropriate air dispersion model for the purpose of this assessment as it is well suited to simulate dispersion from several sources. It also has the capability to simulate dispersion in the atmosphere's complex land-sea interface. More information about the model can be found in the User's Guide for the CALPUFF Dispersion Model (US EPA, 1995).

The Air Pollution Model (TAPM) (Hurley, 2000; Hurley et al., 2001; Hurley et al., 2002) is used to model surface and upper air metrological data for the study domain. TAPM uses global gridded synoptic-scale meteorological data with observed surface data to simulate surface and upper air meteorology at given locations in the domain, taking the underlying topography and land cover into account. The global gridded data sets that are used are developed from surface and upper air data that are submitted routinely by all meteorological observing stations to the Global Telecommunication System of the World Meteorological Organisation. TAPM has been used successfully in Australia where it was developed (Hurley, 2000; Hurley et al., 2001; Hurley et al., 2002). It is an ideal tool for modelling applications where meteorological data does not adequately meet requirements for dispersion modelling. TAPM modelled output data is therefore used to augment the site-specific surface meteorological data for input to CALPUFF.

6.2.2 TAPM and CALPUFF parameterisation

The TAPM diagnostic meteorological model is used to generate a 3-dimensional temporally and spatially continuous meteorological field for 2021, 2022 and 2023 in hourly increments for the modelling domain.

TAPM is set-up in a nested configuration of three domains, centred on the Port of Richards Bay. The outer domain is 480 km by 480 km at a 24 km grid resolution, the middle domain is 240 km by 240 km at a 12 km grid resolution and the inner domain is 60 km by 60 km at a 3 km grid resolution (Figure 6-9). The nesting configuration ensures that topographical effects on meteorology are captured and that meteorology is well resolved and characterised across the boundaries of the inner domain. Twenty-seven vertical levels are modelled in each nest from 10 m to 5 000 m, with a finer resolution in the lowest 1 000 m. The subset of the entire TAPM model output in the form of pre-processed gridded surface meteorological data fields is input into the dispersion model.

The 3-dimensional TAPM meteorological output on the inner grid includes hourly wind speed and direction, temperature, relative humidity, total solar radiation, net radiation, sensible heat flux, evaporative heat flux, convective velocity scale, precipitation, mixing height, friction velocity and Obukhov length. The spatially and temporally resolved TAPM surface and upper air meteorological data is used as input to the CALPUFF meteorological pre-processor, CALMET.

The CALPUFF modelling domain covers an area of 900 km^2, where the domain extends 30 km (west-east) by 30 km (north-south) (Figure 6-9). It consists of a uniformly spaced receptor grid with 0.25 km spacing, giving 14 400 grid cells (120 x 120 grid cells).

The topographical and land use for the respective modelling domains is obtained from the dataset accompanying the Commonwealth Scientific and Industrial Research Organisation (CSIRO) TAPM modelling package (CSIRO, 2008). This dataset includes global terrain elevation and land use classification data on a longitude/latitude grid at 30-second grid spacing from the US Geological Survey, Earth Resources Observation Systems (EROS) Data Center.

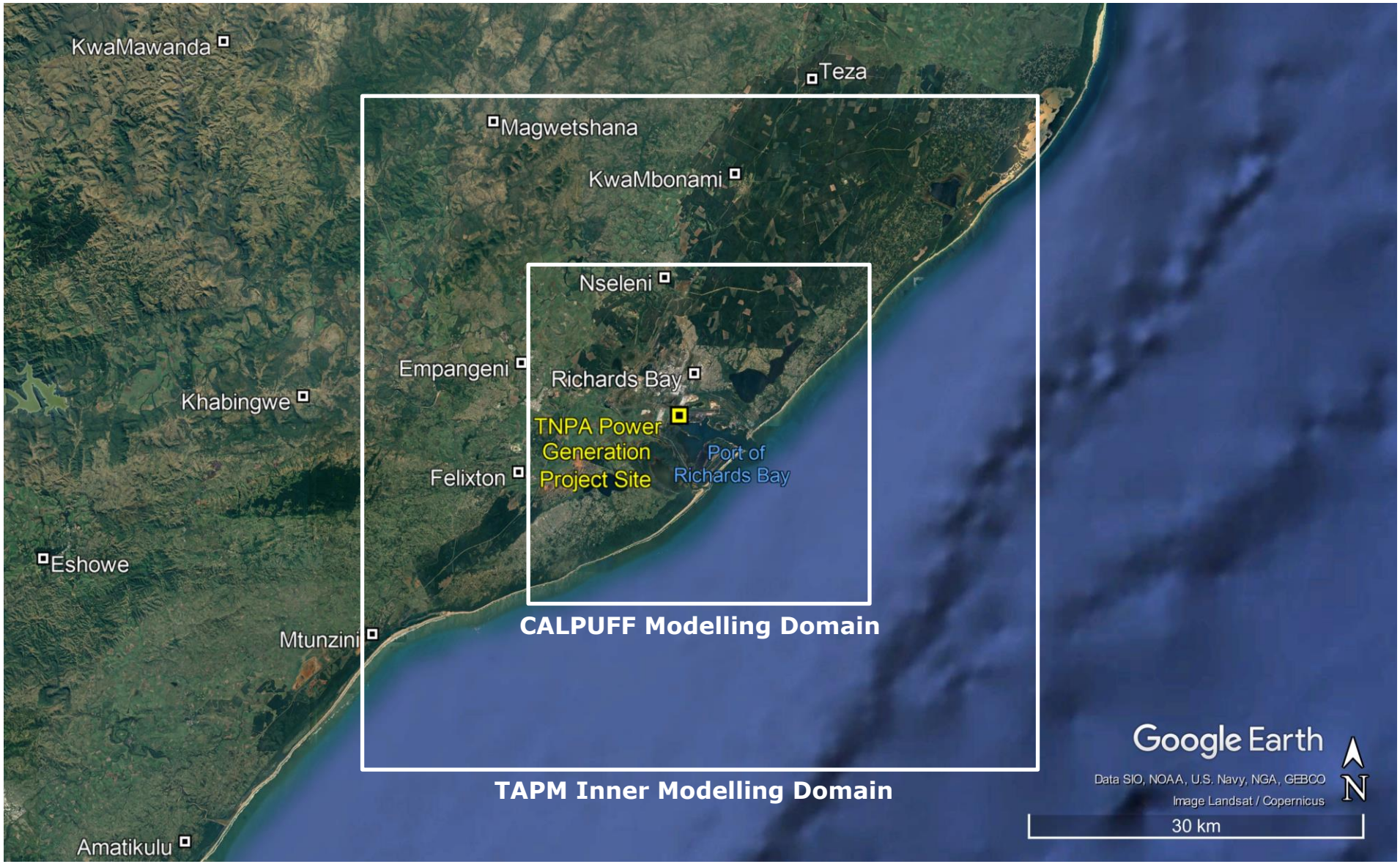

Figure 6-9: TAPM and CALPUFF modelling domains

The parameterisation of key variables that apply in CALMET and CALPUFF are indicated in Table 6-2 and Table 6-3 respectively.

Table 6-2: Parameterisation of key variables for CALMET

Parameter	Model value
12 vertical cell face heights (m)	0, 20, 40, 80, 160, 320, 640, 1000, 1500, 2000, 2500, 3000, 4000
Coriolis parameter (per second)	0.0001
Empirical constants for mixing height equation	Neutral, mechanical: 1.41 Convective: 0.15 Stable: 2400 Overwater, mechanical: 0.12
Minimum potential temperature lapse rate (K/m)	0.001
Depth of layer above convective mixing height through which lapse rate is computed (m)	200
Wind field model	Diagnostic wind module
Surface wind extrapolation	Similarity theory
Restrictions on extrapolation of surface data	No extrapolation as modelled upper air data field is applied
Radius of influence of terrain features (km)	5
Radius of influence of surface stations (km)	Not used as continuous surface data field is applied

Table 6-3: Parameterisation of key variables for CALPUFF

Parameter	Model value
Chemical transformation	Default NO_2 conversion factor is applied
Wind speed profile	Rural
Calm conditions	Wind speed < 0.5 m/s
Plume rise	Transitional plume rise, stack tip downwash, and partial plume penetration is modelled
Dispersion	CALPUFF used in PUFF mode
Dispersion option	Pasquill-Gifford coefficients are used for rural and McElroy-Pooler coefficients are used for urban
Terrain adjustment method	Partial plume path adjustment

6.2.3 Model accuracy

Air quality models attempt to predict ambient concentrations based on "known" or measured parameters, such as wind speed, temperature profiles, solar radiation and emissions. There are however, variations in the parameters that are not measured, the so-called "unknown"

parameters as well as unresolved details of atmospheric turbulent flow. Variations in these "unknown" parameters can result in deviations of the predicted concentrations of the same event, even though the "known" parameters are fixed.

There are also "reducible" uncertainties that result from inaccuracies in the model, errors in input values and errors in the measured concentrations. These might include poor quality or unrepresentative meteorological, geophysical and source emission data, errors in the measured concentrations that are used to compare with model predictions and inadequate model physics and formulation used to predict the concentrations. "Reducible" uncertainties can be controlled or minimised. This is done by using accurate input data, preparing the input files correctly, checking and re-checking for errors, correcting for odd model behaviour, ensuring that the errors in the measured data are minimised and applying appropriate model physics.

Models recommended in the DEA dispersion modelling guideline (DEA, 2014b) have been evaluated using a range of modelling test kits (http://www.epa.gov./scram001). CALPUFF is one of the models that have been evaluated and it is therefore not mandatory to perform any modelling evaluations. Rather the accuracy of the modelling in this assessment is enhanced by every effort to minimise the "reducible" uncertainties in input data and model parameterisation.

6.2.4 Background Concentrations and other sources

A background concentration refers to the portion of the ambient concentration of a pollutant due to sources, both natural and anthropogenic, other than the source being assessed.

In the assessment the annual average ambient concentrations of PM_{10} (Figure 6-7) and SO_2 (Figure 6-8) at the RBCAA monitoring stations are used as background concentrations to gauge the potential additive effect of the proposed TNPA Power Generation Project emissions in the Richards Bay area.

6.2.5 Assessment scenarios

To assess the potential impacts of the proposed TNPA Power Generation Project on ambient air quality, two operational scenarios are assessed:
Scenario 1: Generator using diesel fuel – diesel-fired option
Scenario 2: Generator using LNG fuel – gas-fired option

6.3 Dispersion Modelling Results

The dispersion modelling results are presented in the following sections for SO_2, NO_2, PM_{10} and CO. First the maximum predicted ambient concentrations are presented in Section 6.3.1. An explanation of the model output is provided in Section 6.3.2, followed by the dispersion modelling results presented as isopleth maps.

6.3.1 Maximum predicted ambient concentrations

The maximum predicted annual SO_2, NO_2, PM_{10} and CO concentrations and the 99th percentile of the 24-hour, 8-hour and 1-hour predicted concentrations are listed in Table 6-4. In all cases the predicted maximum concentrations are very low and are well below the respective NAAQS, also shown in Table 3-4.

Table 6-4: Maximum predicted ambient annual SO_2, NO_2, PM_{10} and CO concentrations in µg/m^3 and the predicted 99th percentile concentrations for 24-hour, 8-hour and 1-hour averaging periods, with the South African NAAQS

Description	Scenario	Pollutant and averaging period			
		SO_2			
		Annual	**24-hour**	**8-hour**	**1-hour**
Predicted maximum SO_2	Scenario 1 – Diesel Fuel	0.38	3.07		7.38
	Scenario 2 – LNG Fuel	0.31	2.53		6.07
NAAQS		50	125		350
		NO_2			
Predicted maximum NO_2	Scenario 1 – Diesel Fuel	0.15			2.95
	Scenario 2 – LNG Fuel	0.03			0.61
NAAQS		40			200
		PM_{10}			
Predicted maximum PM_{10}	Scenario 1 – Diesel Fuel	0.04	0.31		
	Scenario 2 – LNG Fuel	0.01	0.06		
NAAQS		40	75		
		CO			
Predicted maximum CO	Scenario 1 – Diesel Fuel			0.81	0.97
	Scenario 2 – LNG Fuel			1.66	2.01
NAAQS				10 000	30 000

6.3.2 Isopleth maps

Maps of predicted ambient SO_2, NO_2, PM_{10} and CO concentrations are presented in the following sections in Figure 6-10 to Figure 6-18. The predicted concentrations are shown as isopleths, lines of equal concentration, in µg/m^3 for the respective NAAQS averaging periods. The isopleths are depicted as white lines on the various maps.

The prevailing winds over the Port of Richards Bay largely dictate the dispersion of pollutants resulting from the proposed TNPA Power Generation Project. This is best illustrated by the wind roses at Richards Bay Airport (Figure 6-2). Dispersion occurs in two predominant sectors from the proposed TNPA Power Generation Project. The first is to the sector is south to south-southwest because of the prevailing northerly to northeasterly winds. The second is the sector north-northeast to northeast because of the southwesterly winds.

6.3.2.1 Sulphur dioxide (SO_2)

The predicted SO_2 concentrations for Scenario 1 where diesel fuel is used and Scenario 2 where LNG fuel is used by the generator are very low relative to the NAAQS throughout the modelling domain which includes the Port of Richards Bay and surrounding areas. No exceedances of the NAAQS are therefore predicted for SO_2. The predicted annual average concentrations are shown in Figure 6-10, with the 99th percentile of the 24-hour concentrations in Figure 6-11 and the 99th percentile of the 1-hour concentrations in Figure 6-12.

For the annual and 1-hour averaging periods, highest predicted concentrations occur within 3 km to the north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas. For the 24-hour averaging period, highest predicted concentrations occur within 1.5 km to the west of the proposed project site over the industrial area.

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.38 µg/m^3 to the existing annual ambient concentrations, a maximum of 3.07 µg/m^3 to the 24-hour ambient concentrations and a maximum of 7.38 µg/m^3 to the 1-hour ambient concentrations in the assessment area when diesel fuel is used (Scenario 1).

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.31 µg/m^3 to the existing annual ambient concentrations, a maximum of 2.53 µg/m^3 to the 24-hour ambient concentrations and a maximum of 6.07 µg/m^3 to the 1-hour ambient concentrations in the assessment area when LNG fuel is used (Scenario 2).

For both scenarios, the additive effect will be less than this elsewhere in the assessment area where predicted ambient concentrations are lower. The additive effect of emissions from the proposed TNPA Power Generation Project on ambient SO_2 concentrations is therefore predicted to be small and is unlikely to result in exceedances of the NAAQS throughout the assessment area.

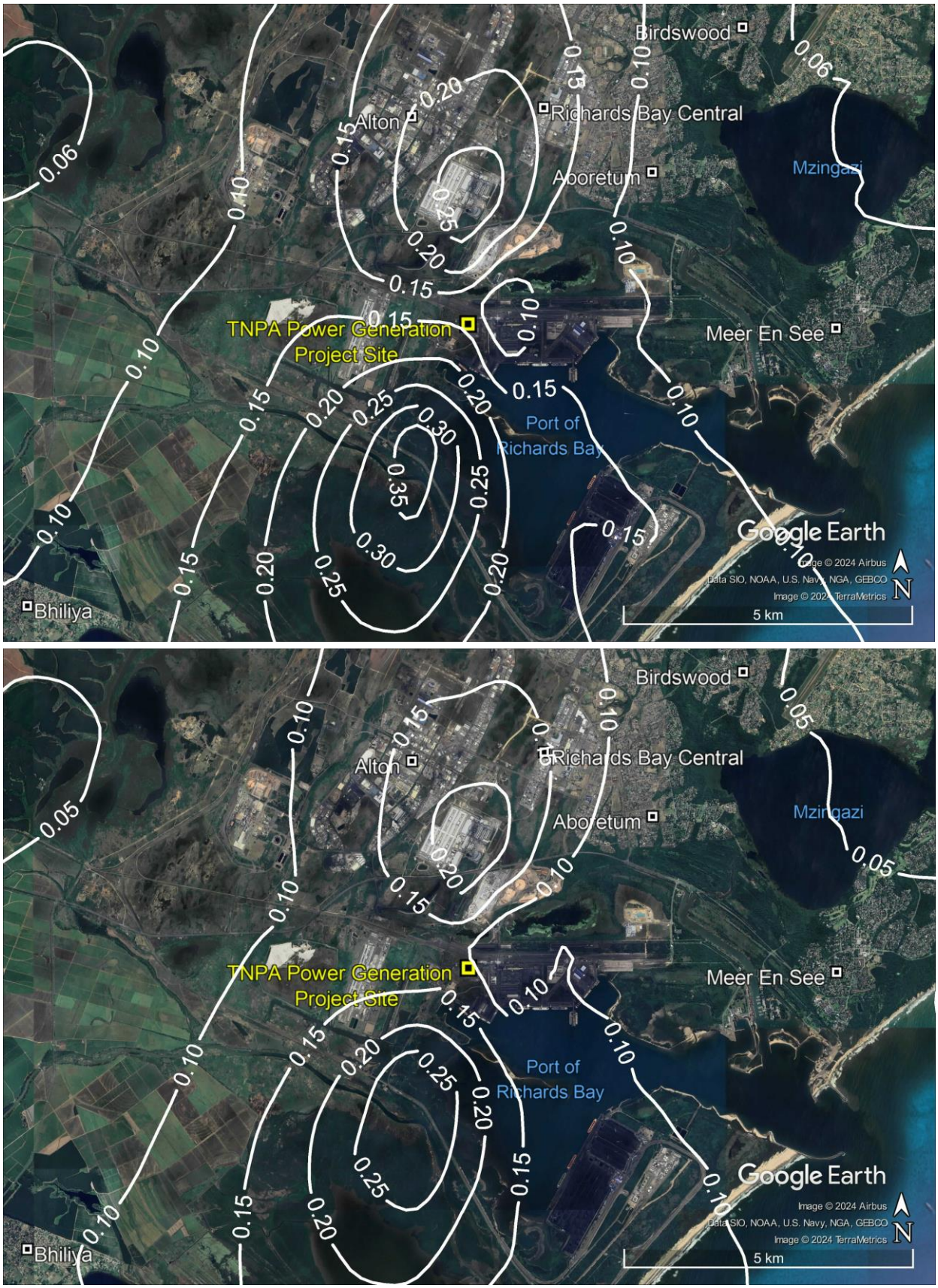

Figure 6-10: Predicted annual average SO_2 concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

Figure 6-11: Predicted 99th percentile 24-hour SO_2 concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

Figure 6-12: Predicted 99th percentile 1-hour SO_2 concentrations in µg/m^3 resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

6.3.2.2 Nitrogen dioxide (NO_2)

The predicted NO_2 concentrations for Scenario 1 where diesel fuel is used and Scenario 2 where LNG fuel is used by the generator are very low relative to the NAAQS throughout the modelling domain which includes the Port of Richards Bay and surrounding areas. No exceedances of the NAAQS are therefore predicted for NO_2. The predicted annual average concentrations are shown in Figure 6-13, with the 99th percentile of the 1-hour concentrations in Figure 6-14.

For the annual and 1-hour averaging periods, highest predicted concentrations occur within 3 km to the north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas.

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.15 µg/m^3 to the existing annual ambient concentrations, and a maximum of 2.95 µg/m^3 to the 1-hour ambient concentrations in the assessment area when diesel fuel is used (Scenario 1).

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.03 µg/m^3 to the existing annual ambient concentrations, and a maximum of 0.61 µg/m^3 to the 1-hour ambient concentrations in the assessment area when LNG fuel is used (Scenario 2).

For both scenarios, the additive effect will be less than this elsewhere in the assessment area where predicted ambient concentrations are lower. The additive effect of emissions from the proposed TNPA Power Generation Project on ambient NO_2 concentrations is therefore predicted to be small and is unlikely to result in exceedances of the NAAQS throughout the assessment area.

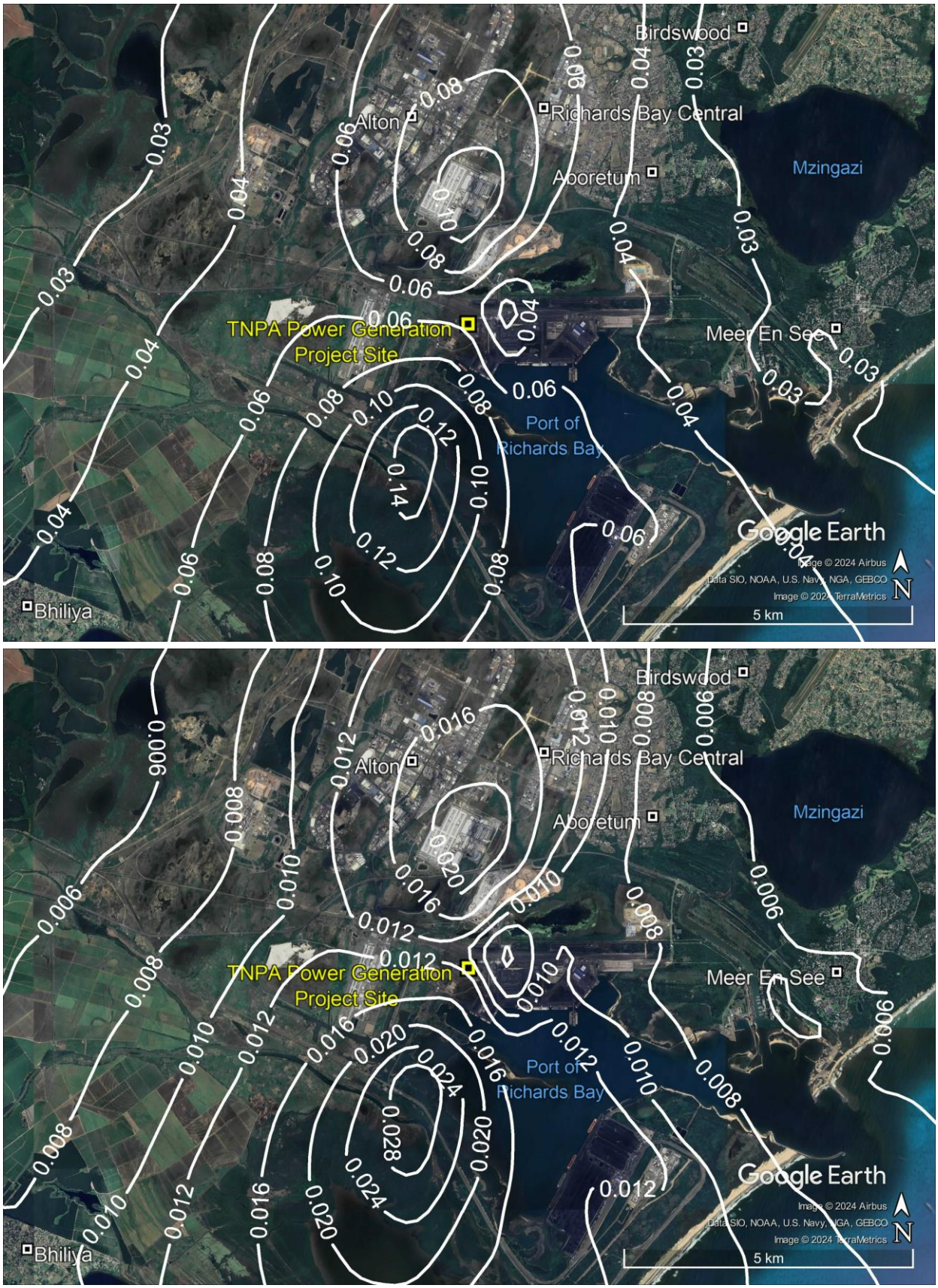

Figure 6-13: Predicted annual average NO_2 concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

Figure 6-14: Predicted 99th percentile 1-hour NO_2 concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

6.3.2.3 Particulates (PM_{10})

The predicted PM_{10} concentrations for Scenario 1 where diesel fuel is used and Scenario 2 where LNG fuel is used by the generator are very low relative to the NAAQS throughout the modelling domain which includes the Port of Richards Bay and surrounding areas. No exceedances of the NAAQS are therefore predicted for PM_{10}. The predicted annual average concentrations are shown in Figure 6-15, with the 99th percentile of the 24-hour concentrations in Figure 6-16.

For the annual averaging period, highest predicted concentrations occur within 3 km to the north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas. For the 24-hour averaging period, highest predicted concentrations occur within 1.5 km to the west of the proposed project site over the industrial area.

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.04 µg/m^3 to the existing annual ambient concentrations, and a maximum of 0.31 µg/m^3 to the 24-hour ambient concentrations in the assessment area when diesel fuel is used (Scenario 1).

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.01 µg/m^3 to the existing annual ambient concentrations, and a maximum of 0.06 µg/m^3 to the 24-hour ambient concentrations in the assessment area when LNG fuel is used (Scenario 2).

For both scenarios, the additive effect will be less than this elsewhere in the assessment area where predicted ambient concentrations are lower. The additive effect of emissions from the proposed TNPA Power Generation Project on ambient PM_{10} concentrations is therefore predicted to be small and is unlikely to result in exceedances of the NAAQS throughout the assessment area.

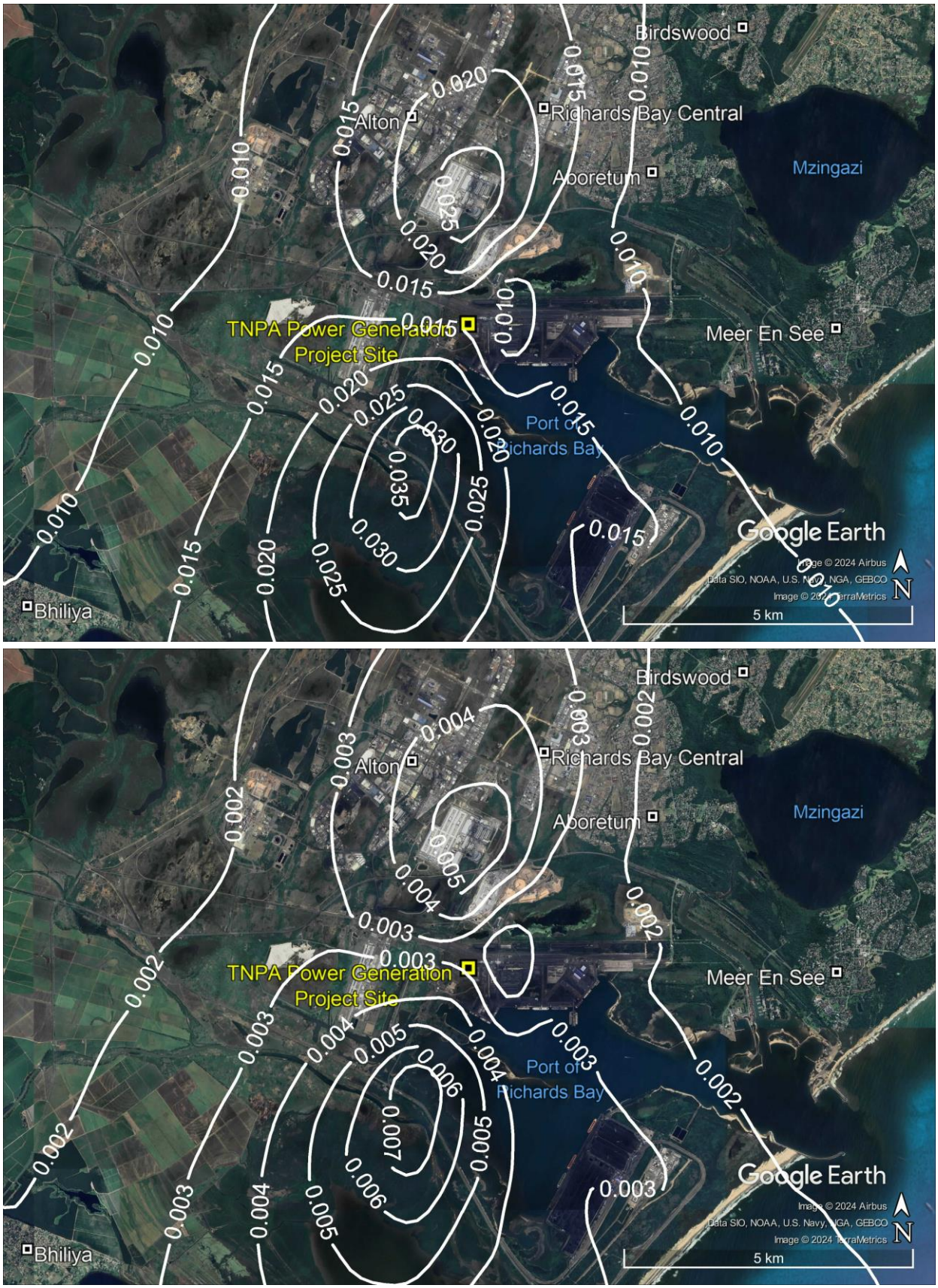

Figure 6-15: Predicted annual average PM_{10} concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

Figure 6-16: Predicted 99th percentile 24-hour PM_{10} concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

6.3.2.4 Carbon monoxide (CO)

The predicted CO concentrations for Scenario 1 where diesel fuel is used and Scenario 2 where LNG fuel is used by the generator are very low relative to the NAAQS throughout the modelling domain which includes the Port of Richards Bay and surrounding areas. No exceedances of the NAAQS are therefore predicted for CO. The predicted 99th percentile of the 8-hour concentrations are shown in Figure 6-17, with the 99th percentile of the 1-hour concentrations in Figure 6-18.

For the 8-hour and 1-hour averaging periods, highest predicted concentrations occur within 3 km to the north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas.

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 0.81 µg/m^3 to the 8-hour ambient concentrations and a maximum of 0.97 µg/m^3 to the 1-hour ambient concentrations in the assessment area when diesel fuel is used (Scenario 1).

At the point of maximum predicted ambient concentrations, the proposed TNPA Power Generation Project will add a maximum of 1.66 µg/m^3 to the 8-hour ambient concentrations and a maximum of 2.01 µg/m^3 to the 1-hour ambient concentrations in the assessment area when LNG fuel is used (Scenario 2).

For both scenarios, the additive effect will be less than this elsewhere in the assessment area where predicted ambient concentrations are lower. The additive effect of emissions from the proposed TNPA Power Generation Project on ambient CO concentrations is therefore predicted to be small and is unlikely to result in exceedances of the NAAQS throughout the assessment area.

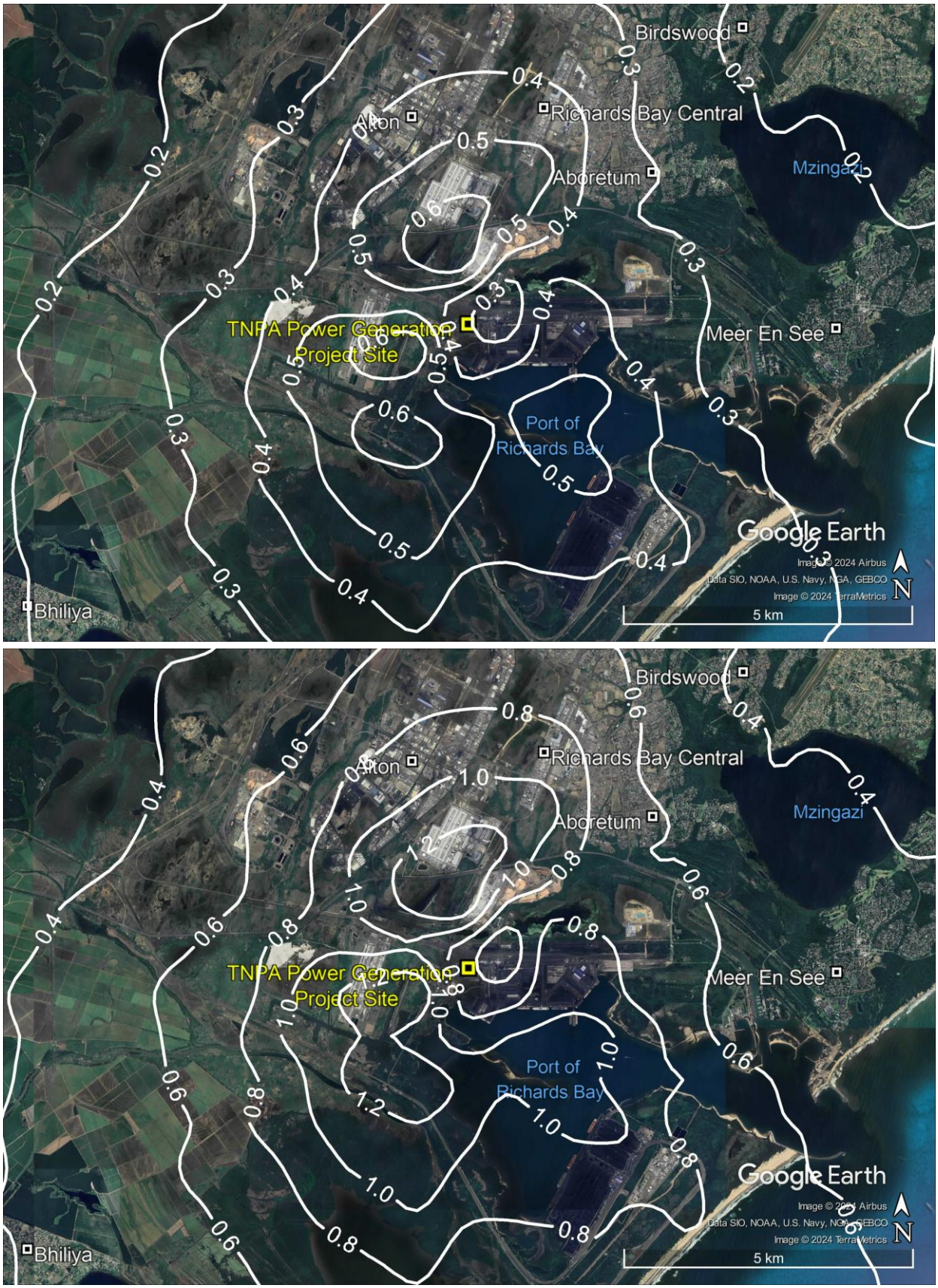

Figure 6-17: Predicted 99th percentile 8-hour CO concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

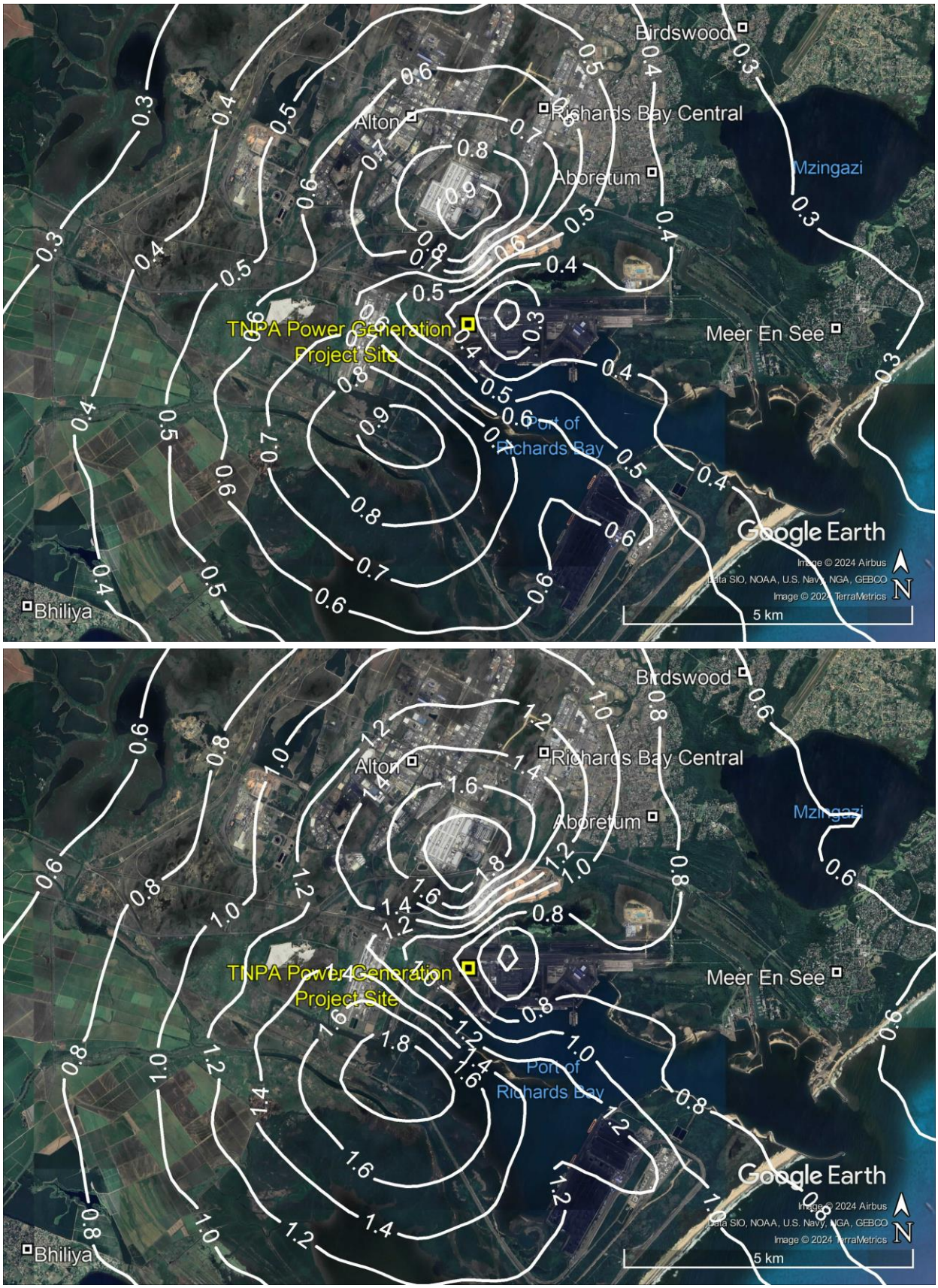

Figure 6-18: Predicted 99th percentile 1-hour CO concentrations in µg/m³ resulting from emissions from the TNPA 22 MW Duel Fuel Generator for Scenario 1 where diesel fuel is used (top) and for Scenario 2 where LNG fuel is used (bottom)

6.4 Impact Assessment

6.4.1 Impact Rating Methodology

The NEMA EIA Regulations (DEA, 2014a) describe the significance of environmental impacts considering the consequence of the impact and the likelihood of the impact occurring.

Clearly defined rating and rankings scales (Table 6-5 - Table 6-14) are used to assess the impacts associated with the proposed TNPA Genset Generator Project. To enable a scientific approach for the determination of the environmental significance (importance), a numerical value is linked to each rating scale. The rating of these parameters is based on the findings of the assessment and professional judgement of specialists.

Table 6-5: Severity or magnitude of impact

Severity or magnitude of impact	
Not applicable/none/negligible	0
Minor/insignificant/non-harmful (no loss of species/habitat)	2
Low/small/potentially harmful (replaceable loss with minimal effort)	4
Moderate/significant/slightly harmful (replaceable loss of species/habitat with great effort and investment)	6
High/highly Significant/harmful (impact to human health or welfare/loss of species/habitat)	8
Very High/extremely significant/extremely harmful/within a regulated sensitive area (loss of human life/irreplaceable loss of Red Data species/conservation habitat)	10

Table 6-6: Spatial Scale of activity

Spatial Scale of activity	
Not applicable/none/negligible	0
Site only	1
Local (within 5km)	2
Regional/neighbouring areas (5 km to 50 km)	3
National	4
International	5

Table 6-7: Duration of activity

Duration of activity	
Not applicable/none/negligible	0
Immediate (immediately reversible with minimal effort)	1
Short-term (0-5 years - reversible)	2
Medium-term (5 to 15 years – difficult to reverse with effort)	3
Long-term/life of the activity (very difficult to reverse with extensive effort)	4
Permanent/beyond life of the activity (not reversible)	5

Table 6-8: Frequency of activity (how often activity is undertaken)

Frequency of activity	
Not applicable/none/negligible	0
Improbable /almost never/annually or less	1
Low probability/very seldom/6 monthly	2
Medium probability/infrequent/temporary/monthly	3
Highly probable/often/semi-permanent/weekly	4
Definite/always/permanent/daily	5

Table 6-9: Frequency of incident/impact (how often activity impacts environment)

Frequency of incident/impact	
Almost never/almost impossible/>20%	1
Very seldom/highly unlikely/>40%	2
Infrequent/unlikely/seldom/>60%	3
Often/regularly/likely/possible/>80%	4
Daily/highly likely/definitely/>100%	5

Table 6-10: Legal Issues – governance of activity by legislation

Legal Issues	
No legislation	1
Fully covered by legislation	5

Table 6-11: Detection (how quickly/easily impacts/risks of activity on environment, people and property are detected)

Detection	
Immediately (easier to mitigate)	1
Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered (more difficult to mitigate)	5

Each impact identified is assessed in terms of probability (likelihood of occurring); the consequence of the impact (spatial scale, severity and duration); and the associated risk (impact significance).

Consequence is determined as follows:

CONSEQUENCE = Severity + Spatial Scale + Duration

The probability or likelihood of occurrence of the activity is calculated based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected:

LIKELIHOOD = Frequency of Activity + Frequency of Impact + Legal issues + Detection

The significance or risk of each identified impact is based on the product of consequence and likelihood:

Environmental Significance/Risk = Consequence x Likelihood

Impacts are rated as either of high, medium or low significance on the basis provided in Table 6-12. Each impact will also be assessed in terms of the level to which there is an irreplaceable loss of resources (Table 6-13) and its degree of reversibility (Table 6-14).

Table 6-12: Impact significance ratings

Impact significance ratings		
SIGNIFICANCE	**ENVIRONMENTAL RISK RATING**	**COLOUR CODE**
High (positive)	>240	H
Medium (positive)	120 to 240	M
Low (positive)	<120	L
Neutral	0	N
Low (negative)	>-120	L
Medium negative)	-120 to -240	M
High (negative)	<-240 (max = 400)	H

Table 6-13: Irreplaceability of resource caused by impacts

Irreplaceability of resource caused by impacts	
No irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate)	Low
Resources that will be impacted can be replaced, with effort	Medium
Project will destroy unique resources that cannot be replaced	High

Table 6-14: Reversibility of impacts

Reversibility of impacts	
Low reversibility to non-reversible	Low
Moderate reversibility of impacts	Medium
High reversibility of impacts	High

The significance of an impact gives one indication of the level of mitigation measures required to minimise negative impacts and reduce environmental damage during the construction, operational and decommissioning phases. Suitable and appropriate mitigation measures, to ensure avoidance, management and mitigation of impacts, will be identified for each of the potential impacts based on specialist recommendations and GCS expertise.

6.4.2 Impact assessment

In this section, the air quality impact assessment is presented for the following phases which are applicable to both Scenario 1 where diesel fuel is used and for Scenario 2 where LNG fuel is used:

- Construction Phase
- Operational Phase
    - TNPA Power Generation Project in isolation
    - TNPA Power Generation Project with existing sources (cumulative)
    - TNPA Power Generation Project with other gas-to-power projects (cumulative)
- Decommissioning Phase

The air quality impact assessment for the construction and decommissioning phase of the proposed TNPA Power Generation Project is assessed qualitatively as insufficient emissions data is available for a qualitative assessment. A summary of the impact scores for the construction and decommissioning phase is presented in Table 6-19.

The air quality impact assessment for the proposed TNPA Power Generation Project for the operational phase is based on model predicted ambient SO_2, NO_2, PM_{10} and CO concentrations using the methodology described above, and is therefore quantitative. The proposed TNPA Power Generation Project is assessed in isolation, and cumulatively with existing sources and with other gas-to-power projects in Richards Bay. The two operational phases which include the proposed TNPA Power Project in isolation and with existing sources is similar and is therefore assessed together. A summary of the impact scores for the operational phase is presented in Table 6-19.

Model predicted ambient SO_2, NO_2, PM_{10} and CO concentrations for the operational phase is based on accurate emissions data, representative meteorological data and applies the DEA recommended dispersion modelling principles (DEA, 2014b). The assessment team has significant experience and is familiar with the proposed project site and the power generation concept. The confidence in the impact assessment is therefore high.

6.5 Construction phase

The proposed TNPA Power Generation Project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas – it is assumed that the generator and associated infrastructure will be hauled to site in special trailers and then assembled;
- The installation of diesel fuel tank(s) with a total capacity of 600 m^3;
- The installation of a 200 m^3 tank for the storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the proposed site;
- An auxiliary pit;
- A drain facility for used diesel and sludge;

- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the proposed generator site.

A range of vehicles and equipment are used during construction including heavy duty vehicles and mobile generators. Activities during construction are associated with the movement of a range of vehicles and equipment including bulldozers, excavators and tipper trucks. These activities inherently generate dust that depends on a number of factors, including:

- The nature of the activity: The physical movement of soil through digging, grading, loading and tipping, loosens otherwise bound fine particles allowing entrainment into the atmosphere through mechanical processes and wind.
- Equipment operation and vehicles: Equipment and vehicle movement on unpaved surfaces pulverise particles to a fine dust, which may be entrained into the atmosphere by their movement. Dust entrainment is a function of vehicle size and speed, with heavier vehicles and faster travel generating more dust.
- Silt content of the soil and other materials: Soils and materials with high silt content have a higher percentage of fine material that is easily entrained into the atmosphere when it is disturbed.
- The size of the denuded construction area: Larger exposed areas are naturally greater sources of wind-generated dust.
- The frequency of strong wind and rainfall: Strong winds easily entrain dust from open areas, from storage piles and during operational activities. Rainfall on the other hand suppresses the generation of dust.
- The dust abatement programme: Dust can be suppressed at the point where it is generated in a number of ways. Diligent management of an abatement programme can have a marked effect on reducing dust from all construction activities.

All aspects of construction inherently generate dust, but the movement of construction vehicles on the unpaved surfaces at the construction site are generally the largest source of dust. Dust is also easily entrained from exposed areas by wind.

During the construction phase, surface preparation of the proposed project area will be done by vegetation clearing and compaction. A laydown area for the receipt, temporary storage, and assembly of construction equipment and other supplies will be demarcated. Construction for the proposed site infrastructure is estimated to take approximately 6-12 months to complete. There is insufficient information to estimate dust emissions from the construction phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during construction is therefore qualitative. The impact assessment below applies to the construction phase of the proposed project, specifically focussing on construction dust.

Severity or magnitude of impact

Construction dust is generally coarse in nature and manifests as a nuisance rather than a health issue. The severity or magnitude of the impact associated with the construction activities is therefore considered to be insignificant (score = 2).

Spatial scale of activity

Construction dust is released close to ground level with little or no buoyancy. This implies that their dispersion is limited and the extent of potential impacts will be limited to the construction site (score = 1).

Duration of activity

Construction activities are likely to endure for a maximum of 6-12 months and impacts may only occur during this period. The duration of activity is therefore short-term (score = 2).

Frequency of activity

The frequency of impact of construction dust emissions on ambient air quality is assessed by considering how often the activity is undertaken. Construction activities will occur on a daily basis, and will last for the entire duration of the construction period (score = 5).

Frequency of incident/impact

Low levels of dust emissions are expected dust during construction activities. The frequency of incident of dust emissions on ambient air quality are therefore expected to be almost never/almost impossible/>20% (score = 1).

Legal issues

The National Dust Control Regulations were published on 1 November 2013 (DEA, 2013b). It lists guidance on the requirements for monitoring dust fallout and provides limit values for acceptable dustfall rates for residential and non-residential areas. Bylaws also prohibit activities that result in high levels of dust. In terms of legal issues, the impact of dust emissions on ambient air quality is therefore fully covered by legislation (score = 5).

Detection

The detection of impact of the dust emissions on ambient air quality during construction is assessed by evaluating how quickly/easily impacts/risks of activity on environment, people and property are detected. High levels of dust emissions are usually visible during dry, windy conditions, particularly from areas of the construction site that are continually disturbed or where natural vegetation has been removed. If dust levels are high, they are easily noticeable when they settle on property, mainly on the surfaces of exterior floors, windows

and vehicles. Dust monitors can be used to determine dust levels from construction sites. Detection of impacts is therefore considered to be undertaken without much effort (score = 2).

Consequence (Severity + Spatial Scale + Duration)

Consequence is a function of the severity, duration, and spatial scale of an impact. As discussed above:

- The severity or magnitude of the impact associated with the construction activity is considered to be insignificant (score = 2).
- The spatial scale of the impact is limited to the construction site (score = 1).
- The duration of the impact will be for a short-term of 6-12 months (score = 2).

Based on the equation provided, the consequence of construction dust resulting from construction activities has a score of 2+1+2=5.

Likelihood or Probability (Frequency of Activity + Frequency of Impact + Legal Issues + Detection)

The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. As discussed above:

- Construction activities will occur on a daily basis, and will last for the entire duration of the construction period (score = 5).
- The frequency of incident of dust emissions on ambient air quality are expected to be almost never/almost impossible/>20% (score = 1).
- In terms of legal issues, the impact of dust emissions on ambient air quality is fully covered by legislation (score = 5).
- Detection of impacts is considered to be undertaken without much effort (score = 2).

Based on the equation provided, the likelihood or probability of construction dust resulting from emissions from construction activities has a score of 5+1+5+2=13.

Environmental Significance/Risk (Consequence x Likelihood)

Significance is a function of consequence and likelihood. Based on the equation provided, the significance of construction dust resulting from emissions from construction activities has a score of 5x13=65.

Emissions of construction dust from sources associated with construction activities will result in an increase in ambient levels of dust. Although exposure to construction dust may not be regarded as a health issue, it does manifest as a nuisance. The status of the impact is therefore negative.

The significance of impact relating to emissions of construction dust from sources associated with construction activities is therefore predicted to be low (negative).

Irreplaceability of resource caused by impacts

Construction dust is generally coarse and manifests as a nuisance rather than a health issue. Emissions are released close to ground level with little or no buoyancy, which implies that their dispersion is limited and the extent of potential impacts will be limited to the construction site. Construction activities are likely to endure for a relatively short period of time. Air quality impacts occurring in the ambient environment as a result of construction activities are therefore not expected to incur a loss of any resources. Since no irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate), the irreplaceability of resources caused by impacts is rated as low.

Reversibility of impacts

Low levels of dust emissions are expected during construction activities. The generation of dust emissions will cease if construction activities stop. Air quality impacts occurring in the ambient environment as a result of construction activities are therefore expected to reverse with minimal rehabilitation and negligible residual effects. Since a high reversibility of impacts is possible, the reversibility of impacts is rated as high.

Mitigation measures to control dust

A few general recommendations to minimise the emission of dust from construction activities are proposed below:

- Strict enforcement of speed limits on all site roads
- Routine water spraying of site roads and denuded/disturbed areas (more frequent spraying may be necessary during dry, windy conditions)
- Removal of vegetation only if necessary
- Revegetation or paving of disturbed areas once construction activities are complete.

No further dust control or mitigation is deemed necessary as these measures will be adequate to control dust emissions.

6.6 Operational phase

TNPA Power Generation Project in isolation and with existing sources

Severity or magnitude of impact

The severity or magnitude of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by comparing the predicted SO_2, NO_2 PM_{10} and CO concentrations with the health-based NAAQS.

The predicted ambient SO_2 concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.03% of the limit value of the NAAQS. The severity or magnitude of the impact associated with SO_2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient NO_2 concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.001% of the limit value of the NAAQS. The severity or magnitude of the impact associated with NO_2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient PM_{10} concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.005% of the limit value of the NAAQS. The severity or magnitude of the impact associated with PM_{10} is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

The predicted ambient CO concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The maximum predicted concentrations are less than 0.0001% of the limit value of the NAAQS. The severity or magnitude of the impact associated with CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project in isolation.

Monitoring data for 2021-2023 has shown that ambient SO_2 concentrations are relatively high in Richards Bay, with many exceedances of the 1-hour and 24-hour NAAQS. The additive effect of the contribution of SO_2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient SO_2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of SO_2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for NO_2 in Richards Bay. Despite this, the additive effect of the contribution of NO_2 from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient NO_2 concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of NO_2 is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 has shown that ambient PM_{10} concentrations are relatively high in Richards Bay because of high regional background concentrations, with one exceedance of the 24-hour NAAQS. The additive effect of the contribution of PM_{10} from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient PM_{10} concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of PM_{10} is

therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Monitoring data for 2021-2023 is not available for CO in Richards Bay. Despite this, the additive effect of the contribution of CO from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient CO concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. The severity of the cumulative impact of CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project cumulatively with existing sources.

Spatial scale of activity

The spatial scale of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by evaluating the spatial extent of predicted SO_2, NO_2, PM_{10} and CO concentrations in the ambient environment.

In all cases the predicted ambient concentrations are very low relative to the NAAQS and the highest predicted concentrations occur within a 3 km radius to the west and north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas. The spatial scale of the impact is therefore local (score = 2) as impacts are limited to the Port of Richards Bay and the immediate surrounding areas for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Duration of activity

The duration of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering the operational lifespan of the proposed project. Impacts on ambient air quality in terms of SO_2, NO_2, PM_{10} and CO will exist for the entire duration of the proposed project. It is assumed that the duration of activity will be for a medium-term of 5-15 years (score = 3) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Frequency of activity

The frequency of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering how often the activity is undertaken. It is expected that the generator will only be used during emergency situations, which is mainly during loadshedding or in the event of power failures. As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Frequency of incident/impact

The frequency of incident of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by considering how often the activity will impact on ambient air quality. The predicted ambient concentrations of SO_2, NO_2, PM_{10} and CO are very low. The highest predicted concentrations are well below the respective NAAQS. The additive effect of the contribution of SO_2, NO_2, PM_{10} and CO from the proposed TNPA Power Generation Project is predicted to be very small and the potential increase in ambient concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. Impacts will only occur when the generator is in use during emergency situations, which is mainly during loadshedding or in the event of power failures. Impacts are therefore expected to be almost never/almost impossible/>20% (score = 1) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Legal issues

Ambient air quality in South Africa is governed by the National Environmental Management: Air Quality Act No. 39 of 2004 (NEM: AQA) and supporting regulations. According to the legislation, the act was promulgated "to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto".

Air quality objectives defined in Provincial and Municipal Air Quality Management Plans (AQMP) are achieved to a large extent through the enforcement of regulations supporting the NEM: AQA and through municipal by-laws.

In this study, reference has been made to the MES, NAAQS and AEL. In terms of legal issues, the impact of the proposed TNPA Power Generation Project emissions on ambient air quality in terms of predicted SO_2, NO_2, PM_{10} and CO concentrations in the ambient environment is fully covered by legislation (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Detection

The detection of impact of the proposed TNPA Power Generation Project emissions on ambient air quality is assessed by evaluating how quickly/easily impacts/risks of activity on environment, people and property are detected. Air dispersion modelling is a robust tool that is used to easily predict if ambient concentrations are compliant with the NAAQS, as has been done in this study. Fenceline monitoring can be used to determine ambient concentrations on the fenceline of a facility; and to assess compliance with the NAAQS, during the operational phase of the proposed project. Stack emission testing can be used to measure emissions within a stack and assess compliance with the MES, during the operational phase.

Detection of impacts is therefore considered to be undertaken without much effort (score = 2) , for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Consequence (Severity + Spatial Scale + Duration)

Consequence is a function of the severity, duration, and spatial scale of an impact. As discussed above:

- The severity (or magnitude) of the impact is expected to be insignificant (score = 2) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- The spatial scale of the impact is local (score = 2) as impacts are limited to the Port of Richards Bay and the immediate surrounding areas for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- The duration of the impact will be for a medium-term of 5-15 years (score = 3) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Based on the equation provided, the consequence of ambient concentrations of SO_2, NO_2, PM_{10} and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 2+2+3=7 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Likelihood or Probability (Frequency of Activity + Frequency of Impact + Legal Issues + Detection)

The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. As discussed above:

- As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- Impacts will only occur when the generator is in use during emergency situations, hence, impacts in terms of frequency of impact are therefore expected to be almost never/almost impossible/>20% (score = 1) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- In terms of legal issues, the impact of the proposed TNPA Power Generation Project emissions in the ambient environment is fully covered by legislation (score = 5) for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.
- Detection of impacts is considered to be undertaken without much effort (score = 2), for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Based on the equation provided, the likelihood or probability of ambient concentrations of SO_2, NO_2, PM_{10} and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 5+1+5+2=13 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Environmental Significance/Risk (Consequence x Likelihood)

Significance is a function of consequence and likelihood. Based on the equation provided, the significance of ambient concentrations of SO_2, NO_2, PM_{10} and CO resulting from emissions from the proposed TNPA Power Generation Project has a score of 7x13=91 for both the proposed TNPA Power Generation Project in isolation, and cumulatively with existing sources.

Emissions of SO_2, NO_X, PM_{10} and CO from sources associated with the proposed TNPA Power Generation Project will result in an increase in ambient concentrations of SO_2, NO_2, PM_{10} and CO. Exposure to air pollutants through inhalation poses a health risk, regardless of the concentration. The status of the impact is therefore negative for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

The significance of impact relating to emissions of SO_2, NO_X, PM_{10} and CO from sources associated with the proposed TNPA Power Generation Project is therefore predicted to be low (negative) for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Irreplaceability of resource caused by impacts

The predicted ambient concentrations of SO_2, NO_2, PM_{10} and CO are very low and well below the respective NAAQS. Air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project are therefore not expected to incur a loss of any resources. Since no irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate), the irreplaceability of resource caused by impacts is rated as low for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Reversibility of impacts

The predicted ambient concentrations of SO_2, NO_2, PM_{10} and CO are very low and well below the respective NAAQS. Air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project are therefore expected to reverse with minimal rehabilitation and negligible residual effects. Since a high reversibility of impacts is possible, the reversibility of impacts caused by the proposed TNPA Power Generation Project is rated as high for the proposed TNPA Power Generation Project in isolation and cumulatively with existing sources.

Mitigation measures to control stack emissions

The generator will be fitted with a water injection metering system to reduce NO_X emissions for gaseous fuel (LNG in this case) or liquid fuel (diesel in this case) operation. Demineralised water is injected into the combustor through ports in the fuel nozzles to produce NO_X suppression. Water is supplied to the nozzles by a special water manifold. Water injection can reduce NO_X emissions to 25 ppm (51 mg/Nm^3) for gaseous fuels and to 42 ppm (86 mg/Nm^3) for liquid fuel.

Air quality management interventions in the form of emission control have been considered in all aspects of design and operation. Further emission reduction interventions are deemed to be unnecessary considering the low impact of the proposed project on air quality. No further control or mitigation is necessary as these measures will be adequate to control exhaust emissions.

TNPA Power Generation Project with other gas-to-power projects

The Department of Mineral Resources and Energy launched the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in August 2020 to procure 2 000 MW of new generation from a range of energy technologies. The objective was to fill the short-term supply gap, alleviate the current electricity supply constraints and reduce the extensive use of diesel-based peaking generators.

Besides the proposed TNPA Power Generation Project, it is reasonable to expect that other electricity generation projects may be procured in Richards Bay as part of the RMIPPPP. It is therefore relevant to assess the potential cumulative effects of these projects on ambient air quality in Richards Bay. In this study, six potential projects have been identified for the assessment of cumulative impacts (Table 6-15).

Table 6-15: Potential electricity generation projects in Richards Bay

Project Name and Description	Applicant	Status as at June 2024
RBGP2 400 MW Gas-to-Power Project at RBIDZ 1F (proposed amendments to the existing Environmental Authorisation and EMPr): The Power Plant includes six gas turbines for mid-merit/peaking plant power provision, with two steam turbines using excess heat from the engines in a separate steam cycle, as well as three fuel tanks of 2000 m³ each for on-site fuel storage.	Richards Bay Gas Power 2 (Pty) Ltd (RBGP2)	Environmental Authorisation was issued in 2016. Amendment was applied for in 2020, and in May 2022 a review application was launched in the Pretoria High Court challenging the reissued authorization.

Project Name and Description	Applicant	Status as at June 2024
Richards Bay Combined Cycle Power Plant (CCPP): The CCPP and associated infrastructure will be located on Portion 2 of Erf 11376 and Portion 4 of Erf 11376 within the Richards Bay IDZ Zone 1D. The facility will operate with natural gas as the main fuel resource and diesel as a back-up resource.	Eskom Holdings SoC Limited	Environmental Authorisation was issued in December 2019, and in August 2022 a review application was launched in the Pretoria High Court challenging the authorization. Judgment was handed down by the Court on 6 October 2022. The Court dismissed the application brought by the NGO's and confirmed that the project's Environmental Authorisation is valid. Leave to appeal was declined on 18 January 2023. NERSA declined to concur with the determination of the Minister. NERSA has since changed its mind and brought an application to the North Gauteng High Court to review its own decision, which was heard on 25 April 2023.
Phinda 320 MW Emergency Risk Mitigation Power Plant (RMPP): The project site is to be located in Alton, near the Richards Bay Industrial Development Zone (IDZ). The facility will have an installed generating capacity of 320 MW, operating with liquified petroleum gas (LPG) or naphtha as an initial source and will convert to using natural gas (NG) once this is available in Richards Bay.	Phinda Power Producers (Pty) Ltd	Environmental Authorisation was granted in July 2021, but the decision was challenged by NGOs by an appeal. The appeal was dismissed by the Minister in November 2021. The NGOs have taken the matter on review to the Pretoria High Court.
Nseleni Independent Floating Power Plant (NIFPP): The project site is to be located at the Port of Richards Bay. The project includes a floating gas-powered power station made up of floating combined cycle gas turbine (CCGT) Power Plants and associated infrastructure for the evacuation of power from the NIFPP to the National Grid. Four floating power	Nseleni Power Corporation (Pty) Ltd and Anchor Energy (Pty) Ltd	The proposed Nseleni Independent Floating Gas Power Plant in Richards Bay was refused for two of its licence applications by different regulatory authorities. Nseleni's application for an Environmental Authorisation was refused by the DFFE on 19 November 2021, and the project's application for a water use license was refused by the DWS on 25

Project Name and Description	Applicant	Status as at June 2024
barges generating a nominal 700 MW per barge will result in 2800 MW generation capacity.		November 2021. Nseleni have apparently appealed the refusals.
Phakwe RBGP3 2000 MW Gas-to-Power Project (RBGP3) at RBIDZ 1F: The Power Plant includes up to four combined cycle gas turbine (CCGT) Power Plants and associated infrastructure for the generation of electricity using natural gas or a combination of natural gas and hydrogen, and up to four heat recovery steam generators (HRSGs) to generate additional electricity from the capture of excess heat from the turbine exhausts.	Phakwe Richards Bay Gas Power 3 (Pty) Ltd (PRBGP3)	Draft EIAr issued for comments on 4 June 2022 – 22 July 2022. EA was issued on 6 Dec 2022. An appeal was lodged in January 2023.
Karpowership 450 MW Gas-to-Power Powership Project at the Port of Richards Bay: Karpowership SA Proprietary Ltd proposes to locate a Khan Class Powership and a Shark Class Powership in the Port of Richards Bay to supply 450 MW of power to the National Grid using Liquified Natural Gas (LNG). A Floating Storage and Regasification Unit (FSRU), also located in the Port, will store the LNG and convert it to Natural Gas (NG) to supply the Powership.	Karpowership SA Proprietary Ltd	Environmental Authorisation was granted to Karpowership SA in October 2023. An AEL was issued to Karpowership SA in November 2023. An appeal against the Environmental Authorisation and Environmental Impact Assessment (EIA) was lodged by groundWork and the South Durban Community Environmental Alliance (SDCEA), supported by the Centre for Environmental Rights, Natural Justice and The Green Connection in December 2023.

RBGP2 400 MW Gas-to-Power Project (RBGP2) at RBIDZ 1F

Richards Bay Gas Power 2 (Pty) Ltd proposes the establishment of a gas-to-power plant with a generation capacity of up to 400 MW with associated infrastructure in Zone 1F in the Richards Bay IDZ. The RBGP2 Project will initially require liquid fuel such as diesel or liquefied petroleum gas (LPG) and ultimately liquid natural gas (LNG) or natural Gas (NG). Two operational scenarios were therefore assessed in the AIR (uMoya-NILU, 2016). These were Scenario 1: Power generation using diesel, including stack emissions and fugitive emissions from the diesel storage tanks and Scenario 2: Power generation using LNG via pipeline, including stack emissions only.

The main findings of the air quality assessment (uMoya-NILU, 2016) are:

- The maximum predicted ambient concentration of SO_2, NO_2, PM_{10} and CO resulting from emission from the two scenarios occur close to the project site and are very low compared to the respective NAAQS (Table 6-16).
- For Scenario 1 (diesel) and Scenario 2 (LNG), the significance of the impact of the RBGP2 Project on ambient air quality was rated as low for SO_2, NO_X, PM_{10} and CO, without and with mitigation.

Table 6-16: Maximum predicted annual average concentration and the 99th percentile concentration for the 24-hour and 1-hour predictions at the points of maximum ground-level concentration (uMoya-NILU, 2016a)

	SO_2 (µg/m³)		
	Scenario 1: Diesel	**Scenario 2: LNG**	**NAAQS**
1-hour	7.19	3.43	350
24-hour	3.01	1.43	125
Annual	0.25	0.12	50
	NO_2 (µg/m³) controlled in brackets		
	Scenario 1: Diesel	**Scenario 2: LNG**	**NAAQS**
1-hour	50.15 (13.68)	18.66 (7.58)	200
Annual	1.71 (0.47)	0.64 (0.26)	40
	PM_{10} (µg/m³)		
	Scenario 1: Diesel	**Scenario 2: LNG**	**NAAQS**
24-hour	0.36	0.20	75
Annual	0.03	0.02	40
	CO (µg/m³) uncontrolled		
	Scenario 1: Diesel	**Scenario 2: LNG**	**NAAQS**
1-hour	0.24	5.98	30 000
8-hour	0.19	4.77	10 000

Regarding cumulative impacts, the proposed RBGP2 plant is located in an area where there are many notable sources of SO_2, NO_2, PM_{10} and CO. Emissions of SO_2, NO_2, PM_{10} and CO from the combustion of diesel during Phase 1 and LNG during Phase 2 will increase the existing ambient concentrations of these pollutants in the immediate vicinity of the plant. The predicted ambient concentrations of SO_2, NO_2, PM_{10} and CO are however very low. The contribution to ambient concentrations beyond the immediate vicinity of the proposed gas-to-power plant is predicted to be small and is highly unlikely to make a significant contribution to the cumulative impacts. It is highly unlikely that they will result in exceedances of the NAAQS. The significance of the cumulative impact is therefore rated as low (Table 6-18).

Richards Bay Combined Cycle Power Plant (CCPP)

The Richards Bay Combined Cycle Power Plant (CCPP) involves the construction of a gas-fired power station which will supply electrical power to the national grid. The proposed site location is 7 km from the CBD and adjacent to Mondi Richards Bay. It will have an installed

capacity of 3 000 MW and use natural gas with diesel as back-up fuel. Electricity generation will be via eight gas turbines and four heat recovery steam generators (HRSG) with four steam turbines.

The AIR was compiled by Airshed Planning Professionals (Airshed, 2019). Normal operations (using gas) and three emergency scenarios when the HSRG and steam turbine are offline were assessed. In Emergency 1, gas is used and the emission is via the by-pass stack. Emergency 2 and Emergency 3 use diesel with emissions via the main stack and the by-pass stack respectively. Emergency events are expected to be less than 88 hours in a year, each less than 8 hours.

The main findings of the air quality assessment (Airshed, 2019) are:

- For PM_{10}, for normal operations and emitting at Minimum Emission Standards no exceedances of the NAAQS were simulated and the predicted ambient concentrations were less than 3 µg/m^3 throughout the modelling domain. The predicted concentrations are low for the three emergency scenarios, i.e. less than 2.0 µg/m^3 for Emergency 1, less than 3.6 µg/m^3 for Emergency 2, and less than 2.5 µg/m^3 for Emergency 3. For PM_{10}, the significance of the impact was rated as low.
- For SO_2, for normal operations and using emission factors for gas turbines for LNG, no exceedances of the NAAQS were simulated. The predicted 1-hour ambient concentrations were less than 0.7 µg/m^3, the predicted 24-hour concentrations were less than 0.21 µg/m^3 and the predicted annual ambient concentrations were less than 0.07 µg/m^3. For Emergency 2, exceedances of the 1-hour NAAQS of 350 µg/m^3 are predicted up to 9 km from the plant. The predicted 1-hour maximum SO_2 concentration for Emergency 1 and 3 of 207.4 µg/m^3 and 259.5 µg/m^3 comply with the NAAQS. For SO_2 the significance of the impact was rated as medium as a result of Emergency 2 using diesel.
- For NO_2, for normal operations no exceedances of the NAAQS were predicted. The annual predicted concentrations were less than 23 µg/m^3 and the hourly concentrations less than 80 µg/m^3. For Emergency 3, exceedances of the 1-hour NAAQS of 200 µg/m^3 are predicted up to 3.5 km from the plant. The predicted 1-hour maximum NO_2 concentrations for Emergency 1 and 2 of 25 µg/m^3 and 179.9 µg/m^3 comply with the NAAQS. For NO_2 the significance of the impact was rated as low.

Regarding cumulative impacts, emissions from the CCPP would elevate ambient concentrations and the significance of the cumulative impact was rated as medium for SO_2 and low for NO_2 and PM_{10} (Table 6-18).

Phinda 320 MW Emergency Risk Mitigation Power Plant (RMPP) at RBIDZ 1F

Phinda Power Producers (Pty) Ltd propose to develop and operate a 320 MW Power Plant and associated infrastructure in Alton, using liquified petroleum gas (LPG) or naphtha as an initial source and will convert to using natural gas once this is available in Richards Bay.

The main findings of the air quality assessment (Airshed, 2021) are:

- The construction (and decommissioning) phase(s) are likely to have a low impact on ambient air quality before and after effective mitigation.
- Compliance with hourly, daily and annual NAAQS under normal operations for SO_2, NO_2, PM_{10}, CO and VOCs.
- A low impact significance is predicted for ambient SO_2, NO_2, PM_{10}, CO, and VOC concentrations for the operational phase based on design mitigation measures with no further need for mitigation.

Regarding cumulative impacts, emissions of SO_2, NO_2, PM, CO and VOCs from the proposed Phinda Power Plant will increase existing ambient concentrations of these pollutants in the immediate vicinity of the plant. The predicted ambient concentrations are however low. The contribution to ambient concentrations beyond the immediate vicinity of the proposed gas-to-power plant is expected to be small and is unlikely to make a significant contribution to the cumulative impacts. The significance of the cumulative impacts on ambient SO_2, NO_2, PM_{10} and CO concentrations is therefore rated as low (Table 6-18).

Nseleni Independent Floating Power Plant (NIFPP)

Nseleni Power Corporation (Pty) Ltd and Anchor Energy (Pty) Ltd is proposing to establish a floating gas-powered power station consisting of floating combined cycle gas turbine (CCGT) Power Plants (known as the Nseleni Independent Floating Power Plant (NIFPP)) and associated infrastructure for the evacuation of power from the NIFPP to the National Grid, in the Port of Richards Bay. The EIA is in process and is being led by SE Solutions (2021).

Initially four floating power barges are proposed (700 MW generated per barge) resulting in a combined generation capacity of 2 800 MW. Thereafter, additional barges would be added to increase the combined power generation potential to as much as 8 400 MW. The fuel proposed is LNG. The power plants will use CCGT technology, providing high generation efficiencies. The gas turbines have low NO_X burners and selective catalytic reduction (SCR) to control NO_X emissions and three-stage filtration to remove respirable particulate matter (PM). Power will be evacuated to a newly constructed land-based substation and switching yard, and from there into the national grid. Approximately 220 000 tonne of LNG will be delivered monthly to the NIFPP and would be offloaded from supply vessels into floating storage units (FSUs) connected to the LNG terminal.

The main findings of the air quality impact assessment which are listed in the Draft Environmental Impact Report (SE Solutions, 2021) are:

- Dust is the principal emission during construction but sources of dust are limited; conventional dust suppression would mitigate the impact still further.
- Predicted SO_2 and NO_2 concentrations are within the NAAQS across the modelling domain. The contribution from the NIFPP is small for SO_2 (less than 5% of the hourly, daily and annual SO_2 limit values), while the contribution from the NIFPP is a maximum of 65% of the NO_2 hourly average limit when considering the project within the existing ambient air quality within the modelling domain.

- Cumulative PM_{10} concentrations may exceed the daily NAAQS based on ambient data at Harbour West, Scorpio, and Arboretum monitoring stations due to the elevated baseline concentrations in those areas. However, the contribution from the NIFPP to those elevated concentrations would be small.

Regarding cumulative impacts, emissions from the NIFPP would elevate ambient concentrations and the significance of the cumulative impact was rated as very low for SO_2, and PM_{10} and low for NO_2 (Table 6-18).

Phakwe RBGP3 2000 MW Gas-to-Power Project (RBGP3) at RBIDZ 1F

Phakwe Richards Bay Gas Power 3 (Pty) Ltd proposes to operate a CCGT Power Plant in the Richards Bay IDZ with a generating capacity of up to 2 000 MW using natural gas or a mixture of natural gas and hydrogen.

The main findings of the air quality assessment (Airshed, 2022) are:

- The construction (and decommissioning) phase(s) are likely to have a low impact on the ambient air quality before and after effective mitigation.
- Compliance with hourly, daily and annual NAAQS under normal operations for SO_2, PM_{10}, $PM_{2.5}$, CO and TVOCs is predicted.
- Predicted exceedances of the limit value concentration of the NAAQS for NO_2 could result from the normal operation, but the frequency of exceedance is likely to be within that allowed by the NAAQS.
- A low impact significance is predicted for ambient SO_2, PM, CO, and VOC concentrations for the operational phase based on design mitigation measures with no further need for mitigation.
- A medium impact significance is predicted for ambient NO_2 concentrations during the operational phase, however, with additional mitigation measures the significance could be reduced to low.
- The predicted ambient NO_2 concentrations exceed the NAAQS during start-up at residential receptors, schools and medical facilities. However, the impacts can be reduced if the turbines reach Minimum Emission Standards in less than 30 minutes, and if the frequency of start-up events is reduced.

Regarding cumulative impacts, the proposed Phakwe RBGP3 project site is located in an area where there are many notable sources of SO_2, NO_2 and PM_{10}. Emissions of SO_2, NO_2, PM, CO and VOCs will increase the existing ambient concentrations of these pollutants in the immediate vicinity of the plant. The predicted ambient concentrations are however low. The contribution to ambient concentrations beyond the immediate vicinity of the proposed gas-to-power plant is expected to be small and is highly unlikely to make a significant contribution to the cumulative impacts. The predicted NO_2 concentrations exceed the limit value of the NAAQS, but comply with the frequency of exceedance. The significance of the cumulative impact on ambient NO_2 concentrations in therefore rated as low (Table 6-18).

Karpowership 450 MW Gas-to-Power Powership Project at the Port of Richards Bay

The Karpowership Project at the Port of Richards Bay comprises the Khan Powership and Shark Powership combination, the FSRU and the LNG supply vessel. Each engine has a dedicated stack, or point source. On the Khan Class Powership the 21 stacks are orientated along the vessel from bow to stern. On the Shark Class Powership the 6 stacks are orientated along the deck. LNG supply vessels will restock the FSRU approximately once every 20 to 30 days.

The main findings of the air quality assessment (uMoya-NILU, 2023) are:

- The maximum predicted annual SO_2, NO_2 and PM_{10} concentrations and the 99th percentile of the 24-hour and 1-hour predicted concentrations are very low and are well below the respective NAAQS (Table 6-17).
- The highest predicted ambient concentrations occur within 2 km over the industrial area northeast of the Port of Richards Bay and south-southwest of the project area over parts of the Port of Richards Bay and naturally vegetated areas.
- The contribution from the Karpowership Project will add to the existing ambient concentrations in Richards Bay. The greatest addition will be at the point of maximum with lower concentrations elsewhere. The added effect is small and will not result in exceedances of the NAAQS.

Table 6-17: Maximum predicted annual average concentration and the 99th percentile concentration for the 24-hour and 1-hour predictions at the points of maximum ground-level concentration (uMoya-NILU, 2023)

Description	Annual	24-hour	1-hour
	SO_2		
Predicted maximum SO_2	0.07	0.34	0.94
NAAQS	50	125	350
	NO_2		
Predicted maximum NO_2	1.34		18.9
NAAQS	40		200
	PM_{10}		
Predicted maximum PM_{10}	0.33	1.72	
NAAQS	40	75	

Contribution of the Karpowership Project to the existing ambient concentrations is very small. The cumulative effect of the Karpowership Project with existing sources is likely to be very low. Air quality management interventions in the form of the control of emission have been considered in all aspects of design and operation. Further interventions to reduce emissions are deemed to be unnecessary considering the low impact of the project on air quality. With low predicted ambient concentrations for SO_2 and PM_{10} the consequence of impacts is very low. The predicted ambient NO_2 are somewhat higher, but the consequence of the impact is low. The likelihood of occurrence of impacts associated with SO_2, NO_2 and PM_{10} is very low. Therefore, the significance of impacts resulting from the Karpowership Project is predicted to be very low (Table 6-18).

Summary

The cumulative impacts on air quality of the six potential gas-to-power projects and the proposed TNPA Power Generation Project may be assessed if it is assumed that all seven projects operate together. The significance of the impacts resulting from operations of the individual projects are presented in Table 6-18. The highest rating for an individual project is used to assess the potential cumulative impact of all seven gas-to-power projects (Table 6-18).

For NO_2 and PM_{10} the significance of the cumulative impact of the proposed TNPA Power Generation Project with other gas-to-power projects is rated as low. For SO_2 the significance of the impact is rated as medium because of the predicted exceedances of ambient SO_2 concentrations during the Richards Bay CCPP – Emergency 2 simulation using diesel and emitting via the main stack.

King Cetshwayo District Municipality (KCDM) is responsible for the Atmospheric Emission Licensing (AEL) function in the District, including the issue of AELs and the enforcement of conditions of the AELs. The KCDM developed its first Air Quality Management Plan (AQMP) in 2014 to guide air quality management in the District. With the assistance of GreenApple Sustainability Solutions, the KCDM is currently reviewing the AQMP. The vision of the AQMP is to fulfil the requirement of Section 24 of the Constitution, i.e. to ensure clean and healthy air for all (GreenApple Sustainability Solutions, 2022). To achieve this, the AQMP sets goals including, amongst others, cooperative governance for air quality management, the strengthening of the systems and tools to implement the AQMP, and the capacity and skills to implement the AQMP. The KCDM is also developing Air Quality Management Bylaws to assist with the enforcement of the AQMP, see:
http://www.kingcetshwayo.gov.za/images/Policies/Draft%20KCDM%20AQMP%202022.pdf

Considering the air quality mandate of the KCDM and the demonstrated regulatory intent, cumulative impacts of the proposed TNPA Power Generation Project together with existing and new proposed energy projects are considered to be medium for SO_2 and low for NO_2, PM_{10}, CO.

Table 6-18: Significance of project and cumulative impacts

Project	SO_2	NO_2	PM_{10}	CO	Reference
RBGP2 400 MW Gas-to-Power Project (RBGP2) at RBIDZ 1F	Low	Low	Low	Low	uMoya-NILU (2016a)
Richards Bay Combined Cycle Power Plant (CCPP)	Medium	Low	Low	Not assessed	Airshed (2019)
Phinda 320 MW Emergency Risk Mitigation Power Plant (RMPP) at RBIDZ 1F	Low	Low	Low	Low	Airshed (2021)
Nseleni Independent Floating Power Plant (NIFPP)	Very low	Low	Very low	Not assessed	Professional opinion; SE Solutions (2021)
Phakwe RBGP3 2000 MW Gas-to-Power Project (RBGP3) at RBIDZ 1F	Low	Low	Low	Low	Airshed (2022)
Karpowership 450 MW Gas-to-Power Powership Project at the Port of Richards Bay	Very low	Very low	Very low	Not assessed	uMoya-NILU (2023)
TNPA Power Generation Project at the Port of Richards Bay	Very low	Very low	Very low	Very low	uMoya-NILU (2024)
Cumulative impact	**Medium**	**Low**	**Low**	**Low**	**Highest rating across different projects**

Severity or magnitude of impact

The severity or magnitude of impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by comparing the predicted SO_2, NO_2 PM_{10} and CO concentrations with the health-based NAAQS.

The predicted ambient SO_2 concentrations are high relative to the NAAQS and there are predicted exceedances of the NAAQS. The severity or magnitude of the impact associated with SO_2 is therefore predicted to be high (score = 8) for the proposed TNPA Power Generation Project with other gas-to-power projects.

The predicted ambient NO_2, PM_{10} and CO concentrations are very low relative to the NAAQS and there are no predicted exceedances of the NAAQS. The severity or magnitude of the impact associated with NO_2, PM_{10} and CO is therefore predicted to be insignificant (score = 2) for the proposed TNPA Power Generation Project with other gas-to-power projects.

Spatial scale of activity

The spatial scale of impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by evaluating the spatial extent of predicted SO_2, NO_2, PM_{10} and CO concentrations in the ambient environment.

For SO_2, the highest predicted concentrations are expected to occur within a 15 km radius. The spatial scale of the impact is therefore regional (score = 3) for the proposed TNPA Power Generation Project with other gas-to-power projects.

For NO_2, PM_{10} and CO, the predicted ambient concentrations are very low relative to the NAAQS and the highest predicted concentrations are expected to occur within a 5 km radius. The spatial scale of the impact is therefore local (score = 2) as impacts are limited to the Port of Richards Bay and the immediate surrounding areas for the proposed TNPA Power Generation Project with other gas-to-power projects.

Duration of activity

The duration of impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by considering the operational lifespan of the projects. Impacts on ambient air quality in terms of SO_2, NO_2, PM_{10} and CO will exist for the entire duration of the projects. It is assumed that the duration of activity will be for a medium-term of 5-15 years (score = 3) for the proposed TNPA Power Generation Project with other gas-to-power projects.

Frequency of activity

The frequency of impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by considering how often the activity

is undertaken. As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for the proposed TNPA Power Generation Project with other gas-to-power projects.

Frequency of incident/impact

The frequency of incident of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by considering how often the activity will impact on ambient air quality.

For SO_2, the predicted concentrations are high with many exceedances of the NAAQS. Impacts are therefore expected to be often/regularly/likely/possible/>80% (score = 4) for the proposed TNPA Power Generation Project with other gas-to-power projects.

For NO_2, PM_{10} and CO, predicted ambient concentrations are very low. The highest predicted concentrations are well below the respective NAAQS. The additive effect of the contribution of NO_2, PM_{10} and CO from the proposed TNPA Power Generation Project with other gas-to-power projects is predicted to be very small and the potential increase in ambient concentrations is highly unlikely to result in elevated concentrations or further exceedances of the NAAQS. Impacts are therefore expected to be almost never/almost impossible/>20% (score = 1) for the proposed TNPA Power Generation Project with other gas-to-power projects.

Legal issues

As discussed previously, ambient air quality in South Africa is governed by the National Environmental Management: Air Quality Act No. 39 of 2004 (NEM: AQA) and supporting regulations. Air quality objectives defined in Provincial and Municipal Air Quality Management Plans (AQMP) are achieved to a large extent through the enforcement of regulations supporting the NEM: AQA and through municipal by-laws.

In terms of legal issues, the impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality in terms of predicted SO_2, NO_2, PM_{10} and CO concentrations in the ambient environment is fully covered by legislation (score = 5).

Detection

The detection of impact of the proposed TNPA Power Generation Project emissions with other gas-to-power projects on ambient air quality is assessed by evaluating how quickly/easily impacts/risks of activity on environment, people and property are detected. As discussed previously, air dispersion modelling is a robust tool that is used to easily predict if ambient concentrations are compliant with the NAAQS, as has been done in this study. Fenceline monitoring can be used to determine ambient concentrations on the fenceline of a facility; and to assess compliance with the NAAQS, during the operational phase of all projects. Stack

emission testing can be used to measure emissions within a stack and assess compliance with the MES, during the operational phase. Detection of impacts is therefore considered to be undertaken without much effort (score = 2), for the proposed TNPA Power Generation Project with other gas-to-power projects.

Consequence (Severity + Spatial Scale + Duration)

Consequence is a function of the severity, duration, and spatial scale of an impact. As discussed above:

- The severity (or magnitude) of the impact is expected to be high (score = 8) for SO_2 and insignificant (score = 2) for NO_2, PM_{10} and CO.
- The spatial scale of the impact is regional (score = 3) for SO_2 and local (score = 2) for NO_2, PM_{10} and CO.
- The duration of the impact will be for a medium-term of 5-15 years (score = 3) for SO_2, NO_2, PM_{10} and CO.

Based on the equation provided:

- The consequence of ambient concentrations of SO2 resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 8+3+3=14.
- The consequence of ambient concentrations of NO2, PM10 and CO resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 2+2+3=7.

Likelihood or Probability (Frequency of Activity + Frequency of Impact + Legal Issues + Detection)

The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. As discussed above:

- As a worst-case scenario, it is expected that the frequency of activity will be definite/always/permanent/daily (score = 5) for SO_2, NO_2, PM_{10} and CO.
- Impacts are expected to be often/regularly/likely/possible/>80% (score = 4) for SO_2, and almost never/almost impossible/>20% (score = 1) for NO_2, PM_{10} and CO.
- In terms of legal issues, the impact of the proposed TNPA Power Generation Project with other gas-to-power project emissions in the ambient environment is fully covered by legislation (score = 5) for SO_2, NO_2, PM_{10} and CO.
- Detection of impacts is considered to be undertaken without much effort (score = 2) for SO_2, NO_2, PM_{10} and CO.

Based on the equation provided:

- The likelihood or probability of ambient concentrations of SO_2, resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 5+4+5+2=16.

- The likelihood or probability of ambient concentrations of NO_2, PM_{10} and CO resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 5+1+5+2=13.

Environmental Significance/Risk (Consequence x Likelihood)

Significance is a function of consequence and likelihood. Based on the equation provided:

- The significance of ambient concentrations of SO_2 resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 14x16=224.
- The significance of ambient concentrations of NO_2, PM_{10} and CO resulting from emissions from the proposed TNPA Power Generation Project with other gas-to-power projects has a score of 7x13=91.

Emissions of SO_2, NO_X, PM_{10} and CO from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects will result in an increase in ambient concentrations of SO_2, NO_2, PM_{10} and CO. Exposure to air pollutants through inhalation poses a health risk, regardless of the concentration. The status of the impact is therefore negative.

The significance of impact relating to emissions from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects is therefore predicted to be medium (negative) for SO_2 and low (negative) for NO_2, PM_{10} and CO.

Irreplaceability of resource caused by impacts

The predicted ambient concentrations of SO_2 is high with many exceedances of the NAAQS while NO_2, PM_{10} and CO are very low and well below the respective NAAQS. Despite the high SO_2, air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project with other gas-to-power projects are not expected to incur a loss of any resources. Since no irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate), the irreplaceability of resource caused by impacts is rated as low for the proposed TNPA Power Generation Project with other gas-to-power projects.

Reversibility of impacts

The predicted ambient concentrations of SO_2 is high with many exceedances of the NAAQS while NO_2, PM_{10} and CO are very low and well below the respective NAAQS. Despite the high SO_2, air quality impacts occurring in the ambient environment as a result of the proposed TNPA Power Generation Project with other gas-to-power projects is expected to reverse with minimal rehabilitation and negligible residual effects. Since a high reversibility of impacts is possible, the reversibility of impacts caused by the proposed TNPA Power Generation Project with other gas-to-power projects is rated as high.

Mitigation measures to control stack emissions

In general, air quality management interventions in the form of emission control have been considered in all aspects of design and operation for all gas-to-power projects. Further emission reduction interventions are deemed to be necessary, specifically for SO_2 for the Richards Bay CCPP – Emergency 2 simulation using diesel, considering the high impact on air quality. No further control or mitigation is necessary for NO_2, PM_{10} and CO as proposed measures will be adequate to control these emissions.

6.7 Decommissioning and closure phase

The decommissioning and closure phase will mainly entail disassembly of the generator and associated infrastructure, including storage tanks, and removal from site. All other infrastructure such as fencing, laydown areas, pipelines and transmission lines which may no longer be needed will be demolished. Most of the site is expected to be paved and in good condition at closure. This area could be cleaned and used by future tenants that would occupy the site.

Most of these activities generate dust. As with construction, the dust is generally coarse, but may include some fine respirable particles. Dust emissions were not estimated for the closure phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during decommissioning is therefore qualitative.

A range of vehicles and equipment are used during decommissioning including heavy duty vehicles and mobile generators. Activities during decommissioning are associated with the movement of a range of vehicles and equipment including bulldozers, excavators and tipper trucks. All aspects of decommissioning inherently generate dust, but the movement of construction vehicles on the unpaved surfaces at the site are generally the largest source of dust. Dust is also easily entrained from exposed areas by wind.

Decommissioning of the proposed site infrastructure is estimated to take approximately 6-12 months to complete. There is insufficient information to estimate dust emissions from the decommissioning phase as they require specific information on the nature and duration of the activities as well as the equipment and vehicles. The assessment of air quality impacts during decommissioning is therefore qualitative. The impact assessment below applies to the decommissioning phase of the proposed project, specifically focussing on dust.

Severity or magnitude of impact

Dust is generally coarse in nature and manifests as a nuisance rather than a health issue. The severity or magnitude of the impact associated with the decommissioning activities is therefore considered to be insignificant (score = 2).

Spatial scale of activity

Dust is released close to ground level with little or no buoyancy. This implies that their dispersion is limited and the extent of potential impacts will be limited to the decommissioning site (score = 1).

Duration of activity

Decommissioning activities are likely to endure for a maximum of 6-12 months and impacts may only occur during this period. The duration of activity is therefore short-term (score = 2).

Frequency of activity

The frequency of impact of dust emissions on ambient air quality is assessed by considering how often the activity is undertaken. Decommissioning activities will occur on a daily basis, and will last for the entire duration of the decommissioning period (score = 5).

Frequency of incident/impact

Low levels of dust emissions are expected dust during decommissioning activities. The frequency of incident of dust emissions on ambient air quality are therefore expected to be almost never/almost impossible/>20% (score = 1).

Legal issues

The National Dust Control Regulations were published on 1 November 2013 (DEA, 2013b). It lists guidance on the requirements for monitoring dust fallout and provides limit values for acceptable dustfall rates for residential and non-residential areas. Bylaws also prohibit activities that result in high levels of dust. In terms of legal issues, the impact of dust emissions on ambient air quality is therefore fully covered by legislation (score = 5).

Detection

The detection of impact of the dust emissions on ambient air quality during decommissioning is assessed by evaluating how quickly/easily impacts/risks of activity on environment, people and property are detected. High levels of dust emissions are usually visible during dry, windy conditions, particularly from areas of the site that are continually disturbed or where natural vegetation has been removed. If dust levels are high, they are easily noticeable when they settle on property, mainly on the surfaces of exterior floors, windows and vehicles. Dust monitors can be used to determine dust levels from the decommissioning site. Detection of impacts is therefore considered to be undertaken without much effort (score = 2).

Consequence (Severity + Spatial Scale + Duration)

Consequence is a function of the severity, duration, and spatial scale of an impact. As discussed above:

- The severity or magnitude of the impact associated with the decommissioning activity is considered to be insignificant (score = 2).
- The spatial scale of the impact is limited to the decommissioning site (score = 1).
- The duration of the impact will be for a short-term of 6-12 months (score = 2).

Based on the equation provided, the consequence of dust resulting from decommissioning activities has a score of 2+1+2=5.

Likelihood or Probability (Frequency of Activity + Frequency of Impact + Legal Issues + Detection)

The likelihood or probability of occurrence of the activity is based on frequencies of the activity and impact, whether the activity is governed by legislation and how easily it can be detected. As discussed above:

- Decommissioning activities will occur on a daily basis, and will last for the entire duration of the decommissioning period (score = 5).
- The frequency of incident of dust emissions on ambient air quality are expected to be almost never/almost impossible/>20% (score = 1).
- In terms of legal issues, the impact of dust emissions on ambient air quality is fully covered by legislation (score = 5).
- Detection of impacts is considered to be undertaken without much effort (score = 2).

Based on the equation provided, the likelihood or probability of dust resulting from emissions from decommissioning activities has a score of 5+1+5+2=13.

Environmental Significance/Risk (Consequence x Likelihood)

Significance is a function of consequence and likelihood. Based on the equation provided, the significance of dust resulting from emissions from decommissioning activities has a score of 5x13=65.

Emissions of dust from sources associated with decommissioning activities will result in an increase in ambient levels of dust. Although exposure to dust may not be regarded as a health issue, it does manifest as a nuisance. The status of the impact is therefore negative.

The significance of impact relating to emissions of dust from sources associated with decommissioning activities is therefore predicted to be low (negative).

Irreplaceability of resource caused by impacts

Dust is generally coarse and manifests as a nuisance rather than a health issue. Emissions are released close to ground level with little or no buoyancy, which implies that their dispersion is limited and the extent of potential impacts will be limited to the decommissioning site. Decommissioning activities are likely to endure for a relatively short period of time. Air quality impacts occurring in the ambient environment as a result of decommissioning activities are therefore not expected to incur a loss of any resources. Since no irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate), the irreplaceability of resources caused by impacts is rated as low.

Reversibility of impacts

Low levels of dust emissions are expected during decommissioning activities. The generation of dust emissions will cease if decommissioning activities stop. Air quality impacts occurring in the ambient environment as a result of decommissioning activities are therefore expected to reverse with minimal rehabilitation and negligible residual effects. Since a high reversibility of impacts is possible, the reversibility of impacts is rated as high.

Mitigation measures to control dust

A few general recommendations to minimise the emission of dust from decommissioning activities are proposed below:

- Strict enforcement of speed limits on all site roads
- Routine water spraying of site roads and denuded/disturbed areas (more frequent spraying may be necessary during dry, windy conditions)
- Removal of vegetation only if necessary
- Revegetation of disturbed areas once decommissioning activities are complete.

No further dust control or mitigation is deemed necessary as these measures will be adequate to control dust emissions.

Table 6-19: Air quality impact scores

Description	Pollutants	Severity or magnitude	Spatial scale	Duration	Frequency of activity	Frequency of incident/impact	Legal issues	Detection	Consequence	Likelihood	Significance	Irreplaceability	Reversibility
Construction Phase	Dust	2	1	2	5	1	5	2	5	13	Low (-65)	Low	High
Operational Phase: TNPA Power Generation Project in isolation	SO_2	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	NO_2	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	PM_{10}	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	CO	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
Operational Phase: TNPA Power Generation Project with existing sources (cumulative)	SO_2	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	NO_2	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	PM_{10}	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	CO	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
Operational Phase: TNPA Power Generation Project with other gas-to-power projects (cumulative)	SO_2	8	3	3	5	4	5	2	14	16	Medium (-224)	Low	High
	NO_2	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	PM_{10}	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
	CO	2	2	3	5	1	5	2	7	13	Low (-91)	Low	High
Decommissioning Phase	Dust	2	1	2	5	1	5	2	5	13	Low – 65	Low	High

6.8 Analysis of Emissions' Impact on the Environment

This AIR has focused on potential human health impacts. An assessment of the atmospheric impact of the facility on the environment was therefore not undertaken as part of this AIR.

7. COMPLAINTS

Not relevant to this AIR as this is a proposed facility.

8. CURRENT OR PLANNED AIR QUALITY MANAGEMENT INTERVENTIONS

Air quality management interventions in the form of the control of emission have been considered in all aspects of design and operation. Further interventions to reduce emissions are deemed to be unnecessary considering the low impact of the proposed project on air quality.

Routine emission measurements to demonstrate compliance with the Minimum Emission Standards may be stipulated by the Licensing Authority in the Atmospheric Emission License (AEL).

9. COMPLIANCE AND ENFORCEMENT ACTIONS

Not relevant to this AIR as this is a proposed facility.

10. SUMMARY AND CONCLUSION

Due to the electricity challenges faced by the port, TNPA proposes to procure and install a duel-fuel 22 MW generator at the Port of Richards Bay to support port operations. This project will generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss during these events. The generator is capable of producing electricity using diesel or liquefied natural gas (LNG).

The CALPUFF dispersion model is used to predict ambient concentrations of SO_2, NO_2, PM_{10} and CO resulting from the proposed TNPA Power Generation Project emissions for the diesel-fired and gas-fired option. Modelling is done according to the modelling regulations and 3-years of hourly surface and upper air meteorological data are used.

The maximum predicted annual SO_2, NO_2, PM_{10} and CO concentrations and the 99^{th} percentile concentration of the 24-hour, 8-hour and 1-hour predicted concentrations are very low relative to the NAAQS. The highest predicted concentrations occur within a 3 km radius to

the west and north-northwest of the proposed project site over the industrial area, and to the south-southwest over parts of the Port of Richards Bay and naturally vegetated areas.

In terms of the cumulative impacts with existing sources, the proposed TNPA Power Generation Project will add to the existing ambient concentrations in Richards Bay. The greatest addition will be at the point of maximum with lower concentrations elsewhere. The added effect is small and will not result in exceedances of the NAAQS. Therefore, the significance of impacts resulting from the proposed project is predicted to be low (negative).

In terms of the cumulative impacts with other electricity generation projects that may operate in Richards Bay in the future, emissions from the proposed TNPA Power Generation Project will result in an increase in ambient concentrations of SO_2, NO_2, PM_{10} and CO. The significance of impact relating to emissions from sources associated with the proposed TNPA Power Generation Project with other gas-to-power projects is predicted to be medium (negative) for SO_2 because of predicted exceedances of ambient SO_2 concentrations when diesel is used as an emergency back-up fuel on the Richards Bay CCPP Project and low (negative) for NO_2, PM_{10} and CO.

Dust emissions were not estimated for the construction and decommissioning/closure phase of the proposed project as they require specific information. The assessment is therefore qualitative. The significance of the impact for the construction and decommissioning/closure phase on air quality is low.

Air quality management interventions in the form of the control of emission have been considered in all aspects of design and operation. Further emission reduction interventions are deemed to be unnecessary considering the low impact of the proposed project on air quality. From an air quality perspective, it is the reasonable opinion of the authors that the proposed TNPA Power Generation Project should be authorised considering the findings of this AIR.

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12. FORMAL DECLARATIONS

A declaration of the accuracy of the information contained in this Atmospheric Impact Report is included here. A declaration of the independence of the practitioners in the uMoya-NILU consultancy team that compiled this AIR is also included.

DECLARATION OF ACCURACY OF INFORMATION – APPLICANT

Name of Enterprise: uMoya-NILU Consulting (Pty) Ltd

Declaration of accuracy of information provided:

Atmospheric Impact Report in terms of Section 30 of the Act

I, Mark Zunckel [duly authorised], declare that the information provided in this atmospheric impact report is, to the best of my knowledge, in all respects factually true and correct. I am aware that the supply of false or misleading information to an air quality office is a criminal office in terms of section 51(1)(g) of this Act.

Signed at Durban on this 13th day of June 2024.

_____

SIGNATURE

Managing Director – uMoya-NILU Consulting

CAPACITY OF SIGNATORY

DECLARATION OF INDEPENDENCE – PRACTITIONER

Name of Practitioner: Mark Zunckel

Name of Registered Body: South African Council for Natural Scientific Professionals

Professional Registration Number: 400449/04

Declaration of independence and accuracy of information provided:

Atmospheric Impact Report in terms of Section 30 of the Act

I, Mark Zunckel declare that I am independent of the applicant. I have the necessary expertise to conduct the assessment required for the report and will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant. I will disclose to the applicant and the air quality officer all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the air quality officer. The information provided in the atmospheric impact report is, to the best of my knowledge, in all respects factually true and correct. I am aware that the supply of false or misleading information to an air quality office is a criminal office in terms of section 51(1)(g) of this Act.

Signed at Durban on this 13th day of June 2024.

SIGNATURE

Managing Director – uMoya-NILU Consulting
CAPACITY OF SIGNATORY

ANNEXURE 1: NEMA REGULATION – APPENDIX 6

Specialist Reports as per the NEMA EIA Regulations, 2014 (as amended), must contain the information outlined in According to Appendix 6 (1) of the Regulations. Table A-1 indicates where this information is included in the AIR.

Table A-1: Prescribed contents of the Specialist Reports (Appendix 6 of the EIA Regulations, 2014)

Relevant section in GNR. 982	Requirement description	Relevant section in this report
(a) details of—	(i) the specialist who prepared the report; and	2.6 & Annexure 2
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Annexure 2
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 12
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1 & 2.7
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 6.1 & 6.2
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Site investigation not applicable
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 2.7 & 6.2
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 6.3 & 6.4
(g)	an identification of any areas to be avoided, including buffers;	None identified
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 6.3.2
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge; Note: Uncertainties should be qualified within the report – there will always be uncertainties due to gaps in knowledge should also be qualified – a gap is to record that not all knowledge can be obtained for a study.	Section 2.8

Relevant section in GNR. 982	**Requirement description**	**Relevant section in this report**
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 6.4
(k)	any mitigation measures for inclusion in the EMPr; Note: We need to include whether these mitigation measures (excluding ongoing monitoring) can be practically implemented prior to commencement or not.	Section 8
(l)	any conditions for inclusion in the environmental authorisation;	No conditions
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	No conditions
(n) a reasoned opinion—	(i) whether the proposed activity, activities or portions thereof should be authorised;	Section 10
	(iA) regarding the acceptability of the proposed activity or activities; and	Section 10
	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan; Note: We need to include whether these mitigation measures (excluding ongoing monitoring) can be practically implemented prior to commencement or not.	Section 10
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 1
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not received
(q)	any other information requested by the competent authority.	No requests
(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Section 3 & 6.2.1

ANNEXURE 2: CURRICULUM VITAE

MARK ZUNCKEL

Firm	:	uMoya-NILU (Pty) Ltd
Profession	:	Air quality consultant
Specialization	:	Air quality assessment, air quality management planning, air dispersion modelling, boundary layer meteorology, project management
Position in Firm	:	Managing director and senior consultant
Years with Firm	:	Since 1 August 2007
Nationality	:	South African
Year of Birth	:	1959
Language Proficiency	:	English and Afrikaans

EDUCATION AND PROFESSIONAL STATUS

Qualification	Institution	Year
National Diploma (Meteorology)	Technikon Pretoria	1980
BSc (Meteorology)	Univ. of Pretoria	1984
BSc Hons (Meteorology)	Univ. of Pretoria	1988
MSc	Univ. of Natal	1992
PhD	Univ. Witwatersrand	1999

Registered Natural Scientist: South African Society for Natural Scientific Professionals
Ex-Council Member: National Association for Clean Air
Member: National Association for Clean Air

EMPLOYMENT AND EXPERIENCE RECORD

Period	**Organisation details and responsibilities/roles**
1976 – May 1992	South African Weather Bureau : Observer, junior forecaster, senior forecast, researcher, assistant director
June 1992 – July 2007	CSIR: Consultant and researcher, Research group Leader: Atmospheric Impacts
August 2007 to present	uMoya-NILU Consulting: Managing Director and senior air quality consultant

Key and Recent Project Experience:

1996	Project leader & Principal researcher: Atmospheric impact assessment for the proposed Mozal aluminium smelter in Maputo, Mozambique.
1996	Project leader & Principal researcher: Dry sulphur deposition during the Ben MacDhui High Altitude Trace Gas and Transport Experiment (BATTEX) in the Eastern Cape.
1997	Project leader & Principal researcher: Atmospheric impact assessment of the proposed capacity expansion project for Alusaf in Richards Bay.
1997	Project leader & Principal researcher: The Uruguayan ambient air quality project with LATU.
1997	Principal researcher on the Air quality specialist study for the Strategic Environmental Assessment on the industrial and urban hinterland of Richards Bay.
1997	Project leader & Principal researcher: Feasibility study for the implementation of a fog detection system in the Cape Metropolitan area: Meteorological aspects.
2001	Project leader & Principal researcher: Air quality specialist study for the Environmental Impact Assessment for the proposed expansion of the Hillside Aluminium Smelter, Richards Bay.
2001-03	Researcher: The Cross Border air Pollution Impact (CAPIA) project. A 3-year modelling and impacts study in the SADC region.
2002	Project leader & Principal researcher: Air quality assessment specialist study for the proposed Pechiney Smelter at Coega.
2002	Project leader & Principal researcher: Air quality assessment specialist study for the proposed N2 Wild Coast Toll Road.
2002-05	Project leader on the NRF project – development of a dynamic air pollution prediction system
2004	Project leader on the specialist study for expansion at the Natal Portland Cement plant at Simuma, KwaZulu-Natal.
2004-05	Researcher: National Air Quality Management Plan implementation project for Department Environmental Affairs and Tourism.
2005	Researcher in the assessment of air quality impacts associated with the expansion of the Natal Portland Cement plant at Port Shepstone.
2006-07	Project team leader of a multi-national team to develop the National Framework for Air Quality Management for the Department of Environment Affairs and Tourism
2007	Air quality assessment for Mutla Early Production System in Uganda for ERM Southern Africa on behalf of Tullow Oil.
2007-10	Lead consultant on the development of a dust mitigation strategy for the Bulk Terminal Saldanha and an ambient guideline for Fe_2O_3 dust for Transnet Projects and on-going monitoring.
2008	Lead consultant on the Air quality status quo assessment and scoping for the EIA for the Sonangol Refinery

2008-09	Lead consultant on the development of the air quality management plan for the Western Cape Provincial. Department of Environmental Affairs and Development Planning.
2008-10	Lead consultant on the development of the Highveld Priority Area air quality management plan for the Department of Environmental Affairs and Tourism.
2008	Lead consultant in the development of an odour management and implementation strategy for eThekwini, focussing on Wastewater Treatment Works and odourous industrial sources
2008&10	Lead consultant on the Air Quality Specialist Study for the EIA for the proposed Kalagadi Manganese Smelter at Coega
2008	Lead consultant on the Air Quality Assessment for the Proposed Construction and Operation of a Second Cement Mill at NPC-Cimpor, Simuma near Port Shepstone.
2008	Lead consultant on the Air Quality Specialist Study Report for the New Multi-Purpose Pipeline Project (NMPP) for Transnet Pipelines.
2008	Lead consultant on the Air quality assessment for the proposed UTE Power Plant and RMDZ coal mine at Moatize, Mozambique for Vale.
2008-09	Lead consultant on the Dust source apportionment study for the Coedmore region in Durban for NPC-Cimpor.
2009	Consultant on the Air quality specialist study for the upgrade of the Kwadukuza Landfill, KwaZulu-Natal
2009-10	Lead consultant on the Audit of ambient air quality monitoring programme and air quality training for air quality personnel at PetroSA
2010	Lead consultant on the Qualitative assessment of impact of dust on solar power station at Saldanha Bay
2010	Lead consultant on the Air quality specialist study for the EIA for the Kalagadi Manganese Smelter at Coega
2009-10	Lead consultant on the Air quality specialist study for the Environmental Management Framework for the Port of Richards Bay
2010	Lead consultant on the Air quality status quo assessment and abatement planning at Idwala Carbonates, Port Shepstone
2010	Lead consultant on the Air quality status quo assessment and abatement planning at Sappi Tugela, Mandeni
2010–11	Air quality status quo assessment and revision of the Air Quality Management Plan for City of Johannesburg
2010	Lead consultant on the Air quality status quo assessment and abatement planning at First Quantum Mining's Bwana Mkubwa and Kansanshi mines, Zambia
2010–11	Lead consultant on the Air quality specialist study for the EIA for the Alternative Fuel and Resources Project at Simuma, Port Shepstone
2010–11	Lead consultant on the Air quality specialist study for the EIA for the Coke Oven re-commissioning at ArcelorMittal Newcastle
2010	Qualitative air quality assessment for the EIA for the Mozpel sugar to ethanol project , Mozambique

2011	Development of the South African Air Quality Information System – Phase II The National Emission Inventory
2011	Ambient baseline monitoring for Riversdale's Zambezi Coal Project in Tete, Mozambique
2010-11	Ambient quality baseline assessment for the Ncondeze Coal Project, Tete Mozambique
2011-12	Air quality assessment for the mining and processing facilities at Longmin Platinum in Marikana
2012	Air quality assessment for the proposed LNG and OLNG plants in Mozambique
2012	Modelling study in Abu Dhabi for the transport and deposition of radio nuclides
2012	Air quality assessment for the proposed manganese ore terminal at the Ngqura Port
2012-13	Air quality management plan development for Stellenbosch Municipality
2012-12	Air quality management plan development for the Eastern Cape Province
2013	Air quality specialist for Tullow Oil Waraga-D and Kinsinsi environmental audit in Uganda
2013	Air quality specialist study for the EIA for the Thabametsi IPP station
2013	Air quality management plan for the Ugu District Municipality
2013-14	Air quality specialist study for the application for postponement of the minimum emission standards for 9 Eskom power stations
2014	Air quality specialist study for the application for postponement applications of the minimum emission standards for the Engen Refinery in Merebank, Durban
2014-15	Baseline assessment and AQMP development for the uThungulu District Municipality
2013-15	Baseline assessment, AQMP and Threat Assessment for the Waterberg-Bojanala Priority Area
2014-15	Review of the 2007 AQMP for eThekwini Municipality, including metropolitan emission inventory development for all sectors, i.e. industrial, transport, waste management, biomass burning, residential fuel burning, dispersion modelling and strategy development
2014-14	Dispersion modelling study for Richards Bay Minerals
2015	Air quality assessment for Rainbow Chickens at Hammersdale
2015	Air quality status quo assessment and planning for TNPA ports in South Africa
2016- 7	Lead author of the National State of Air Report for 2005 to 2015, including national emission inventory development for all sectors, i.e. industrial, transport, waste management, biomass burning, residential fuel burning
2016	Air quality assessment for Kanshansi Mine, Solwesi, Zambia
2016	Assessment of air quality impacts associated with activities at the Venetia Mine, Limpopo Province
2016	Assessment of air quality impacts associated with activities at the Komati Anthracite Mine, Mpumalanga Province
2016	Air quality assessment for the proposed Powership Project at the Port of Nacala, Mozambique
2016	Air quality assessment for the proposed Richards Bay Gas to Power Project

2017	Baseline assessment and review of the 2009 AQMP for Gauteng Province, including emission inventory development for all sectors, i.e. industrial, transport, waste management, biomass burning, residential fuel burning, and dispersion modelling
2017	Baseline assessment and air quality management plan for Northern Cape Province
2017	Air quality assessment for the EIA for the Thabametsi Power Station in Limpopo Province
2017	Air quality assessment for the EIA for the proposed Tshivasho Power Station in Limpopo Province
2018	Air quality assessment for the EIA for the proposed Bellmall Thermal Plant in Ekurhuleni
2018	Air quality assessment for the EIA for the proposed Simba Oil mini Refinery in Tororo, Uganda
2018-19	Air dispersion modelling for input to the Atmospheric Reports for the postponement application for 14 Eskom power stations
2019	Air quality impact assessment for the proposed NamPower expansion project in Walvis Bay
2019	Air quality assessment for the mine expansion project at the Akanani Mine
2019	Air quality impact assessment for the proposed power plant at Nacala, Mozambique
2020	AIR for the KarpowershipSA proposal in the Ports of Ngqura, Richards Bay and Saldanha Bay
2020	AIR for the Coega Development Corporation gas-to-power project at 4 sites in the CDC
2020	AIRs for 10 Eskom coal-fired power plants on the Highveld to support their postponement application
2020	AIR for the proposed Azure Power gas-to-power project in the Western Cape
2021	Air quality assessment for the proposed optimisation project at Beeshoek Iron Ore Mine, Postmasburg, Northern Cape
2021	AIR for the proposed Frontier Power Gas-to-Power project at Saldanha Bay, Western Cape
2021	AIR for the 2021 shutdown and start-up at Engen Refinery in Merebank
2021	AIR for the proposed expansion of the Swartkops Ore handling facility in Port Elizabeth, Eastern Cape
2016-24	AEL compliance monitoring for Joseph Grieveson, Durban, including dust fallout monitoring and reporting
2018-24	Dust fallout and HF monitoring and reporting for Hulamin, Richards Bay
2018-24	Dust fallout and H_2S monitoring and reporting for at KwaDukuza Landfill for Dolphin Coast Landfill Management (DCLM)
2019-24	AEL compliance monitoring for Umgeni Iron and Steel Foundry, including dust fallout monitoring and reporting

PUBLICATIONS

Author and co-author of 34 articles in scientific journals, chapters in books and conference proceedings. Author and co-author of more than 300 technical reports and presented 47 papers at local and international conferences.

ATHAM RAGHUNANDAN

Firm	:	uMoya-NILU Consulting (Pty) Ltd
Profession	:	Air Quality Consultant
Specialization	:	Meteorological and Atmospheric Dispersion Modelling, Air Quality Specialist Studies, Project Management, Data Processing, Emission Inventories
Position in Firm	:	Senior Air Quality Consultant
Years with Firm	:	14 years (appointed in 2008)
Nationality	:	South African
Year of Birth	:	1977
Language Proficiency	:	English (mother tongue), Afrikaans (fair)

EDUCATION AND PROFESSIONAL STATUS

Qualification	**Institution**	**Year**
M.A. (Atmospheric Sciences)	University of Natal, Durban	2003
B.A. Hons. (Environmental Sciences)	University of Durban–Westville	2001
B.Paed. (Education)	University of Durban–Westville	2000

Memberships:

- National Association for Clean Air (NACA)
- South African Society for Atmospheric Sciences (SASAS)
- South African Council of Educators (SACE)

EMPLOYMENT AND EXPERIENCE RECORD

Period	Organisation details and responsibilities/roles
Jan 2003 – Oct 2008	CSIR: Consultant/Researcher in Air Quality Group, Research Group Leader – Air Quality Research Group
Nov 2008 – present	uMoya-NILU: Senior Air Quality Consultant

Key and Recent Project Experience:

2003	Baseline air dispersion modelling study for Natal Portland Cement (Pty) Ltd – Simuma Plant, Port Shepstone – Modelling and Reporting
2004	Air Quality Screening Study for MOZAL 3 – Modelling and Reporting
2005	Air Quality Specialist Study for the Proposed Kudu Combined Cycle Gas Turbine Power Station at Oranjemund, Namibia (Site D) – Modelling and Reporting
2005	Air Quality Specialist Study for the Proposed Kudu Combined Cycle Gas Turbine Power Plant at Uubvlei, Namibia – Modelling and Reporting
2005	Air Quality Specialist Study for a Proposed Cement Milling, Storage and Packaging Facility and a Second Clinker Kiln at Natal Portland Cement (Pty) Ltd – Simuma Plant, Port Shepstone – Modelling and Reporting
2005	Technology Review: Air quality specialist study for the Coega Aluminium Smelter at Coega, Port Elizabeth – Modelling and Reporting
2005	Assessment of Development Scenarios for Hillside Aluminium using Sulphur Dioxide (SO_2) as an Ambient Air Quality Indicator – Modelling and Reporting
2005	Air Quality Scoping Study for Eskom's Proposed Open Cycle Gas Turbine Power Station at Atlantis – Modelling and Reporting
2005	Air Quality Specialist Study for Eskom's Proposed Open Cycle Gas Turbine Power Station at Atlantis, Western Cape – Modelling and Reporting
2005	Air Quality Specialist Study for the Proposed Tata Steel Ferrochrome Project at Richards Bay – Alton North Site – Modelling and Reporting
2005	Air Quality Audit for the Amathole District Municipality - Compilation of detailed emissions inventory
2006	A Regional Scale Air Dispersion Modelling Study for Northeastern Uruguay – Modelling and Reporting
2006	Air Dispersion Modelling Study for Natal Portland Cement (Pty) Ltd for the Proposed AFR Programme at the Simuma Plant, Port Shepstone – Modelling and Reporting
2007	Development of an air quality management strategy for particulate matter at the Bulk Terminal Saldanha - Project Leader and Reporting
2007	Air Quality and Human Health Specialist Study for the Proposed Coega Integrated LNG to Power Project (CIP) within the Coega Industrial Zone, Port Elizabeth, South Africa - Project Leader, Modelling and Reporting
2008	Dispersion Modelling for the Proposed Coega Aluminium Smelter (CAL) at Port Elizabeth - Project Leader, Modelling and Reporting
2008	Modelled and Measured Vertical Ozone Profiles over Southern Africa (as part of the Young Researcher Establishment Fund (2005-2008)) - Project Leader
2008	Air Quality Specialist Study for the Proposed N2 Wild Coast Toll Highway - Project Leader, Modelling and Reporting
2008	Initial Air Quality Impact Assessment for the Proposed Illovo Ethanol Plant in Mali, West Africa - Project Leader, Modelling and Reporting

2008 Modelling Mercury Stack Emissions from South African Coal-fired Power Plants – Modelling and Reporting

2009 Air Quality Management Plan for the Western Cape Province – Baseline Assessment – Modelling

2009 Proposed Exxaro AlloyStream™ Manganese Project in the Coega Industrial Development Zone: Air Quality Impact Assessment – Modelling and Reporting

2009 Air Quality Specialist Study for the Kalagadi Manganese Smelter at Coega, Eastern Cape – Modelling and Reporting

2009 Qualitative Air Quality Impact Assessment for the Wearne Platkop Quarry – Modelling and Reporting

2009 Specialist Air Quality Study for the Vopak Terminal Durban Efficiency Project – Modelling

2009 Qualitative Air Quality Impact Assessment for the Proposed ETA STAR Coal Mine at Moatize, Mozambique – Modelling and Reporting

2009 Specialist Air Quality Study for the Kwadukuza Landfill Upgrade Project – Modelling and Reporting

2010 Ambient dust assessment at Saldanha Bay for the period October 2006 to September 2009 for Transnet Bulk Terminal Saldanha – Reporting

2010 Dust Impact Assessment for the Proposed Saldanha Bay Pilot PV plant – Reporting

2010 Modelling Particulate Emission Concentration Scenarios for Eskom's Kriel Power Station – Modelling and Reporting

2010 Air Quality Dispersion Modelling for MOZAL, Mozambique – Modelling and Reporting

2010 Air Quality Management Plan for the Highveld Priority Area – Air Quality Baseline Assessment for the Highveld Priority Area – Modelling

2010 Ambient Air Quality Modelling and Monitoring at Sappi, Mandeni – Modelling and Reporting

2010 Dust Impact Study at Idwala Carbonates – Modelling and Reporting

2010 Air quality specialist study for the EIA for the proposed re-commissioning of an existing coke oven battery at ArcelorMittal South Africa, Newcastle Works – Modelling

2010 Air quality specialist study for the proposed storage and utilisation of alternative fuels and resources at NPC-Cimpor's Simuma facility, Port Shepstone, KwaZulu-Natal – Modelling and Reporting

2010 Air quality status quo assessment and abatement planning at First Quantum Mining's Bwana Mkubwa and Kansanshi mines, Zambia – Modelling

2010 Air quality specialist study for the proposed briquetting plant at the Mafube Colliery – Modelling and Reporting

2011 Air quality modelling study for the Copeland reactor at Sappi Stanger – Modelling and Reporting

2011 Air quality modelling study for the Copeland reactor at Sappi Tugela – Modelling and Reporting

2011	Air quality monitoring and modelling study for the Copeland reactor at Mpact Paper, Piet Retief – Modelling and Reporting
2011	Air Quality Study for the Basic Environmental Assessment for the Proposed Biomass Co-Firing Facility at the Arnot Power Station – Modelling and Reporting
2011	Assessment of Scenarios for Developing and Implementing a Sulphur Dioxide Emissions Licensing Strategy for Hillside Aluminum – Modelling and Reporting
2011-12	Air quality assessment for the mining and processing facilities at Lonmin Platinum in Marikana – Modelling and Reporting
2012	Development of an Air Quality Management Plan for Anglo's Mafube Colliery in Mpumalanga – Modelling and Reporting
2012	Air quality assessment for the proposed manganese ore terminal at the Ngqura Port – Modelling and Reporting
2012	Air Quality Impact Assessment for NPC Cimpor – Modelling and Reporting
2013	Air Quality Impact Assessment for Proposed AfriSam Plant in Coega – Modelling
2013	Air quality assessment for the Orion Engineered Carbons Co-Gen Plant – Modelling
2013	Air quality assessment for the Orion Engineered Carbons - Main Boiler – Modelling
2013	Air quality assessment for the EIA for the Sekoko Coal Mine – Modelling and Reporting
2013	Air quality specialist study for the EIA for the Thabametsi IPP station – Modelling and Reporting
2013	Air quality specialist study for the EIA for the Mamathwane Common User facility – Modelling and Reporting
2013-14	Air quality specialist study for the application for postponement of the minimum emission standards for 16 Eskom power stations: Acacia, Arnot, Camden, Duvha, Grootvlei, Hendrina, Kendal, Komati, Kriel, Lethabo, Majuba, Matimba, Matla, Madupi, Tutuka, Port Rex – Modelling and Reporting
2014	Air quality specialist study for the application for postponement of the minimum emission standards for the Engen Refinery in Merebank, Durban – Modelling and Reporting
2013-14	Baseline assessment and air quality management plan for the Waterberg-Bojanala Priority Area – Modelling
2013	Air Quality Specialist Study for the EIA for the Pandora Platinum Mine Joint Venture – Modelling and Reporting
2013	Air Quality Specialist Study for the EIA for the Proposed New Tailings Storage Facility (TD8) and Associated Infrastructure at Lonmin's Western Platinum Mine and Eastern Platinum Mine – Modelling and Reporting
2015	Waterberg-Bojanala Priority Area Air Quality Management Plan and Threat Assessment – Modelling

2015 Air Quality Management Plan for eThekwini Municipality – Modelling and Reporting

2015 Air Quality Management Plan for the uThungulu District Municipality – Modelling and Reporting

2015 Dispersion Modelling for Richards Bay Minerals – Modelling and Reporting

2015 Atmospheric Impact Report in support of Sancryl Chemicals's application for a verification to the existing AEL as a result of the introduction of Ethyl Acrylate and Vinyl Acetate, Prospecton – Modelling and Reporting

2016 Dispersion Modelling Study for the City of Johannesburg – Modelling and Reporting

2016 Air Quality Specialist Study for the Department of Energy's Emergency Power IPP Project at Richards Bay and Saldanha Bay – Modelling and Reporting

2016 Atmospheric Impact Report in support of the EIA for the Proposed Gas to Power Plant in Zone 1F of the Richards Bay IDZ – Modelling and Reporting

2016 Atmospheric Impact Report for the EIA for the proposed Tshivhaso Coal-fired Power Plant, Lephalale – Modelling and Reporting

2016 TNPA Air Quality Study – Dispersion Modelling for 8 Ports in South Africa: Port of Richards Bay, Durban, East London, Ngqura, Port Elizabeth, Mossel Bay, Cape Town and Saldanha Bay – Modelling and Reporting

2016 Atmospheric Impact Report for Durran's Calcination Plant – Modelling and Reporting

2016 Air Quality Assessment for the EIA for the Floating Power Plant in Nacala, Mozambique – Modelling and Reporting

2016 Ambient Air Quality Assessment for 2016 for Kansanshi Mining Plc – Modelling and Reporting

2016 Air Quality Impact Assessment for the EIA for the Proposed Hilli FLNG Project in Cameroon – Modelling and Reporting

2016 Kansanshi Smelter and TSF1 Modelling Scenarios for Kansanshi Mining Plc – Modelling and Reporting

2016 Air Quality Assessment the Proposed Accommodation Facility at the Venetia Mine in Limpopo – Modelling and Reporting

2016 Atmospheric Impact Report in support of the EIA for the Proposed Optimisation of the Process Plant at Nkomati Anthracite Mine – Modelling and Reporting

2017 Atmospheric Impact Report in support of the DRDAR Atmospheric Emission License (AEL) application for the proposed replacement and use of an incinerator at their State Veterinary Laboratories located in Grahamstown, Middelburg and Queesntown in the Eastern Cape – Modelling and Reporting

2017 Baseline Assessment and Review of the 2009 AQMP for Gauteng Province, including emission inventory development for all sectors, i.e. industrial, transport, waste management, biomass burning, residential fuel burning, and dispersion modelling – Modelling and Reporting

2017	Baseline Assessment and Air Quality Management Plan for Northern Cape Province – Modelling and Reporting
2017	Atmospheric Impact Report in support of Maloka Machaba Surfacing's application for an Atmospheric Emission License (AEL) for a proposed asphalt plant located in Polokwane – Modelling and Reporting
2017	Assessment of modelling scenarios involving an increase in the open area of the cone on the Common Stack for the pretreater, reformer and CHD furnaces at Engen Refinery – Modelling and Reporting
2017	Atmospheric Impact Report in support of the Atmospheric Emission License (AEL) application and stack-height assessment for the proposed Thabametsi Power Plant near Lephalale, Limpopo – Modelling and Reporting
2017	Dispersion Modelling Study for the Beeshoek Mine, near Postmasburg, Northern Cape – Modelling and Reporting
2018	Air quality assessment for the EIA for the proposed Bellmall Thermal Plant in Ekurhuleni – Modelling and Reporting
2018	Air quality assessment for the EIA for the proposed Simba Oil mini Refinery in Tororo, Uganda – Modelling and Reporting
2018-19	Air dispersion modelling for input to the Atmospheric Reports for the postponement application for 14 Eskom power stations – Modelling and Reporting
2019	Air quality impact assessment for the proposed NamPower expansion project in Walvis Bay – Modelling and Reporting
2019	Air quality assessment for the mine expansion project at the Akanani Mine – Modelling and Reporting
2019	Air quality impact assessment for the proposed power plant at Nacala, Mozambique – Modelling and Reporting
2019	Atmospheric Impact Report in Support of the Atmospheric Emission License (AEL) Amendment Application and Basic Assessment for Dow Southern Africa - New Germany – Modelling and Reporting
2019	Atmospheric Impact Report in support of Tau-Pele Construction's application for an Atmospheric Emission License (AEL) for a proposed emulsion and asphalt plant located in Indwe, Eastern Cape – Modelling and Reporting
2019	Atmospheric Impact Report in Support of the EIA for the Proposed Material Source and Processing Sites Along the N3 Between Durban and Hilton, KwaZulu-Natal: RCL1, RCL9 and Harrison's Quarry – Modelling and Reporting
2019	Atmospheric Impact Report in Support of the Atmospheric Emission License (AEL) Amendment Application and Basic Assessment for the Vopak Efficiency (Growth 4) Expansion Project, Durban, South Africa – Modelling and Reporting
2020	AIR for the KarpowershipSA proposal in the Ports of Ngqura, Richards Bay and Saldanha Bay – Modelling and Reporting
2020	AIR for the Coega Development Corporation gas-to-power project at 4 sites in the CDC – Modelling and Reporting

2020	AIRs for 10 Eskom coal-fired power plants on the Highveld to support their postponement application – Modelling and Reporting
2020	AIR for the proposed Azura Power gas-to-power project in the Western Cape – Modelling and Reporting
2020	Atmospheric Impact Report for the proposed 315 MW LPG Power Plant at Saldanha Bay – Modelling and Reporting
2021	Air quality assessment for the proposed optimisation project at Beeshoek Iron Ore Mine, Postmasburg, Northern Cape – Modelling and Reporting
2021	Air quality assessment for the proposed expansion at Akanani Mine in Limpopo – Modelling and Reporting
2021	AIR for the proposed Frontier Power Gas-to-Power project at Saldanha Bay, Western Cape
2021	AIR for the 2021 shutdown and start-up at Engen Refinery in Merebank – Modelling and Reporting
2021	AIR for the proposed expansion of the Swartkops Ore handling facility in Port Elizabeth, Eastern Cape – Modelling and Reporting
2021	Atmospheric Impact Report in support of the Proposed 200 MW Engie CB Hybrid Power Project in the Coega Special Economic Zone (SEZ) – Modelling and Reporting
2021	Air Quality Impact Assessment for the proposed Mining of TSF-1 at the Stibium Mopani Mine near Gravelotte, Limpopo Province – Modelling and Reporting
2021	Addendum to the Atmospheric Impact Report in support of the proposed Mulilo-Total 200 MW Gas-fired Power Station, Coega Special Development Zone, Eastern Cape – Reporting
2021	Air Quality Assessment for the EIA for the Tete 1 400 MW Coal-Fired Power Plant, Tete Province, Mozambique – Modelling and Reporting
2021	Atmospheric Impact Report in support of Tugela Asphalt's application for an Atmospheric Emission License (AEL) for a proposed asphalt plant located in Mandini, KwaZulu-Natal – Modelling
2021	Atmospheric Impact Report for Nkomati Mine – Modelling and Reporting
2022	Emission Inventory for Lanxess for 2021 – Reporting
2022	Emission Inventory for Lanxess for 2021 – Reporting
2022	Annual Report for Puregas: Atmospheric Emission License - Submission to the City of Ekurhuleni in compliance with the Atmospheric Emission Licence of the facility for the Reporting Period Year 2021 – Reporting
2022	Emission Inventory for Puregas for 2021 – Reporting
2022	Emission Inventory for Dow Advanced Materials for 2020 – Reporting
2022	Atmospheric Impact Report for the Engen Cape Town Terminal – Modelling and Reporting

2022 Air Quality Specialist Study for the Basic Assessment for the Expansion of the Nkomati Anthracite Mine in Mpumalanga, with a focus on future mining activities at Block L – Modelling and Reporting

2022 Emission Inventory for Lanxess for 2021 – Reporting

2022 Annual Report for Puregas: Atmospheric Emission License - Submission to the City of Ekurhuleni in compliance with the Atmospheric Emission Licence of the facility for the Reporting Period Year 2021 – Reporting

2022 Emission Inventory for Puregas for 2021 – Reporting

2022 Emission Inventory for Dow Advanced Materials for 2020 – Reporting

2022 Atmospheric Impact Report in Support of the Atmospheric Emission License (AEL) Amendment Application for the Engen Cape Town Terminal – Modelling and Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for May 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for May 2022 - SAPREF Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for June 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for June 2022 - SAPREF Refinery – Reporting

2022 BTEX Fenceline Monitoring at Engen Island View Depot: June 2022 - First Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Langlaagte Depot: April 2022 - First Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Mokopane Depot: April 2022 - First Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Makhado Depot: April 2022 - First Campaign – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for July 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for July 2022 - SAPREF Refinery – Reporting

2022 BTEX Fenceline Monitoring at Engen Langlaagte Depot: June 2022 - Second Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Makhado Depot: May 2022 - Second Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Mokopane Depot: June 2022 - Second Campaign – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for August 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for August 2022 - SAPREF Refinery – Reporting

2022 Atmospheric Impact Report for the proposed Karpowership Project at Ngqura (Coega) Port – Modelling and Reporting

2022 Atmospheric Impact Report for the proposed Karpowership Project at the Port of Saldanha Bay – Modelling and Reporting

2022 Atmospheric Impact Report for the proposed Karpowership Project at the Port of Richards Bay – Modelling and Reporting

2022 BTEX Fenceline Monitoring at Engen Cape Town Terminal: August 2022 Campaign – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for August 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for August 2022 - SAPREF Refinery – Reporting

2022 Atmospheric Impact Report in support of the EIA for the Proposed Coega 3000 MW Integrated Gas-to-Power Project, Zone 10: Coastal Power Station (South) – Modelling and Reporting

2022 Atmospheric Impact Report in support of the EIA for the Proposed Coega 3000 MW Integrated Gas-to-Power Project, Zone 10: Coastal Power Station (North) – Modelling and Reporting

2022 Glencore Operations South Africa (Pty) Ltd (Glencore) – Modelling and Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for September 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for September 2022 - SAPREF Refinery – Reporting

2022 BTEX Fenceline Monitoring at Engen Langlaagte Depot: September 2022 - Third Campaign

2022 TSF1 scenario modelling for Kanshansi Mine - 2022 – Modelling and Reporting

2022 BTEX Fenceline Monitoring at Engen Makhado Depot: September 2022 - Third Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Bethlehem Depot: June 2022 - First Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Bethlehem Depot: September 2022 - Second Campaign – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for October 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for October 2022 - SAPREF Refinery – Reporting

2022 Dispersion Modelling Study to Optimise Stack Height for Nampower FIRM Power Project in Walvis bay, Namibia – Modelling and Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for November 2022 - Engen Refinery – Reporting

2022 BTEX Fenceline Monitoring: Monthly Report for November 2022 - SAPREF Refinery – Reporting

2022 BTEX Fenceline Monitoring at Engen Langlaagte Depot: November 2022 - Fourth Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Makhado Depot: November 2022 - Fourth Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Mokopane Depot: October 2022 - Third Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Bethlehem Depot: October 2022 - Third Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Bethlehem Depot: November 2022 - Fourth Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Island View Depot: October 2022 - Second Campaign – Reporting

2022 BTEX Fenceline Monitoring at Engen Island View Depot: November 2022 - Third Campaign – Reporting

2023 Air Quality Assessment for the Karpowership Project in the Port of Matola, Maputo, Mozambique – Modelling and Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for December 2022 - Engen Refinery – Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for December 2022 - SAPREF Refinery – Reporting

2023 Dispersion Modelling Study for the Kansanshi Smelter Expansion Project – Modelling and Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for January 2023 - Engen Refinery – Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for January 2023 - SAPREF Refinery – Reporting

2023 Air Quality Assessment to Support the Proposed Future Mining at The Mogalakwena Platinum Mine – Specifically Focusing on the Transition of the Sandsloot Mine from an Open Pit to Underground Mining Method – Modelling and Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for February 2023 - Engen Refinery – Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for February 2023 - SAPREF Refinery – Reporting

2023 SAPREF_ BTEX Fenceline Monitoring: Annual Report for 2022 – Reporting

2023 Emission Inventory for Lanxess for 2022 – Reporting

2023 Emission Inventory for Dow Advanced Materials for 2022 – Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for March 2023 - Engen Refinery – Reporting

2023 BTEX Fenceline Monitoring: Monthly Report for March 2023 - SAPREF Refinery – Reporting

2023 Air Quality Assessment for the Karpowership Project in the Port of Matola, Maputo, Mozambique (Low Sulphur Case) – Modelling and Reporting

2023 Air Quality Assessment for the Karpowership Project in the Port of Matola, Maputo, Mozambique (Natural Gas Case) – Modelling and Reporting

2023 Air Quality Specialist Study for the Proposed Grasdrift Mine, located on the Left Bank of the Orange River, Richtersveld, Namakwa District, Northern Cape Province – Modelling

2023 Air Quality Specialist Study for the Proposed Remining of Tailings Dam 2 at the Sibanye-Stillwater Eastern Platinum Mine – Modelling and Reporting

2023 Air Quality Specialist Study in Support of the Integrated Environmental Authorisation Process for Open Cast Mining Areas and Expansion of the Madadeni Underground Area and EMPr Consolidation and Amendment for the N'Komati Anthracite Mine

PUBLICATIONS

Author and co-author of 5 articles in scientific journals and conference proceedings. Author and co-author of more than 200 technical reports for external contract clients. Presented 4 papers at local conferences. A full list of publications, conference papers and contract reports is available on request.

NOPASIKA XULU

Firm	:	uMoya-NILU (Pty) Ltd
Profession	:	Senior Air Quality Consultant
Specialization	:	Air Quality Assessment, Air Dispersion Modelling; Project Management; Data Analysis; Report Writing and Reviews
Position in Firm	:	Senior Air Quality Consultant
Years with Firm	:	Since 27 March 2023
Nationality	:	South African
Year of Birth	:	1985
Language Proficiency	:	English and IsiZulu (read, write. Speak)

EDUCATION AND PROFESSIONAL STATUS

Qualification	Institution	Year
BSc. Environmental Studies	Univ. of Witwatersrand	2011
BSc Hons (Env. Studies)	Univ. of Witwatersrand	2012
BSc MSc (Env Sciences)	NWU Potchefstroom	2017

EMPLOYMENT AND EXPERIENCE RECORD

Period	Organisation details and responsibilities/roles
Oct 2016 – Dec 2018	Gondwana Environmental Solutions (Pty) Ltd: Air Quality Management Plans; Report Writing; Business Development and Marketing, Researcher.
July 2019 – March 2023	Rayten Engineering Solutions (Pty) Ltd: Air Quality Consultant, Project Management; Report Writing and Review; Data Analysis; Dispersion Modelling and Air Quality Impact Assessment; Research; Compiling Atmospheric Emission License (AEL) Applications; Populating National Atmospheric Emissions Inventory System; AEL Compliance Auditing; Dust Emission Reduction Plans; Greenhouse Gas Emissions Inventory Reporting; Facilitating/ Attending meetings; Liaising with Clients and Suppliers.

March 2023 – Present: uMoya – Nilu Consulting (Pty) Ltd Senior Air Quality Consultant, Dispersion Modelling and Air Quality Impact Assessments; Project Management

Key Project Experience:

2019 – 2023: Project Leader: Air Quality Impact Assessment projects (Harmony Moab Khotsong; EzeeTile Bloemfontein, EzeeTile Mokopane; Transvaal Galvanizers; Duho Drying; Lingaro Drying; Nama Copper Pty Ltd) Project Leader: AEL Applications and Reporting (Harmony Kopanang Operations; Harmony Mponeng Operations; Sibanye Gold Mines; Sibanye Platinum Mines; TotalEnergies Marketing; Matt Cast Supplies CC; Independent Crematorium SA; City of Tshwane Crematorium; Buffalo City Municipality Crematorium; Wahl Industries; Transvaal Galvanizers)

2014 – 2017: Researcher: Air Quality Assessment in low-income residential areas in the Highveld

Publications: Author: Xulu, N.A., Piketh, S.J. Feig,G.T., Lack, D.A and Garland,R.M., (2020).Characterizing Light Absorbing Aerosols in a Low –Income Settlement in South Africa. Aerosol Air Quality Aerosol Air Quality Research. https://doi.org/10.4209/aaqr.2019.09.004

CONTACT INFORMATION:

Email: nopasika@umoya-nilu.co.za

Phone: +27 63 1289 447

APPENDIX E2: Terrestrial Biodiversity

2 Impunzi Place
Kloof
KwaZulu-Natal
3640

Tel: +27 83 556 4087
Email: info@ecolinksa.co.za

TERRESTRIAL BIODIVERSITY SITE VERIFICATION ASSESSMENT ASSOCIATED PROPOSED TRANSNET NATIONAL PORTS AUTHORITY 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

Version – final

May 2024

Project Number: 24-0005

Client Reference:

TERRESTRIAL BIODIVERSITY SITE VERIFICATION ASSESSMENT ASSOCIATED PROPOSED TRANSNET NATIONAL PORTS AUTHORITY 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

Version – final

May 2024

DOCUMENT ISSUE STATUS

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Title	**TERRESTRIAL BIODIVERSITY SITE VERIFICATION ASSESSMENT ASSOCIATED PROPOSED TRANSNET NATIONAL PORTS AUTHORITY 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL**		
	Name	**Signature**	**Date**
Author	Magnus van Rooyen		May 2024
Director	Magnus van Rooyen		May 2024

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Declaration

I, Magnus van Rooyen, in my capacity as a specialist consultant, hereby declare that I:

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act (Act No. 107 of 1998);
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability; and
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field.

Magnus van Rooyen (Pr.Sci.Nat) May 2024

SACNASP reg. no. 400335/11 Date

TERRESTRIAL BIODIVERSITY SITE VERIFICATION ASSESSMENT ASSOCIATED PROPOSED TRANSNET NATIONAL PORTS AUTHORITY 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

1 INTRODUCTION

Ecolink Consulting has been appointed by the GCS Water and Environment (Pty) Ltd (GCS) to conduct a Terrestrial Biodiversity Assessment associated with the proposed Transnet National Ports Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, KwaZulu-Natal.

The assessment will be submitted in support of the Application for Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

2 PROJECT BACKGROUND

2.1 Project location and extent

The proposed project is located in the Port of Richards Bay within the City of uMhlathuze (CoM) Local Municipality and King Cetshwayo District Municipality (KCDM) KwaZulu Natal some 160km north-east of Durban and 465km south of Maputo.

The project site location falls within the main Port entrance and the Employee Care Centre in the Bayvue Precinct. The GPS coordinates for the site are 28°47'8.42"S and 32° 1'54.45"E. (see Figure 2-1 for the Locality Map).

Table 2-1: Property Details

Property	Extent	Title Deed	Registered owner
Erf 397 of Township Richards Bay	800.0000DUM	T3484/972	Government of the Republic of South Africa

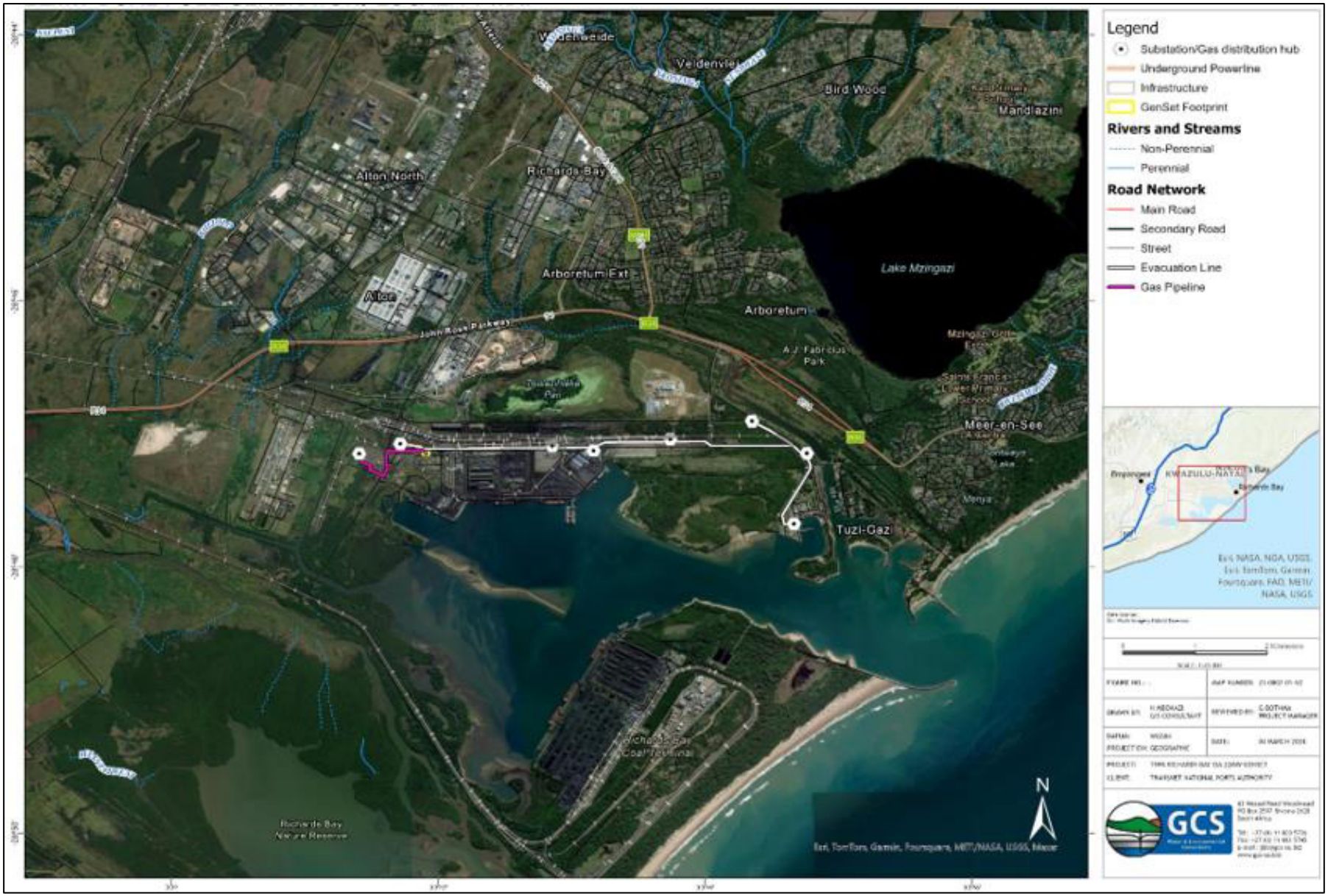


Figure 2-1: Locality Map of the TNPA 22MW Genset Project (maps provided by GCS)

2.2 Project description

The TNPA is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay is one of the country's largest ports in size, with total land and water surfaces of 2 174ha and 1 443ha, respectively.

TNPA is responsible for ensure that the ports are economic hubs for the country while ensuring that it also complies with the South African Laws and Regulations which is governed by the National Ports Act (Act No. 12 of 2005) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. As such, the project is needed to generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or loadshedding.

This Projects makes provision for the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port (it must be noted that all the substations mentioned above are existing); and
- LNG pipeline from the Gas Hub to the Generator site.

The proposed development layout is provided in Figure 2-2.

Figure 2-2: Layout of the TNPA 22MW Genset Project (maps provided by GCS)

3 APPLICABLE SOUTH AFRICAN LEGISLATION

The national and provincial legislation briefly described in this section relates directly with the legal aspects associated with the biodiversity associated with the project.

3.1 Applicable National Legislation

The project applicable environmental related National Legislation is provided in Table 3-1.

Table 3-1: Applicable National Legislation

Legislation	Description
Constitution of the Republic of South Africa (Act No. 108 of 1996)	According to the South African Constitution, South African citizens have the right to have the environment protected for the benefit of the present and future generations.
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	This Act includes the use and protection of land, soil, wetlands and vegetation and the control of weeds and invader plants. In the regulations published in 1984 under the Act, which declared approximately 50 plant species as “weeds” or “invader plants”. This list was further expanded on 30 March 2001 to now contain a comprehensive list of declared weed and invader plant species.
White Paper on Environmental Management Policy for South Africa (1998)	Through this Policy, the government of South Africa commits to give effect to the many rights in the Constitution that relate to the environment.
National Veld and Forest Fire Act (Act No. 101 of 1998)	The purpose of the Act is to prevent and combat veld fires in the country. The Act was amended by the National Forest and Fire Laws Amendment Act (Act No. 12 of 2001).
National Water Act (Act No. 36 of 2998)	This Act recognises that water is a scarce and unevenly distributed natural resource that should be equitably utilised in a sustainable manner. The Act ensures that water resources are protected, used, developed, conserved and controlled in ways that take into account a range of needs and obligations, including the need to “protect aquatic and associated ecosystems and their biological diversity”. The Act further specifies the water uses that must be authorised and it details the authorisation procedures as well as the minimum requirements for evaluation and decision-making by the relevant authority.
National Forests Act (Act No. 84 of 1998)	An objective of the Act is to provide special measures for the protection of certain forest and tree species, and to promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes. In terms of Section 15(1) of the Act, forest trees or Protected Tree Species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by the relevant authority. Government Notice 35648 of 2012 provides the latest List of Protected Tree Species within the borders of South Africa.
National Environmental Management Act (Act No. 107 of 1998	The Act is an umbrella act covering broad principles of environmental management which makes provision for three main areas, namely Land Planning and Development, Natural and Cultural Resources Use and Conservation and Pollution Control and Waste Management. In accordance with the Act, sustainable development requires the consideration of all relevant factors, including:

Legislation	Description
	• That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; • That the use and exploitation of non-renewable natural resources are conducted in a responsible and equitable manner and takes into account the consequences of the depletion of the resource; and • That the development, use and exploitation of renewable resources and the ecosystems of which they are part of do not exceed the level beyond which their integrity is jeopardised. According to Section 2(r) of the Act, sensitive, vulnerable, highly dynamic or stressed ecosystems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	The Act focuses on the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural land-and seascapes. The Act addresses inter alia: • The protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural land- and seascapes; • The establishment of a national register of all national, provincial and local protected areas; • The management of those areas in accordance with national standards; and • Inter-governmental co-operation and public consultation in matters concerning protected areas.
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	The main objective of the act is to provide for the management and conservation of South Africa's biodiversity and to ensure the sustainable use of indigenous biological resources. In addition to regulations on Threatened, Protected, Alien and Invasive Species in South Africa, the Act also identifies Terrestrial and Aquatic Priority Areas and Threatened Ecosystems for biodiversity conservation.

4 TERMS OF REFERENCE

It is understood that the assessment will be submitted as part of the Application for Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment (EIA) Regulations (2014). As such, the assessment report is completed in accordance with the minimum requirements for specialist assessments as included in Appendix 4 of the EIA Regulations (2014).

In brief, these requirements have as an outcome to achieve the following:

- A methodology of the site visit and techniques used to assess the specific aspects of the site;
- Details of the assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives (where applicable);

- An indication of any areas that are to be avoided, including provision of buffers;
- A description of any assumptions made and any uncertainties or gaps in knowledge;
- A description of the findings and potential implications of such findings on the impact of the proposed activities;
- Any mitigation measures for inclusion in the Environmental Management Programme Report (EMPr);
- Any conditions for inclusion in the Environmental Authorisation and the Water Use Licence;
- Any monitoring requirements for inclusion into the EMPr or Water Use Licence; and
- A reasoned opinion whether the activity should be authorised based on the findings of the assessment.

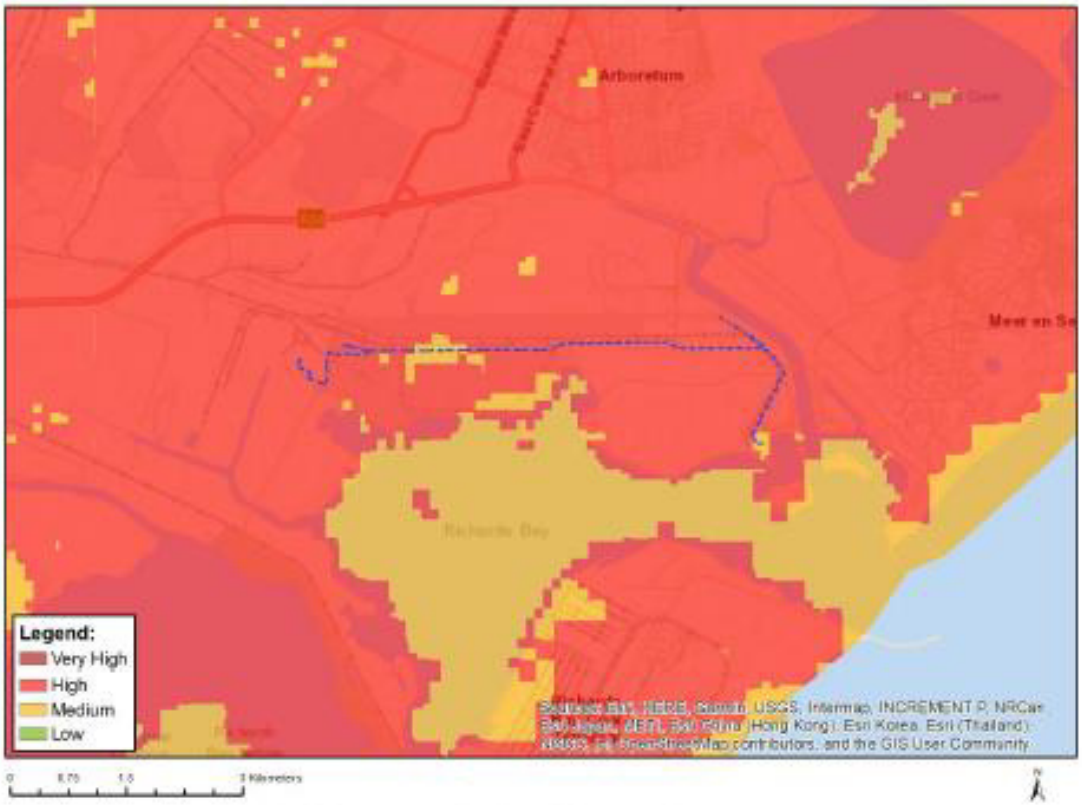
In addition to the above terms of reference, cognisance of the requirements of the Department of Forestry, Fisheries and the Environment's biodiversity assessment requirements as detailed in their Online Screening Assessment Tool. The outcome of the Online Screening Tool has identified the following sensitivities associated with the site.

4.1 Department of Forestry, Fisheries and Environment Online Screening Tool

The findings below have been generated through the interrogation of the Department of Forestry, Fisheries and Environment (DFFE) Online Screening Tool:

- Animal Species Theme sensitivity is '**High**', with 16 avifauna species with high sensitivity possibly occurring within the project area. In addition, one amphibian, one bird, 2 reptile and 2 invertebrate species with medium sensitivity possibly occurring within the project area (Figure 4-1).
- Plant Species Theme sensitivity is '**Medium**', with a number of species with medium sensitivity that may occur and no plant species of special concern are likely present on the site (Figure 4-2).
- Terrestrial Biodiversity Theme sensitivity is '**Very High'**, as the site is located in an area that has been included in two spatial databases, the National Protected Area Expansion Strategy (NPAES) and in the KwaZulu-Natal Biodiversity Sector Plan (2014) as a Critical Biodiversity Area (CBA) with "irreplaceable" status. (Figure 4-3).

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Nettapus auritus
High	Aves-Pelecanus onocrotalus
High	Aves-Podica senegalensis
High	Aves-Circus ranivorus
High	Aves-Stephanoaetus coronatus
High	Aves-Hydroprogne caspia
High	Aves-Neotis denhami
High	Aves-Balearica regulorum
High	Aves-Microparra capensis
High	Aves-Halcyon senegaloides
High	Aves-Pelecanus rufescens
High	Aves-Ephippiorhynchus senegalensis
High	Aves-Circaetus fasciolatus
High	Aves-Geokichla guttata
High	Aves-Aquila rapax
High	Aves-Mycteria ibis
Medium	Amphibia-Hyperolius pickersgilli
Medium	Aves-Terathopius ecaudatus
Medium	Sensitive species 8
Medium	Reptilia-Crocodylus niloticus
Medium	Reptilia-Pelusios rhodesianus
Medium	Invertebrate-Arytropteris basalis
Medium	Invertebrate-Pomatonota dregii

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Figure 4-1: Animal Species Theme

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Aspalathus gerrardii
Medium	Thesium polygaloides
Medium	Freesia laxa subsp. azurea
Medium	Fimbristylis aphylla
Medium	Pachycarpus concolor subsp. arenicola
Medium	Nidorella tongensis
Medium	Senecio ngoyanus
Medium	Wolffiella denticulata
Medium	Cassipourea gummiflua var. verticillata
Medium	Oxygonum dregeanum subsp. streyi
Medium	Pavonia dregei

Medium	Sensitive species 649
Medium	Sensitive species 1221
Medium	Sensitive species 191

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Figure 4-2: Plant Species Theme

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	CBA: Irreplaceable
Very High	National Protected Area Expansion Strategy (NPAES)

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24/04/2024

Figure 4-3: Terrestrial Biodiversity Theme

The first step in the assessment of the terrestrial biodiversity is to verify the findings of the DFFE Screening Tool highlighted above. This is conducted in accordance with the Site Sensitivity Verification (SSV) and is completed by a specialist in the appropriate assessment field.

5 AIMS AND OBJECTIVES

The aim and objectives of this study is as follows:

- Identification of any areas of ecological sensitivity on the study site;
- Determination of the extent of these ecological sensitive areas;
- Determination of the key aspects within each of these identified areas that require conservation;
- Identification of potential impacts on these areas posed by the development;
- Management and mitigation measures to be implemented to limit or mitigate these impacts; and
- Determination of applicable buffers around these ecological sensitive areas, where applicable.

6 ASSUMPTIONS AND KNOWLEDGE GAPS

No direct knowledge gaps have been identified that may influence the outcome of this assessment. The following assumptions however, have been made in the completion of the study:

- The assessment of the potential impacts of the proposed development on the identified ecological features on the development site is based on the development layout that has been provided. If the development layout is amended, the impact identification and assessment contained in this report may also change.
- The findings of the report are limited to a site visit conducted on 5 February 2024 which is considered to be mid-summer. No provision has been made for seasonal visits to the site and is not considered a shortcoming of the report.
- The following standardised and accepted methods to determine the various aspects of the study were used:
    - Electronic biodiversity/wetland databases managed by the South African National Biodiversity Institute (SANBI);

- Available provincial electronic biodiversity/wetland databases; and
- Site assessment to verify the findings of the databases interrogated.

7 EXPERTISE OF THE SPECIALIST

The curriculum vitae of the specialist, Mr Magnus van Rooyen is attached in Appendix A.

Mr Magnus van Rooyen is a registered natural scientist with the South African Council of Natural Scientific Professions (SACNASP) and holds a Master's degree in Environmental Management, a BSc Honours degree in Botany and a BSc degree in Botany and Zoology from the University of Stellenbosch. Mr van Rooyen has in excess of 15 years' experience in the field of wetland and terrestrial ecological studies in Southern and Western Africa.

8 REPORTING CONDITIONS

The following conditions apply to the report in part or as a whole:

- The findings and conclusion of this report are based on the author's scientific and professional knowledge as well as available information at the time of the assessment. In addition, the recommendations made are considered to be the best, implementable actions that can be taken to alleviate the identified impacts.
- As such, the author accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses that may arise from or in connection with the services rendered, and by any use of the information contained in this document.
- No part of this report may be amended without written consent from the author.

9 METHODOLOGY

The methodology that was followed in completing this study is in line with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment (EIA) Regulations (2014) and includes the following aspects.

The assessment was undertaken in two phases which made provision for a preliminary desktop assessment of the study area, followed by a field study and reporting.

The desktop assessment will make provision of the available Geographical Information System (GIS) information from various platforms to determine any potentially ecological sensitive areas that need to be considered during the assessment. Furthermore, it is understood that an Ecological Assessment (fauna and flora) was conducted for the site during a previous application. This assessment will be reviewed and used as the baseline description of the site and the associated terrestrial ecological conditions. This review will form part of the desktop phase of the assessment.

The desktop assessment consisted of an interrogation of available desktop information available from the South African National Biodiversity Institute (SANBI), BGIS database (www.bgis.sanbi.org.). This included the following datasets:

- National Vegetation Map, South African National Biodiversity Institute (SANBI) (2018);
- KwaZulu-Natal Biodiversity Sector Plan (2014);
- South African National Land-cover (2020);
- Important Bird Areas (2015);
- Red Listed Ecosystem, SANBI (2022); and
- Protected Areas (2019).

The information gathered through the interrogation of these references was used as baseline information for the site assessment. Any pertinent information generated through the desktop assessment was checked and/or verified during the site assessment.

The site assessment will take the form site visits to verify the potentially sensitive ecological areas identified during the desktop assessment and to identify any additional areas of features that require consideration from an ecological point of view. The site visits will be limited to observations on the site and will not make any provision for any vegetation sampling or animal trapping.

The desktop and field assessment will culminate in an impact assessment that will make provision for the following:

- Identification of existing impacts on the ecological baseline within the development site;
- identification of any potential impacts that the development might have on the ecological baseline; and
- provision for possible management and mitigation measures to be implemented during the various project phases to alleviate or negate these identified

10 DESKTOP ASSESSMENT FINDINGS

The findings relating to the terrestrial ecology is based on the desktop assessment of available databases as well as site investigations.

10.1 National Vegetation Map, South African National Biodiversity Institute (SANBI) (2018)

The project site is located in Subtropical Alluvial Vegetation (Aza7) that has a distribution in Limpopo, Mpumalanga and KwaZulu-Natal Provinces and in parts of eSwatini. The vegetation occurs along some rivers and river-fed pans in the subtropical regions of eastern South Africa, in particular in the Lowveld of Mpumalanga and Limpopo (Limpopo, Luvubu, Olifants, Sabie and Crocodile Rivers) and northern KwaZulu-Natal (Phongolo, Usuto and Mkuze Rivers). The vegetation type occurs only in the Savanna Biome ranging in an altitude from 0m – 1000m.

The vegetation typically consists of medium to tall grassland with scattered low shrubs. Large portions of the vegetation type have been transformed by agricultural practices dominated by forestry, the growing of sugarcane and infrastructure development (especially in and around the town of Richards Bay.

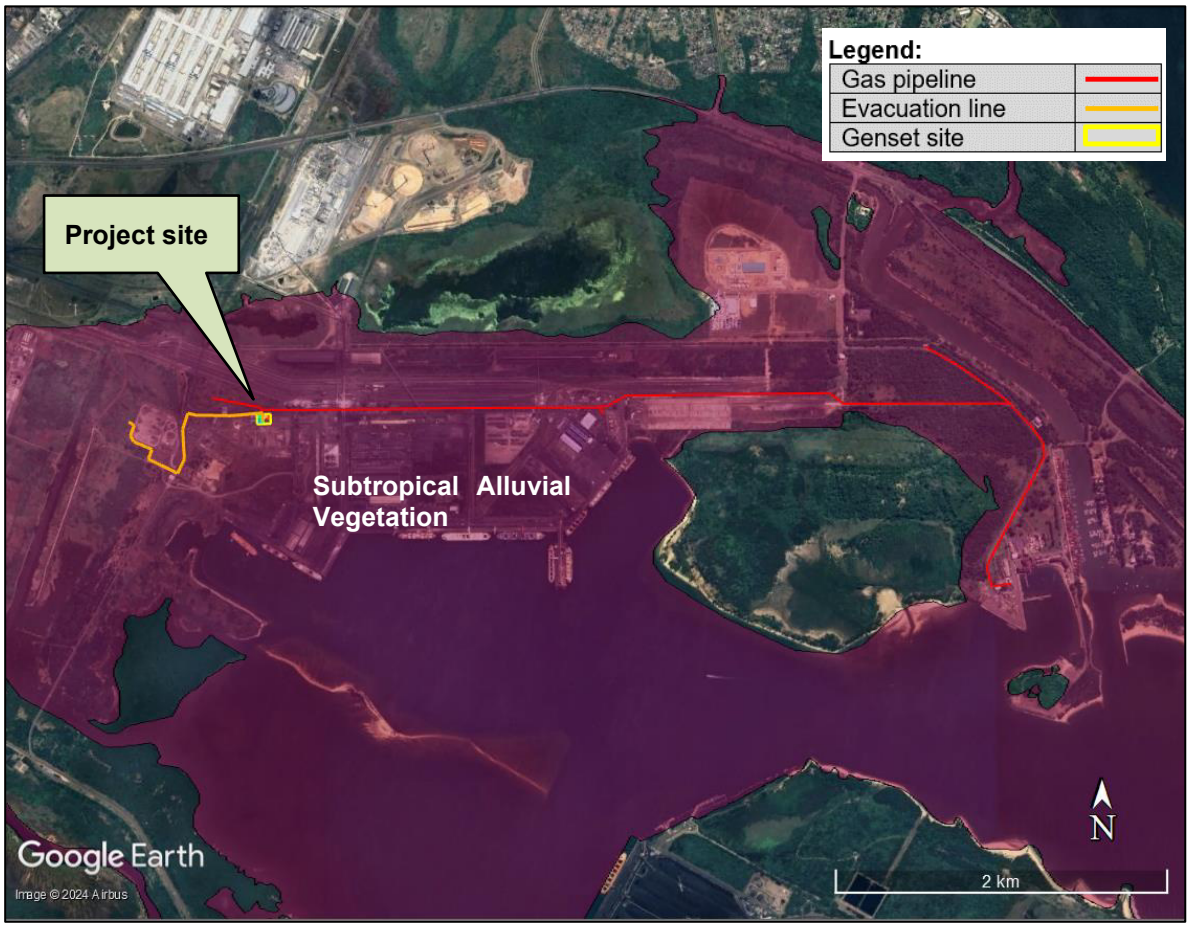

Figure 10-1: Location of the project site within the Subtropical Alluvial vegetation type (Aza7)

10.2 KwaZulu-Natal Biodiversity Sector Plan (2014)

The KwaZulu-Natal Biodiversity Sector Plan (2014) is a dataset that contains the following layers: landscape corridor, vegetation types, Critical Biodiversity Areas (CBAs), provincial conservation status and Protected Areas.

The dataset has indicated the presence of fragmented CBA areas within and within close proximity of the project site. These fragmented CBAs are classified as “irreplaceable” in the Sector Plan. The location of these fragmented CBAs is shown in Figure 10-2.

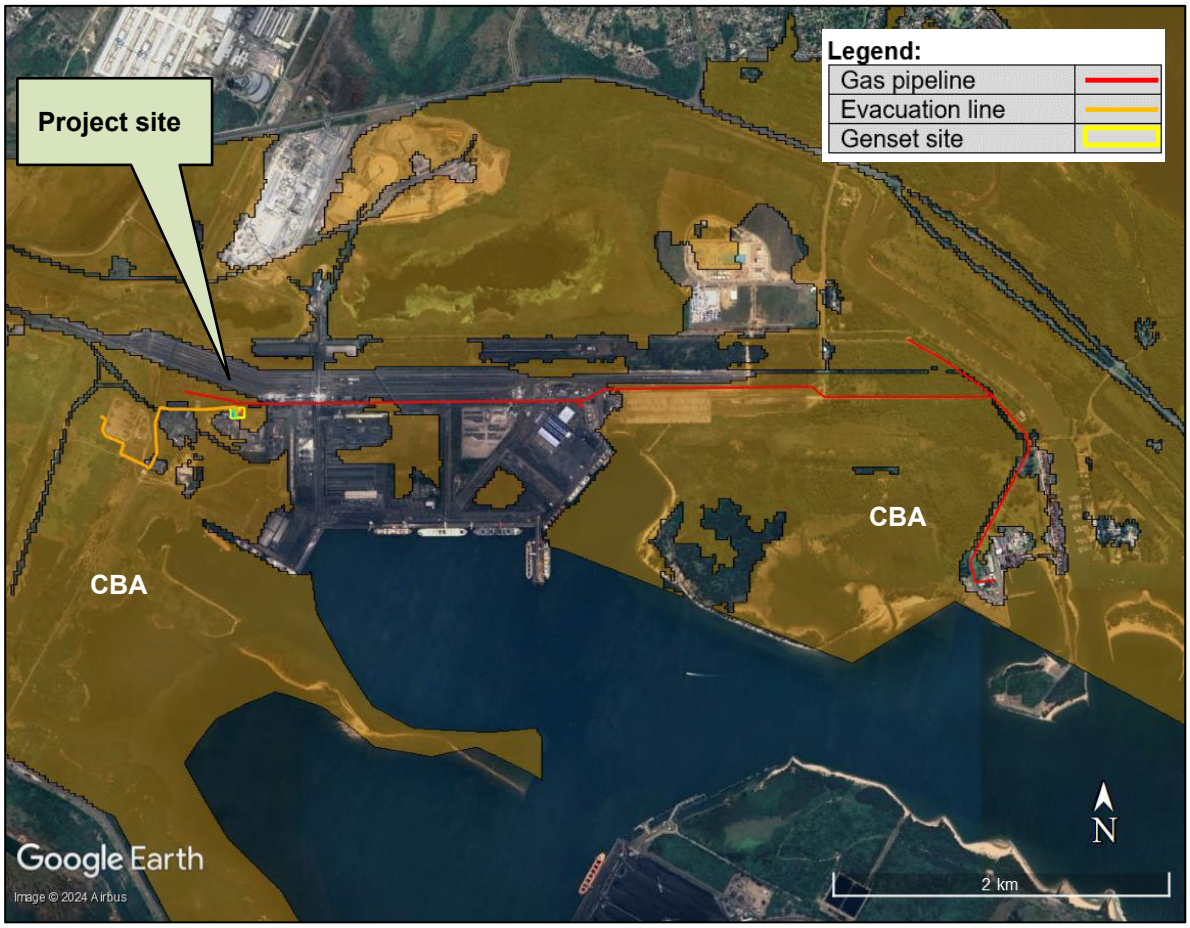

Figure 10-2: Location and extent of the fragmented CBAs included in the KwaZulu-Natal Biodiversity Sector Plan (2014)

10.3 South African National Land-cover (2020)

The South African National Land-cover dataset indicates that the land-cover in the area is dominated by surface infrastructure, transport infrastructure in the west and natural woodland on the eastern extent. The Land Cover Map is provided in Figure 10.3.

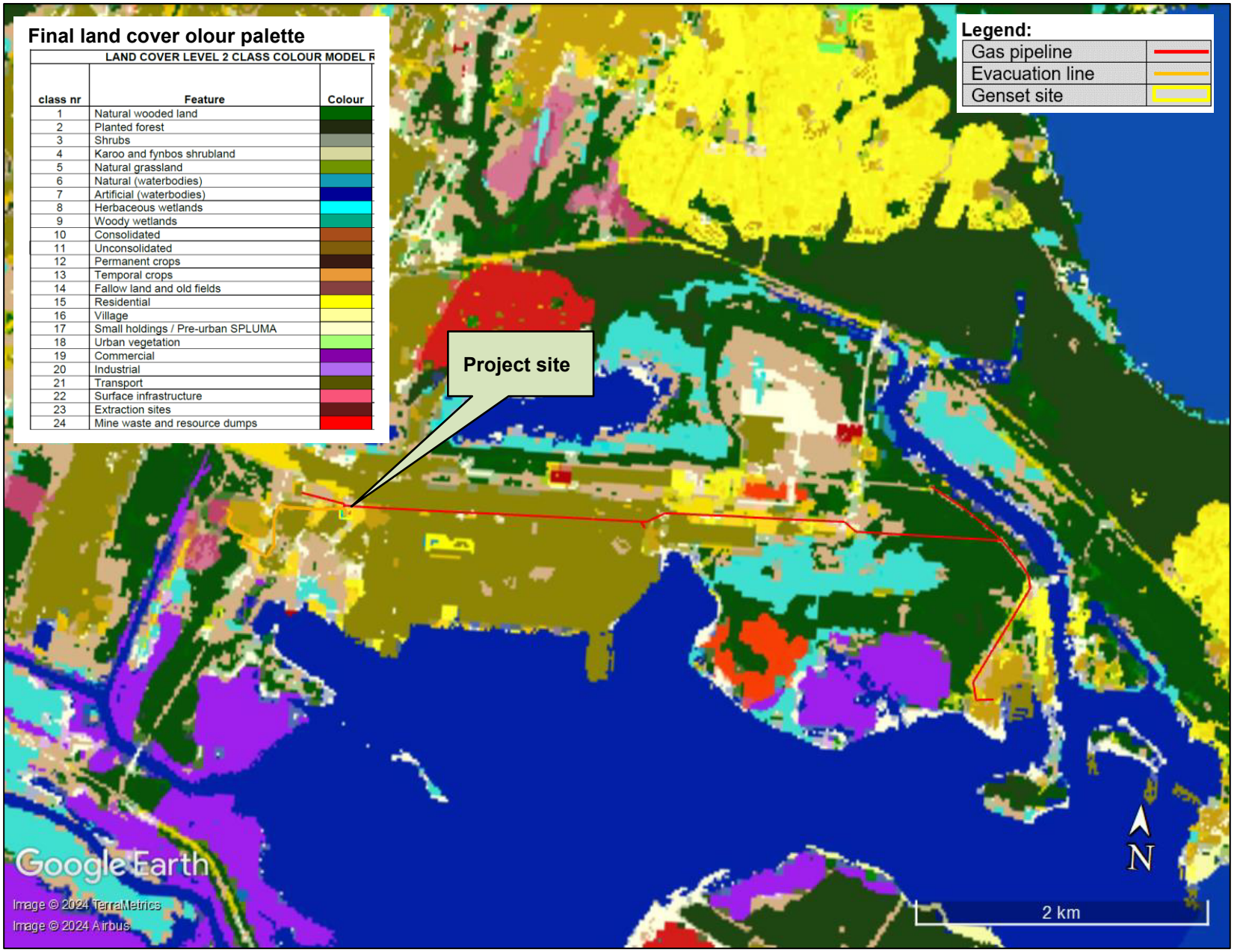

Figure 10-3: Location and extent of the land cover (2020) associated with the TNPA 22MW Genset Project

10.4 Important Bird Areas (2015)

No Important Bird Areas (IBA) as identified by Bird Life South Africa overlap the project site. The nearest such area is located approximately 2.5km to the southwest of the project site and is identified as the Richards Bay Game Reserve IBA. The location of the IBA in relation to the project site is shown in Figure 10-4.

Figure 10-4: Location of the Richards Bay Game Reserve IBA in relation to the project site

10.5 Red Listed Ecosystem, SANBI (2022)

The 2022 revised List of Threatened Terrestrial Ecosystems includes Critically Endangered, Endangered and Vulnerable Terrestrial Ecosystem types for South Africa. Based on the IUCN Red List of Ecosystems framework and published in Government Gazette 47526 (Notice 2747) on 18th November 2022. This data set replaces the 2011 list of ecosystems as published in the National Environmental Management: Biodiversity Act (Act 10 of 2004).

The database identifies the project site to be located within and in close proximity to the Subtropical Alluvial Vegetation Ecosystem. The database classifies this ecosystem as being of “Least Concern”. The location of these areas is shown in Figure 10-5.

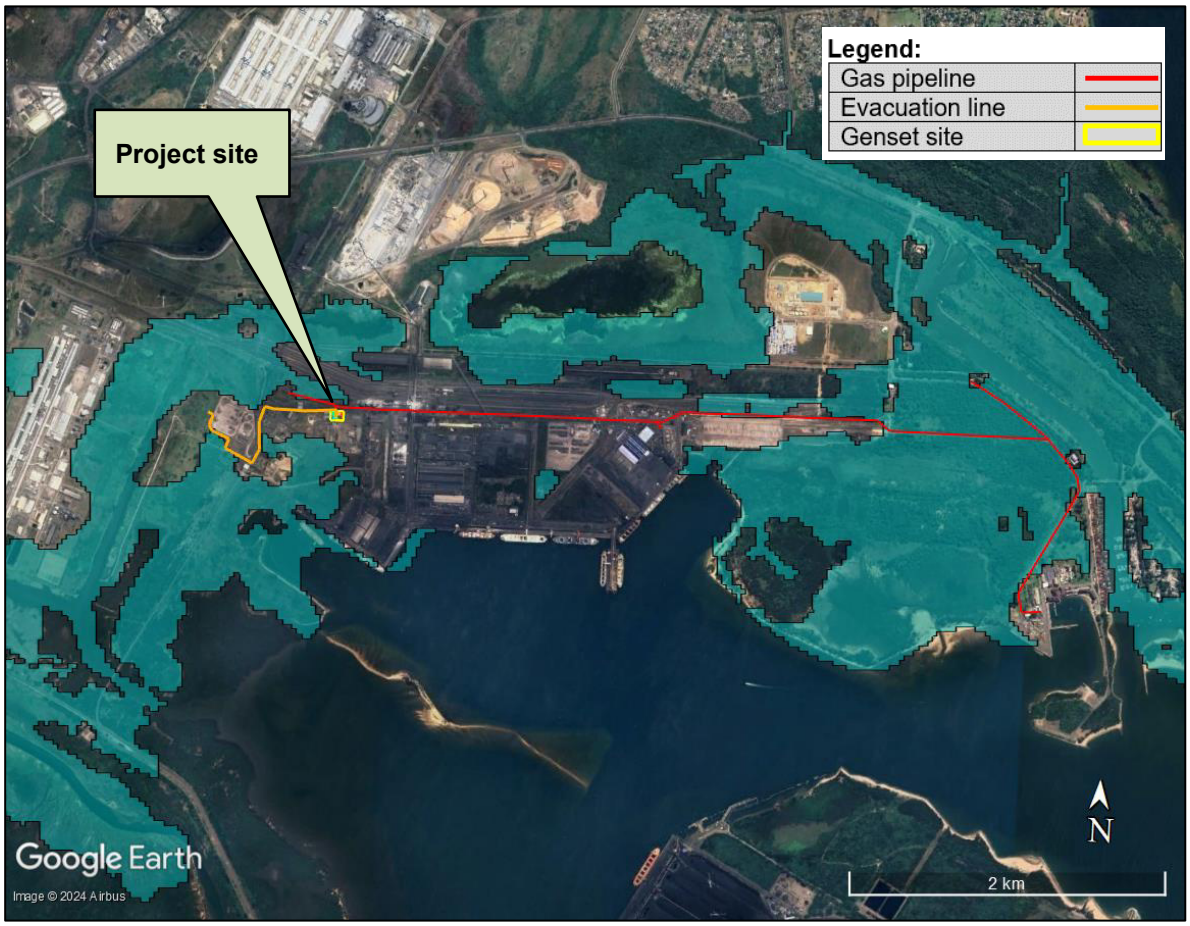

Figure 10-5: Location and extent of the Subtropical Alluvial Ecosystem (classified as "Least Concern") in relation to the project site

10.6 Protected Areas (2019)

The South African Protected Areas Database (SAPAD) is a GIS inventory of all formally Protected Areas in South Africa. The nearest such Protected Area is located approximately 2.5km to the southwest project site and is identified as the Richards Bay Game Reserve that was promulgated in 1937. The location and extent of the Protected Area is shown in Figure 10-6.

Figure 10-6: Location and extent of the Richards Bay Game Reserve in relation to the project site

11 FIELD ASSESSMENT FINDINGS

11.1 Vegetation

As the entire project site is located within the boundaries of the Port of Richards Bay, the vegetation associated with the project consists of vegetation that has been heavily transformed by the current land use. A fine scale vegetation classification based on the site assessment has identified three vegetation types, these are:

- Managed Grassland;
- Transformed Scattered Woodland; and
- Transformed Alluvial Grassland.

The location and extent of these vegetation types is shown in Figure 11-1.

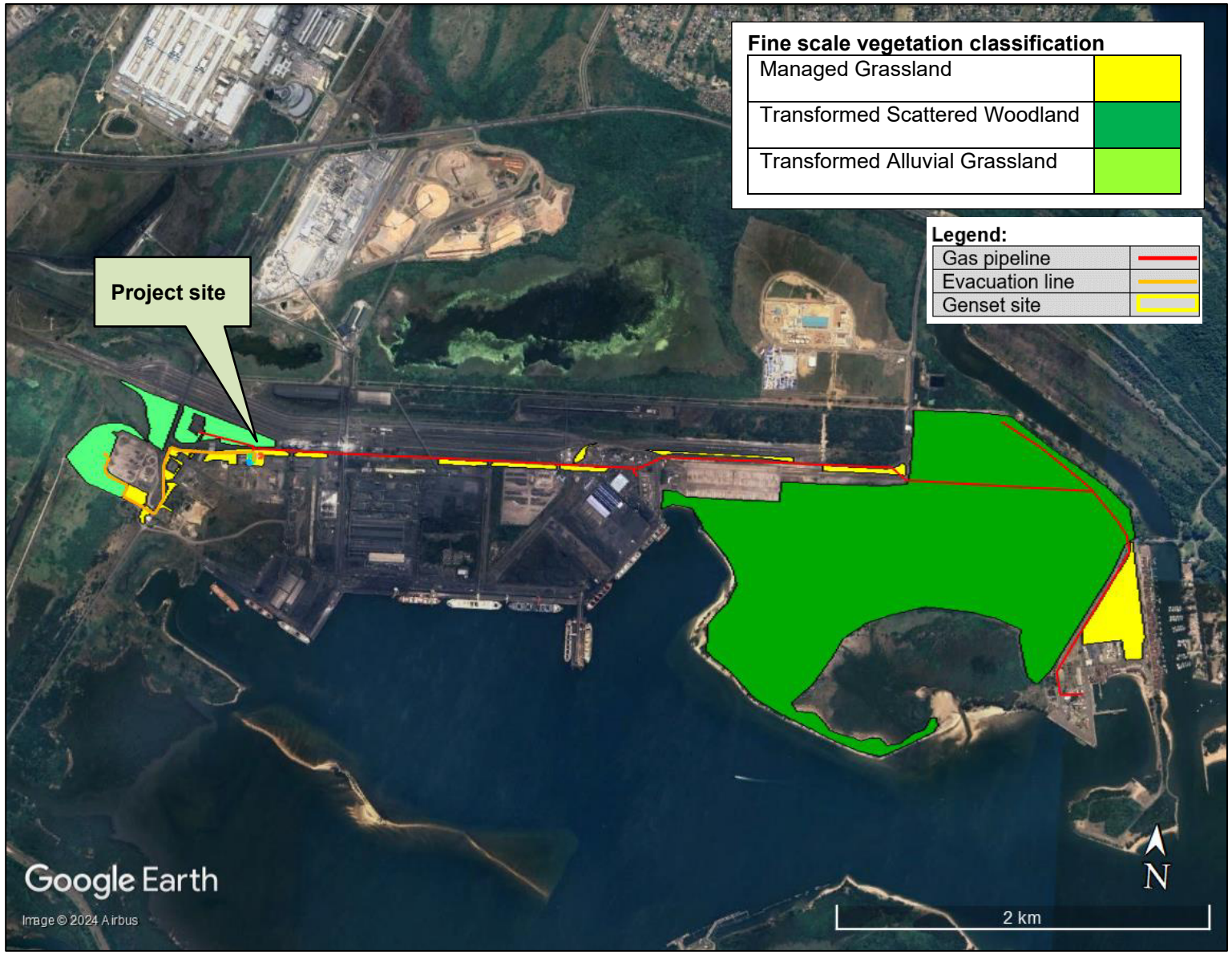

Figure 11-1: Location and extent of the fine-scale vegetation classification associated with the project site

The ***Managed Grassland*** is located in and around the infrastructure associated with the Port of Richards Bay infrastructure.

The vegetation type is activity managed through mowing and cleared where necessary. The infrastructure associated with the project is primarily located within this transformed grassland. This includes genset site (and associated infrastructure), the powerlines to the existing substations and the LNG pipeline from the future LNG Distribution Hub (see Plate 11-1). The vegetation type is dominated by managed *Stenotaphrum secundatum* (Buffalo Grass).

The location and extent of the vegetation type is shown in Figure 11-2.

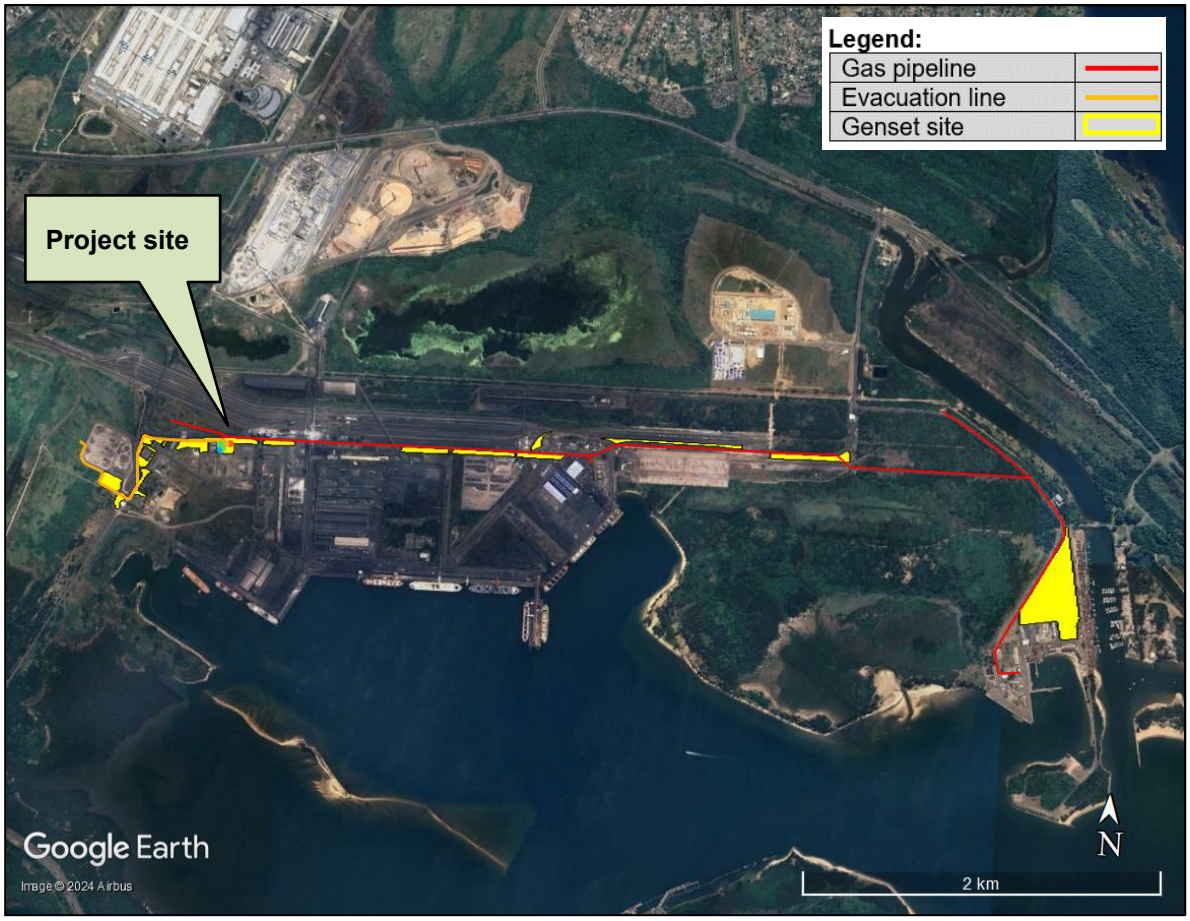

Figure 11-2: Location and extent of the Managed Grassland vegetation type associated with the project site

Plate 11-1: View of the Managed Grassland vegetation on which the 22MW Genset will be located

The ***Transformed Scattered Woodland*** is predominantly located towards the western portion of the project site and will contain the powerline connecting 22MW Genset with the various substations within the Port. The vegetation was historically disturbed for the development of the Port of Richards Bay and have been left naturally recover. As such, the tree component of the vegetation type consists of indigenous pioneer species (*Vachellia* species) and alien invasive species (*Cyperus* and *Acacia* species). The grass component is dominated by *Stenotaphrum secundatum* (Buffalo Grass) (see Plate 11-2).

The location and extent of the vegetation type is shown in Figure 11-3.

Figure 11-3: Location and extent of the Transformed Scattered Woodland vegetation type associated with the project site

Plate 11-2: View of the Transformed Scatted Woodland vegetation type located on the western extent of the project site

The ***Transformed Alluvial Grassland*** is predominantly located towards the eastern extent of the project site and will contain the evacuation line from the 22MW Genset to the substation as well as the future LNG Distribution Hub. The vegetation shows clear signs of disturbance as a result of the establishment of infrastructure (pipelines, roads, substation, access control gates, parking areas, etc.) associated with the Port of Richards Bay. The dominant vegetation in these areas consists of *Stenotaphrum secundatum* (Buffalo Grass) and small common pioneering *Vachellia* species and *Trema orientalis* (Pigeon Wood) (see Plate 11-3).

The location and extent of the vegetation type is shown in Figure 11-4.

Figure 11-4: Location and extent of the Transformed Alluvial Grassland vegetation type associated with the project site

Plate 11-3: View of the Transformed Alluvial Grassland vegetation type located on the eastern extent of the project site

Important plant species

As a resulf the historic and long term impact to the vegetation in the area due to the development and continous presence of the Port of Richards Bay, the vegetation associated with the 22MW Genset project has been highly transformed. As such, no plant species of special concern has been identified that will be impacted by the establishment or operations of the project.

No suitable pristine habitat is present on the development site and as such, no species identified in the DFFE Online Screening Tool is present on the site.

Disturbances to the vegetation on the site

The vegetation on the entire project site has undergone historic and continuous transformation or management associated with the establishment and operation of the Port of Richards Bay.

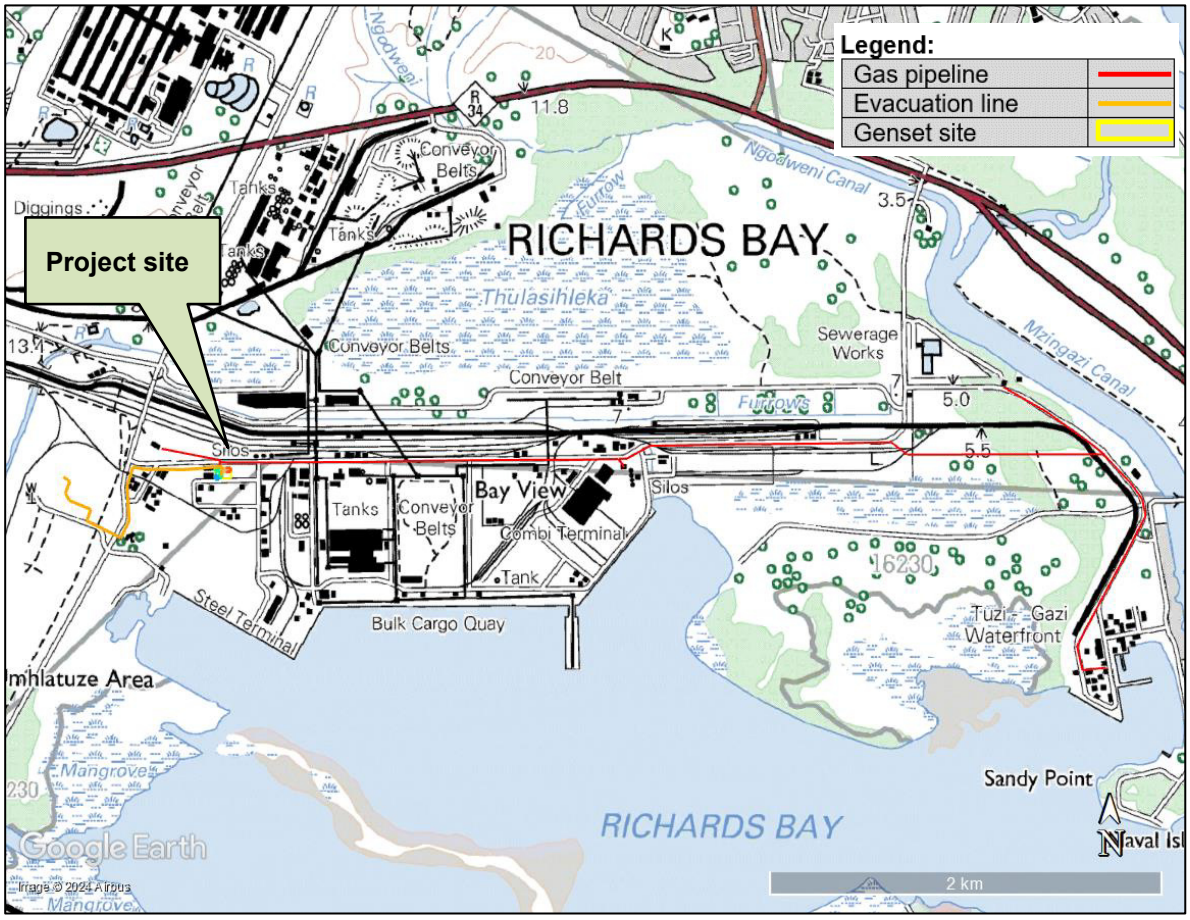

Figure 11-5: Level of transformation of the project site a shown on the 1 in 50 000 map sheet (2832CC – Richards Bay)

11.2 Faunal communities

The high levels of transformation of the habitat associated with the project site is likely to limit the number of faunal species that occur on the site.

Information sourced from The Biodiversity and Development Institute administered and hosted by The FitzPatrick Institute of African Ornithology at the Department of Biological Sciences, University of Cape Town, has indicated that a variety of faunal species occur in the QDS 2833CC. The information indicated that 358 bird, 23 mammals, 32 reptile and 37 amphibian species are known to occur in the QDS.

11.3 Mammals

As previously indicated, the habitat on the project site has been significantly transformed for the establishment and operation of the Port of Richards Bay. This highly transformed habitat as well as the active operations on and around the site has resulted in the no mammal species being observed during the site assessment. Table 11-1 provides the list of species that have been identified by the FitzPartick Institute of African Ornithology database, the Virtual Museum, for the applicable QDS.

11.4 Avifauna

The study site is not located in an Important Bird Area (IBA) as classified by the SANBI, however, the Richards Bay Game Reserve IBA is located approximately 2.5km to the southwest of the project site. No bird species were observed during the site assessment. This is a reflection of the highly transformed nature of the habitat on the project site.

Table 11-2 provides the species with “high” sensitivity as identified in the DFFE Online Screening Tool.

11.5 Reptiles

No reptile species were identified during the site assessment. Table 11-3 provides the list of reptile species that has been identified in the QDS 2833CC. It must be noted that only one species, *Crocodylus niloticus* (Nile Crocodile) has a Red Data List classification other than “Least Concern”. *Crocodylus niloticus* (Nile Crocodile) is listed as being “Vulnerable”. It must be further noted that no appropriate habitat for this species is present on the development site.

11.6 Amphibians

No amphibian species were observed during the site assessment. This is ascribed to the absence of any suitable habitat on the project site. Table 11-4 provides the list of amphibian species identified in the QDS 2833CC.

Table 11-1: Mammal species that have been identified and included in the Virtual Museum database for the QDS 2833CC

Scientific name	Common name	Red list category	Likelihood of occurrence	Comments
Chlorocebus pygerythrus	Vervet Monkey	Least Concern	4	
Chlorocebus pygerythrus pygerythrus	Vervet Monkey (subspecies pygerythrus)	Least Concern	4	
FAMILY Delphinidae	Unidentified Delphinidae	No information	4	
Sousa plumbea	Indian Humpback Dolphin	**Endangered**	4	Marine mammal, no suitable habitat is present on the project site.
Panthera pardus	Leopard	**Vulnerable**	4	No suitable habitat is present on the site.
Galago moholi	Mohol Bushbaby	Least Concern	4	
Otolemur crassicaudatus	Brown Greater Galago	Least Concern	4	
Atilax paludinosus	Marsh Mongoose	Least Concern	4	
Herpestes sanguineus	Slender Mongoose	Least Concern	4	
Mungos mungo	Banded Mongoose	Least Concern	4	
Hippopotamus amphibius	Common Hippopotamus	Least Concern	4	
Mops (Mops) condylurus	Angolan Free-tailed Bat	Least Concern	4	
Dasymys incomtus	Common Dasymys	**Near Threatened**	4	No suitable habitat is present on the site.
Gerbilliscus brantsii	Highveld Gerbil	Least Concern	4	
Mastomys natalensis	Natal Mastomys	Least Concern	4	
Mus (Nannomys) minutoides	Southern African Pygmy Mouse	Least Concern	4	
Otomys angoniensis	Angoni Vlei Rat	Least Concern	4	
Aonyx capensis	African Clawless Otter	**Near Threatened**	4	No suitable habitat is present on the site.
Saccostomus campestris	Southern African Pouched Mouse	Least Concern	4	
Epomophorus sp.	Epauletted Fruit Bats	No information	4	
Crocidura cyanea	Reddish-grey Musk Shrew	Least Concern	4	
Thryonomys swinderianus	Greater Cane Rat	Least Concern	4	
Genetta tigrina	Cape Genet	Least Concern	4	

Key: **Likelihood of occurrence:** 1 = Present; 2 = High; 3 = Moderate; 4 = Low; 5 = May occur as a managed population

Table 11-2: Bird species identified as "high" sensitivity in the DFFE Online Screening Tool

Scientific name	Common name	Red list category	Likelihood of occurrence	Comments
Nettapus auratus	African Pygmy Goose	No information	4	
Pelecanus onocrotalus	Great White Pelican	Least Concern	4	
Podica senegalensis	African Fin-foot	Least Concern	4	
Circus ranivorus	African Marsh Harrier	Least Concern	4	
Stephanoaetus coronatus	Crowned Eagle	**Near Threatened**	4	No suitable habitat is present on the project site.
Hydroprogne caspia	Caspian Tern	Least Concern	4	
Neotis denhami	Denham's Bustard	**Near Threatened**	4	No suitable habitat is present on the project site.
Balearica regulorum	Grey Crowned Crane	**Endangered**	4	No suitable habitat is present on the project site.
Microparra capensis	Lesser Jacana	Least Concern	4	
Halcyon senegaloides	Mangrove Kingfisher	Least Concern	4	
Pelacanus rufescens	Pink-backed Pelican	Least Concern	4	
Ephippiorhynchus senegalensis	Saddle-billed Stork	Least Concern	4	
Circaetus fasciolatus	Southern Banded Snake Eagle	**Near Threatened**	4	No suitable habitat is present on the project site.
Geokichla guttata	Spotted Ground Thrush	**Vulnerable**	4	No suitable habitat is present on the project site.
Aquilla rapax	Tawny Eagle	Least Concern	4	
Mycteria ibis	Yellow-billed Stork	Least Concern	4	

Key: **Likelihood of occurrence:** 1 = Present; 2 = High; 3 = Moderate; 4 = Low; 5 = May occur as a managed population

Table 11-3: Reptile species that have been identified and included in the Virtual Museum database for the QDS 2833CC

Scientific name	Common name	Red list category	Likelihood of occurrence	Comment
Acanthocercus atricollis	Southern Tree Agama	Least Concern	4	
Zygaspis arenicola	Maputoland Dwarf Worm Lizard	No information	4	
Bradypodion setaroi	Setaro's Dwarf Chameleon	Least Concern	4	
Chamaeleo dilepis	Common Flap-neck Chameleon	Least Concern	4	
Crotaphopeltis hotamboeia	Red-lipped Snake	Least Concern	4	
Dasypeltis inornata	Southern Brown Egg-eater	Least Concern	4	
Dipsadoboa aulica	Marbled Tree Snake	Least Concern	4	
Philothamnus hoplogaster	South Eastern Green Snake	Least Concern	4	
Philothamnus natalensis	Eastern Natal Green Snake	Least Concern	4	
Thelotornis capensis capensis	Southern Twig Snake	Least Concern	4	
Crocodylus niloticus	Nile Crocodile	**Vulnerable**	4	Aquatic species with no suitable habitat being present on the project site.
Dendroaspis polylepis	Black Mamba	Least Concern	4	
Naja annulifera	Snouted Cobra	Least Concern	4	
Naja subfulva	Brown Forest Cobra		4	
Hemidactylus mabouia	Common Tropical House Gecko	Least Concern	4	
Lygodactylus capensis	Common Dwarf Gecko	Least Concern	4	
Amblyodipsas concolor	Natal Purple-glossed Snake	Least Concern	4	
Boaedon capensis	Brown House Snake	Least Concern	4	
Duberria lutrix lutrix	South African Slug-eater	Least Concern	4	
Duberria variegata	Variegated Slug-eater	Least Concern	4	
Gracililima nyassae	Black File Snake	Least Concern	4	
Lycodonomorphus inornatus	Olive House Snake	Least Concern	4	
Lycodonomorphus rufulus	Brown Water Snake	Least Concern	4	
Lycophidion capense capense	Cape Wolf Snake	Least Concern	4	
Lycophidion pygmaeum	Pygmy Wolf Snake	Near Threatened	4	
Psammophis mossambicus	Olive Grass Snake	Least Concern	4	

Scientific name	Common name	Red list category	Likelihood of occurrence	Comment
Pelusios castanoides	Yellow-bellied Hinged Terrapin	Least Concern	4	
Python natalensis	Southern African Python	Least Concern	4	
Acontias plumbeus	Giant Legless Skink	Least Concern	4	
Panaspis wahlbergii	Wahlberg's Snake-eyed Skink	Least Concern	4	
Trachylepis depressa	Eastern Coastal Skink	Least Concern	4	
Trachylepis striata	Striped Skink	Least Concern	4	
Kinixys sp.		No information	4	
Kinixys zombensis	Eastern Hinged Tortoise	Least Concern	4	
Varanus niloticus	Water Monitor	Least Concern	4	
Bitis arietans arietans	Puff Adder	Least Concern	4	
Causus rhombeatus	Rhombic Night Adder	Least Concern	4	

Key: **Likelihood of occurrence:** 1 = Present; 2 = High; 3 = Moderate; 4 = Low; 5 = May occur as a managed population

Table 11-4: Amphibian species that have been identified and included in the Virtual Museum database for the QDS 2833CC

Scientific name	Common name	Red list category	Likelihood of occurrence	Comment
Arthroleptis stenodactylus	Shovel-footed Squeaker	Least Concern	4	
Arthroleptis wahlbergi	Bush Squeaker	Least Concern	4	
Leptopelis mossambicus	Brownbacked Tree Frog	Least Concern	4	
Leptopelis natalensis	Forest Tree Frog	Least Concern	4	
Breviceps mossambicus	Mozambique Rain Frog	Least Concern	4	
Sclerophrys garmani	Olive Toad	Least Concern	4	
Sclerophrys gutturalis	Guttural Toad	Least Concern	4	
Afrixalus aureus	Golden Leaf-folding Frog	Least Concern	4	
Afrixalus delicatus	Delicate Leaf-folding Frog	Least Concer	4	
Afrixalus fornasinii	Greater Leaf-folding Frog	Least Concern	4	
Afrixalus spinifrons	Natal Leaf-folding Frog	Least Concern	4	

Scientific name	Common name	Red list category	Likelihood of occurrence	Comment
Hylambates maculatus	Redlegged Kassina	Least Concern	4	
Hyperolius argus	Argus Reed Frog	Least Concern	4	
Hyperolius marmoratus	Painted Reed Frog	Least Concern	4	
Hyperolius microps	Sharp-headed Long Reed Frog	Least Concern	4	
Hyperolius pusillus	Water Lily Frog	Least Concern	4	
Hyperolius semidiscus	Yellowstriped Reed Frog	Least Concern	4	
Hyperolius tuberilinguis	Tinker Reed Frog	Least Concern	4	
Kassina senegalensis	Bubbling Kassina	Least Concern	4	
Phrynobatrachus mababiensis	Dwarf Puddle Frog	Least Concern	4	
Phrynobatrachus natalensis	Snoring Puddle Frog	Least Concern	4	
Xenopus laevis	Common Platanna	Least Concern	4	
Ptychadena mascareniensis	Mascarene Grass Frog	Least Concern	4	
Ptychadena nilotica	Nile Grass Frog	Least Concern	4	
Ptychadena oxyrhynchus	Sharpnosed Grass Frog	Least Concern	4	
Ptychadena porosissima	Striped Grass Frog	Least Concern	4	
Ptychadena taenioscelis	Dwarf Grass Frog	Least Concern	4	
Amietia delalandii	Delalande's River Frog	Least Concern	4	
Cacosternum nanum	Bronze Caco	Least Concern	4	
Pyxicephalus edulis	African Bull Frog	Least Concern	4	
Strongylopus fasciatus	Striped Stream Frog	Least Concern	4	
Tomopterna natalensis	Natal Sand Frog	Least Concern	4	

Key: **Likelihood of occurrence:** 1 = Present; 2 = High; 3 = Moderate; 4 = Low; 5 = May occur as a managed population

11.7 Response to the Terrestrial Biodiversity Protocol requirements

As previously discussed, the DFFE Online Screening Tool has identified the study site to be of “Very High Sensitivity Rating” for terrestrial biodiversity. As such the Terrestrial Biodiversity Protocol is to be followed in the compilation of this assessment. The following are key aspects that has to be addressed in the protocol.

Presence of any protected areas as defined by the National Environmental Management: Protected Areas Act (Act No. 57 of 2004)

The interrogation of the Protected Area Register managed by the DFFE has indicated that no protected areas are present on the study site. The nearest conservation areas are the is the Richards Bay Game Reserve approximately 2.5km to the southwest of the project site (see Figure 10-6). This reserve will be impacted upon by the development of the project in its current location.

Presence of any critically endangered or endangered ecosystems as identified in the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)

No critically endangered and endangered ecosystems as identified in accordance with the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) were identified within the study site. The site was identified to be within the Subtropical Alluvial Vegetation Ecosystem (see Figure 10-5) that is classified as of “least concern”.

The table below provides further feedback with regards the protocol requirements.

Table 11-5: Responses to the Terrestrial Biodiversity Protocol

No.	Requirement	Comment
1.	A description of the ecological drivers or processes of the system and how the proposed development will impact these.	Generally, aquatic ecosystems form the key ecological drivers in any landscape. In the absence of any such ecosystems within the study site, there are no dominant ecological drivers within the study site. The absence of these ecosystems impact on the abundance of faunal species, in particular the presence of reptiles, amphibians and water bird species. The description of the species abundance is provided in Section 11.
2.	A description of the ecological corridors that the proposed development would impede including migration and movement of flora and fauna.	The project is located in an area that current forms part of the Port of Richards Bay, as such the project will not result in any additional impact on any ecological corridors in the area. No pristine ecological corridors or present on the project site and as such no such corridor will be impeded by the establishment and operation of the project.
3.	A description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas or freshwater ecosystem priority areas (FEPA) sub catchments.	There are no aquatic features (wetlands or watercourses) within the project site, in addition, no flora-faunal associations are present within the study area.
4.	A description of terrestrial biodiversity and ecosystems on the preferred site, including: o Main vegetation types; o Threatened ecosystems, including listed ecosystems as well as locally important habitat types identified; o Ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats; and o Species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified.	The description of the terrestrial biodiversity and associated ecosystems within the study site is provided in Section 11 of this report. The section indicates the highly transformed nature of the habitat on the development site due to the establishment and operation of the Port of Richards Bay.
5.	An identification of any alternative development footprints within the preferred site which would be of “low” sensitivity as identified by the screening tool and verified through the site sensitivity verification.	No alternatives were considered as part of this assessment as the location of the project has been optimized for the location of the study site. A key consideration of the selection of the project site was its location in highly transformed areas within the existing Port of Richards Bay infrastructure.
6.	An identification of Critical Biodiversity Areas (CBAs) within the development site. The following must be provided for these CBAs: o Reasons why an area has been identified as a CBA; o An indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;	From the available information, it has been determined that the study site is located within a CBA1 in terms of the KwaZulu-Natal Sector Plan (2014). The reason for this classification is that the study site is located within an estuarine environment associated with the uMhlatuze River. It must however be highlighted that the Aquatic Assessment has not identified any aquatic features within the boundaries of the project site, as such, the establishment and operation of the project will not have any impact on the key aspect identifying the CBA1.

No.	Requirement	Comment
	○ Identification of the impact no species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s); ○ Identification of the impacts on the ecosystem threat status; ○ Identification of impacts on explicit subtypes in the vegetation; ○ Identification of impacts on the overall species and ecosystem diversity of the site; and ○ Identification of impacts on any changes to threat status of populations of species conservation in the CBA.	
7.	An identification of terrestrial ecological support areas (ESAs) within the development site. The following must be provided for these ESAs: ○ Identification of the impacts on the ecological processes that operation within and across the site; ○ Identification of the extent to which the proposed development will impact on the functionality of the ESA; and ○ Identification of any potential loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna.	See Section 13 for the impact assessment
8.	Identification of any protected areas as defined by the National Environmental Management: Protected Areas Act, 2004, including an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and zoning as per the protected area management plan.	No protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 occur within the study site. As such, the development on the study site will not impact on any protected area (see Figure 10-6).
9.	Identification of priority areas for protected area expansion, including the way in which the proposed development will compromise or contribute to the expansion of the protected area network.	The ecological state of the study site is considered to be transformed due its location within the existing Port of Richards Bay. As such the vegetation on large parts of the project site is considered to be secondary in nature. However, the presence of the Port of Richards Bay and associated infrastructure in close proximity of the study site significantly detracts from the study site's potential to form part of any protected area expansion plans.

No.	Requirement	Comment
10.	Identification of Strategic Water Source Areas (SWSAs), including the impacts on the terrestrial habitat of a SWSA and the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses.	Addressed in a separate submission.
11.	Identification of Freshwater Ecosystem Priority Area (FEPAs) sub-catchments, including the impacts of the proposed development on habitat condition and species in the FEPA sub-catchment.	Addressed in a separate submission.
12.	Identification of indigenous forests, including impacts on the ecological integrity of the forest and percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.	No indigenous forests were identified within the study site.

12 SCREENING TOOL COMPARISON

Table 12-1 below provides a comparison of the findings of the DFFE Online Screening Tool and the findings of the Site Sensitivity Verification.

Table 12-1: Comparison of the output of the DFFE Online Screening Tool and the findings of the Site Sensitivity Verification

Screening Tool Theme	Screening Tool Finding	Screening Tool Motivation	Specialist Finding	Tool Validated or Disputed by Specialist - Reasoning
Animal Species Theme	**High**	The possible presence of 16 avifauna species with high sensitivity. In addition, one amphibian, one bird, two reptile and two invertebrate species with medium sensitivity possibly occurring within the project area (see Figure 4-1).	**Low**	**Disputed.** The level of transformation of the vegetation and habitat on the project site due to the establishment and operation of the Port of Richards Bay in which boundaries the project site is wholly located, is considered to be significant. None of the species highlighted are present within the project site due this high level of transformation of the project site.
Plant Species Theme	**Medium**	A number of plant species with medium sensitivity may occur on the project site and no plant species of special concern are likely present on the site (Figure 4-2).	**Low**	**Disputed.** The level of transformation of the vegetation and habitat on the project site as a result of the establishment and operation of the Port of Richards Bay has significantly reduced the value of the vegetation on the project site. In addition, none of the species identified in the DFFE Online Screening Tool were identified on the project site.
Terrestrial Biodiversity Theme	**Very High**	The site is located in an area that has been included in two spatial databases, the National Protected Area Expansion Strategy (NPAES) and in the KwaZulu-Natal Biodiversity Sector Plan (2014) as a Critical Biodiversity Area (CBA) with "irreplaceable" status. (Figure 4-3).	**Low**	**Disputed.** The high level of transformation of the vegetation and habitat on the project site as a result of the establishment and operations of the Port of Richards Bay has resulted in the transformation of the project site to such an extent that no characteristics of the identified CBA is present within the project site. In addition, the location of the site within the boundaries of the Port of Richards Bay does not make is possible to be included into any protected area expansion strategies.

13 IMPACT ASSESSMENT

Likely impacts associated with the proposed development of the TNPA 22MW Genset Facility on the identified terrestrial baseline have been identified through the undertaking of site visits, consultation of published information and independent assessment by the Environmental Project Team. Impacts have also been identified by the specialist assessments undertaken.

The impact assessment will make provision for the assessment of the following impacts:

- No-go impacts;
- Planning and design phase impacts;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- Cumulative impacts.

Impacts identified were assessed according to the criteria outlined in Appendix B. Each impact was ranked according to extent, duration, magnitude and probability. These criteria are based on the Department of Environmental Affairs and Tourism (DEAT) (now the Department of Environmental Affairs, Forestry and Fisheries) Guideline Document to the EIA Regulations(1998). Where possible, mitigatory measures were recommended for the impacts identified.

13.1 No-go impacts

To contextualise the potential impacts of the project's activities and associated infrastructure, the existing impacts (or *status quo*) associated with current terrestrial biodiversity conditions need to be described. This status quo should be used as the comparison against which the other project impacts are assessed. The main issues identified with the existing impacts are:

- The study site will be left in its current state with the existing land use.
- The presence of limited alien invasive vegetation within the property will proliferate at its current rate.

Since these existing impacts will continue even if the project is not implemented, they are considered to be "no-go" impacts.

13.2 Planning and design phase impacts

Activities associated with the design and pre-construction phase pertain mostly to a feasibility assessment which is done mostly at a desktop level. In some cases, further site visits need to take place, but the impacts of these visits are negligible, if any, as these activities will be limited to non-invasive activities such as photographs and field surveys, etc.

For the purposes of this assessment, no impacts have been identified that are directly associated with the project.

13.3 Construction phase impacts

This section will assess the impacts associated with the implementation of the proposed development on the terrestrial biodiversity on the project site. During the construction phase the of the proposed development the following impacts have been identified:

- Potential increase in alien vegetation
- Contamination of the area by petrochemical spillages.
- Contamination of the area by construction waste.
- Contamination of the area by domestic waste.
- Contamination of the area as a result of leaking portable toilet facilities.

13.4 Operational phase impacts

This phase assesses the impacts associated with the operational phase of the new development. The following impacts have been identified:

- Spreading of alien invasive vegetation
- Contamination by domestic waste generated by the operations
- Contamination by leaking petrochemical substances.

13.5 Decommissioning phase impacts

As the development will not be decommissioned within the next 20 years, no provision is made for the any decommissioning impacts. If a decision is reached that the facility is to be decommissioned, a reassessment of the potential impacts at that time must be conducted.

13.6 Cumulative impacts

The following cumulative impacts associated with the development of the TNPA 22MW Genset Facility have been identified:

- Spread of alien invasive plant species.

Table 13-1: No-go impacts associated with the development of the TNPA 22MW Genset Project

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude							S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude					
		S*	E	D	M	P			S	E	D	M	P	
Vegetation	The study site will be left in its current state with the existing land use.	N	1	5	2	5	**Score: 40 Medium Negative**	None, as the no-go option reflects the *status quo*.	N	1	5	2	5	**Score: 40 Medium Negative**
Biodiversity	The presence of limited alien invasive vegetation within the property will proliferate at its current rate.	-	1	5	2	4	**Score: 32 Medium Negative**	None, as the no-go option reflects the *status quo*.	-	1	5	2	4	**Score: 32 Medium Negative**

Table 13-2: Construction phase impacts associated with the development of the TNPA 22MW Genset Project

Nature of impact	Impact summary	Without mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
Potential increase in alien vegetation	The occurrence of alien invasive vegetation on the project site is relatively low, however, any disturbance of the current vegetation will create and opportunity for alien species to settle on the site. If these alien species settle on the study site, the site might become an area from which these species can proliferate into the surrounding areas.	-	2	2	6	3	**Score: 30 Medium Negative**	The current alien invasive species management implemented within the Port of Richards BAy will be sufficient for the control of alien plants that may settle on the project site during construction. As such, the site must be included in the Port of Richards Bay alien species management schedule.	-	1	2	2	1	**Score: 5 Low Negative**
Contamination of the area by petrochemical spillages	The presence of plant and equipment on the construction site that make use of petrochemical substances to operation pose a risk of contamination of soils on the project site which could result in the contamination of the ground- and surface water on the site.	-	2	3	6	3	**Score: 33 Medium Negative**	The following management and mitigation measures must be included into the Environmental Management Programme for the project: • All plant and equipment that make use of petrochemical substances must be checked for leakages on a daily basis before operations commence. • All plant and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed.	-	1	1	4	2	**Score: 12 Low Negative**

Nature of impact	Impact summary	Without mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
								• If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. • All refuelling of plant and equipment must be conducted over a drip-tray. • If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction footprint that has been cleared. • If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.						
Contamination of the area by construction waste	The construction activities will generate an amount of construction waste on the site.	-	1	1	6	4	**Score: 32 Medium Negative**	The following waste management activities must be provided for in the Environmental Management Programme for the project: • Skips must be made available on-site into which all construction waste can be discarded.	-	1	1	2	2	**Score: 8 Low Negative**

Nature of impact	Impact summary	Without mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
								• All construction waste must be cleared from the site on a daily basis and placed in these skips. • The capacity of these skips must be monitored on a daily basis to ensure that a replacement skip can be arranged on the same day as the filled skips are removed. • The disposal of the content of these skips must be done at a municipal landfill site. • No dumping of construction waste on open areas on the property will be allowed. • No burial of construction waste within the project site or in the surrounding areas will be allowed.						
Contamination of the area by domestic waste.	The presence of a labour force associated with the construction will generate an amount of domestic waste (food wrapping, plastic bottles, etc.) on the site.	-	1	1	6	4	**Score: 32 Medium Negative**	The following waste management activities must be provided for in the Environmental Management Programme for the project: • A designated eating area must be established within the construction site. • Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the labour.	-	1	1	2	2	**Score: 8 Low Negative**

Nature of impact	Impact summary	Without mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
								• The capacity of these domestic waste bins must be monitored on a daily basis to ensure that they are emptied timeously. • The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.						
Contamination of the area as a result of leaking portable toilet facilities.	Portable toilet facilities will be present of the property to service the labour associated with the construction. These toilets will pose a risk of leakages and spillages which may impact on the groundwater quality on the site.	-	2	2	8	3	**Score: 36 Medium Negative**	The following management and mitigation measures must be included into the Environmental Management Programme Report for the project: • Only portable chemical toilets with a sealed reservoir will be allowed on site. • The capacity of the reservoirs in the portable chemical toilets must be monitored on a daily basis to ensure that they can be serviced timeously. • All removal of the collected sewage waste from the portable chemical toilets must be conducted by a registered service provider for disposal at a municipal wastewater treatment facility.	-	1	2	6	2	**Score: 18 Low Negative**

Table 13-3: Operational phase impacts associated with the development of the TNPA 22MW Genset Project

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
Spreading of alien invasive vegetation	The occurrence of alien invasive vegetation on the study site is relatively low, however, any disturbance of the current vegetation will create and opportunity for alien species to settle on the study site. If these alien species settle on the study site, the site might become an area from which these species can proliferate into the surrounding areas.	-	2	2	6	3	**Score: 30 Medium Negative**	The current alien invasive species management implemented within the Port of Richards Bay will be sufficient for the control of alien plants that may settle on the project site during construction. As such, the site must be included in the larger alien species management schedule for the Port of Richards Bay.	-	1	2	2	1	**Score: 5 Low Negative**
Contamination by domestic waste generated by the operations	Domestic waste will be generated by the employees associated with the facility.	-	1	1	6	4	**Score: 32 Medium Negative**	The following waste management activities must be provided for in the Environmental Management Programme for the project: • A designated eating area must be established within the project site. • Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the employees. • The capacity of these domestic waste bins must be monitored on a daily basis to ensure that they are emptied timeously. • The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.	-	1	1	2	2	**Score: 8 Low Negative**

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S*	E	D	M	P			S	E	D	M	P	
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
Contamination by leaking petrochemical substances.	The design of the facility makes provision for the genset to run on heavy fuels (and LNG). It is unclear where the heavy fuels will be stored or what the reticulation infrastructure will be, however, the risk of spillage of these heavy fuels pose a risk to the contamination of the project site.	-	2	2	8	3	**Score: 36 Medium Negative**	Provision must be made in the operational management plan for the facility to do regular inspection of all the reticulation lines used for heavy fuels. The goal of the inspection is to identify any possible leakages as soon as possible. If any leakages are detected, the operations must be stopped and the leak in the reticulation must be addressed. If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.	-	2	2	8	1	**Score: 12 Low Negative**

Table 13-4: Cumulative impacts associated with the development of the TNPA 22MW Genset Project

Nature of impact	Impact description	Impact rating post mitigation
Spread of alien invasive plant species	The occurrence of alien invasive vegetation on the study site is relatively low, however, any disturbance of the current vegetation will create and opportunity for alien species to settle on the project site. If these alien species settle on the study site, the site might become an area from which these species can proliferate into the surrounding areas. It is recommended that the alien invasive plant species management be incorporated to the alien invasive species management of the Port of Richards Bay operation as the species will be similar to the ones that are currently being managed on the farm. This cumulative impact can therefore be successfully managed and mitigated.	**Low Negative**

14 MANAGEMENT AND MITIGATION MEASURES

The management and mitigation measure to be included in the Environmental Management Programme Report and Operational Management Plant for the construction and operational phases of the development on the TNPA 22MW Genset Facility is provided in Tables 13-1 to 13-3, above.

15 MONITORING REQUIREMENTS

It is recommended that an Environmental Control Officer, who meets the requirements of the NEMA: EIA Regulations (2014) as amended, be appointed to conduct monthly audits of the construction and rehabilitation works for the duration of the project. An audit report must be completed for each monthly audit and be submitted to the relevant authority.

16 REASONED OPINION BY THE SPECIALIST

Appendix 6 of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended requires that the specialist conducting a specialist study for submission with an Application for Environmental Authorisation provide a reasoned opinion on whether an authorisation should be granted. The following is the specialist's reasoned opinion in this regard.

16.1 Key findings of the assessment

The key findings made during the assessment that were used to generated the reasoned opinion on whether the development should proceed or not is provided in the table below.

Table 16-1: Summary of key findings of the assessment

Aspect	Key findings
Wetlands and watercourses	No aquatic features were identified within the study site and as such, no such features will be directly impacted upon by the development of the project.
Vegetation	The ecosystem that is associated with the project has been identified as the Subtropical Alluvial Vegetation Ecosystem that is classified as "least concern". The vegetation on the project site has undergone significant level of transformation from its natural state due to the establishment and continuous operations associated with the Port of Richards Bay. As such, the vegetation and associated terrestrial habitat on the project site has little or no resemblance to its natural state and as a consequence has little or no conservation value.
Avifauna	No Important Bird Areas (IBA) were found to overlap the project site. No important bird species were identified during the site assessment which is a result of the transformed habitat associated with the project site.
Mammals	No mammal species were identified during the site assessment which is a result of the transformed habitat associated with the project site.

Aspect	Key findings
Reptiles	No reptile species were identified during the site assessment which is a result of the transformed habitat associated with the project site.
Amphibians	No amphibian species were identified during the site assessment which is a result of the absence of any suitable habitat for these species within the project site.
Conservation significance	The vegetation and associated terrestrial habitat on the project site have little or no resemblance to its natural state and as a consequence has little or no conservation value. IN addition, the project site's location within the Port of Richards Bay nullifies any inclusion of the site in any conservation areas. As such, the project site has no conservation significance.

Based on the key findings detailed above, it is the specialist's opinion that there are no fatal flaws associated with the terrestrial biodiversity aspects of the project site that should prevent that project from receiving and Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

17 CONCLUSION

The entire project site is located within the boundaries of the Port of Richards Bay.

The findings of the DFFE Online Screening Tool that relates to the Animal and Plant Species and Terrestrial Biodiversity themes are disputed based on the findings of the Site Sensitivity Verification (see Table 12-1).

As such, based on the findings of the assessment it is the opinion of the Specialist that there are no reasons that the development should not be authorised in accordance with the specifications as presented in this assessment. The authorisation must make provision for the various management and mitigation measures detailed in this report.

18 REFERENCES

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VAN OUDTSHOORN, F., 2006. Guide to grasses of Southern Africa. Briza Publications.

Van Wyk et al., 2000, Photographic guide to trees of Southern Africa. Briza Publications.

APPENDIX A

SPECIALIST CURRICULUM VITAE

Magnus van Rooyen

Technical Director - Environment

CORE SKILLS

- Environmental Impact Assessment
- Specialist Ecological (Terrestrial and Aquatic) Assessment
- Environmental Screening Assessment
- Due Diligence Assessment and Feasibility Studies
- Mining Applications
- Environmental Management Programmes and Plans
- Strategic Environmental Assessments
- Wildlife Management Plans

DETAILS

Qualifications

- MPil. Environmental Management
- BSc (Hon) Botany
- BSc (Botany and Zoology)
- Post Graduate Certificate in Education (Science and Biology)

Memberships

- South African Council for Natural Scientific Professions (Pr. Sci. Nat. 400335/11)
- International Association of Impact Assessors (Ref No. 1839)

Languages

- Afrikaans - fluent
- English - fluent
- German - fair
- Zulu - communication

Countries worked in:

South Africa, Namibia, Lesotho, Mozambique, Botswana, Guinea, Liberia, United States, United Kingdom

PROFILE

Mr van Rooyen is currently a Technical Director – Environment and the Branch Manager of the KwaZulu-Natal Office of GCS in Durban.

In addition to holding a Masters degree in Environmental Management, he also holds a BSc degree in Botany and Zoology, an Honors degree in Botany and a Post Graduate Certificate in Education. He has in excess of 18 years' experience in the environmental consulting field through conducting and managing Environmental Impact Assessments, Specialist Terrestrial and Aquatic Ecology Assessments and Strategic Environmental Management inputs into various project feasibility studies.

Through these services, he has been exposed to projects in a range of sectors which include the general public infrastructure sector (national and provincial roads, harbour and rail developments, water (dams and supply) and wastewater (treatment works and reticulation), private infrastructure sector (small and large scale housing developments, lodges, private dams, etc.), agricultural sector (dams, establishment of orchards, plantations and feedlots), mining sector (coal mines, gold mine, manganese mines, aggregates and associated mining infrastructure) and the industrial sector (light and heavy industrial infrastructure development).

In addition, Mr van Rooyen has extensive experience in conducting specialist terrestrial and aquatic ecological assessments for various infrastructure (roads, dams, ports) and industrial (smelters, power plants) development projects in a number of diverse ecosystems across Africa. He has experience in the compilation of Resettlement Policy Framework Plans, Due Diligence Assessments and Feasibility Studies associated with infrastructure development projects. Mr van Rooyen has experience in working on various private and public sectors as well as rural and urban environments in various countries

Previous Experience

Client	Project Description	Role/ Responsibility
Private client	**Wetland Assessment for the farm dam on the Farm Compentation near Matatiele** Undertaking of the wetland assessment for the development of an irrigation dam on the Farm Compensation near Matatiele in KwaZulu-Natal.	Wetland Specialist
Senekal Boerdery	**Wetland and Biodiversity Assessment for the Mkuze Township Establsishment** Undertaking of the wetland and biodiversity assessment associated with the township establishment in the town of Mkuze, KwaZulu-Natal.	Wetland and Biodiversity Specialist
WSP Consulting	**Wetland Assessment associated with the establishment of a flood protection berm at the SAPPI Saiccor Mill** Undertaking of the wetland assessment for the construciton of a flood protection berm between the uMkomaas River and the SAPPI Saiccor Mill in KwaZulu-Natal.	Wetland Specialist
Transnet National Ports Authority	**Forest mapping within the Port of Richards Bay** Undertaking of the mapping and classification of all the indigenous forest areas withini the Port of Richards Bay, KwaZulu-Natal.	Biodiverstiy Specialist
RHDHV	**KwaMathanya Water Supply Scheme Wetland Assessment** Undertaking of the wetland assessment of the KwaMathanya water supply scheme near town of Ixopo in KwaZulu-Natal.	Wetland Specialist
Private client	**Brownsdrift Hydropedological Assessment** Undertaking of the wetland and hydropedological assessment associated with the proposed residential developmnet on the site in Browndrift, eThekwini Municipality, KwaZulu-Natal.	Wetland Specialist
GreenScene Environmental	**Wetland and Biodiversity Assessment for a residential property in Pumula** Undertaking of the wetland and biodiversity assessment for the residential development on Lot 967 Pumula, KwaZulu-Natal.	Wetland and Biodiversity Specialist
GreenScene Environmental	**Wetland and Biodiversity Assessment for Lot 962 and 965 Port Edward** Undertaking of the wetland and biodiversity assessment for the residential development on Lot 962 and 965 Port Edward, KwaZulu-Natal.	Wetland and Biodiversity Specialist
Msunduzi Municipality	**Wetland and Biodiversity Assessment for various Military Veterans Housing sites within the Msuduzi Municipality** Undertaking of the wetland and biodiversity assessment for the various sites earmarked for the establishment of residential houses for the Military Veterans in the Msunduzi Municipality, KwaZulu-Natal.	Wetland and Biodiversity Specialist
Private client	**Forest delineation of a private property in Munster** Undertaking of the delineation of the forest margins on the residential property in Munster, KwaZulu-Natal.	Biodiverstiy Specialist

Previous Experience

Client	Project Description	Role/ Responsibility
JG Afrika (Pty) Ltd	**Gunyana Water Supply Scheme Wetland and Biodiviersity Assessment** Undertaking of the wetland and biodiverstiy assessment of the Gunyana community water supply scheme near town of Pomeroy in KwaZulu-Natal.	Wetland and Biodiversity Specialist
GreenScene Environmental	**Wetland and Vegetation Assessment associated with the construction of the Ingwebaba Pedestrian Bridge near Shelly Beach** Undertaking of the wetland and vegetaiton assessment for the construction of the Ingwebaba Pedestrian Bridge near Shelly Beach in KwaZulu-Natal.	Wetland and Biodiversity Specialist
Terratest (Pty) Ltd	**Wetland and Vegetation Assessment associated with the construction of the KwaHlokohloko Rural Water Supply Scheme near Eshowe** Undertaking of the wetland and biodiverstiy assessment of the KwaHlokoloko community water supply scheme near town of Eshowe in KwaZulu-Natal.	Wetland and Biodiversity Specialist
Coastal Macadamias	**Wetland Assessment associated with the development of an irrigation dam for Coastal Macadamias near Ramsgate** Undertaking of the wetland assessment for the development of an irrigation dam for the Coastal Macadamias property near Ramsgate, KwaZulu-Natal.	Wetland Specialist
South African National Roads Agency Limited	**Ballito to Tinley Manor Wetland and Biodiveristy Assessment** Undertaking of the wetland and biodiversity study to support the preliminary design for the upgrade of the N3 between Ballito and Tinley Manor.	Wetland and Biodiversity Specialist
Vale Limitada	**Biodiversity Assessment for the alternative water supply pipeline** Undertaking of the biodiversity assessment to suport the preliminary design of the proposed alternative water supply pipeline at the Moatize Mine in Tete, Mozambique.	Biodiversity Specialist
GIB Consulting Engineers	**Aquadene Wetland Assessment** Undertaking of the wetland assessment for the Aquadene housing development in Richards Bay.	Wetland Specialist
JG Afrika (Pty) Ltd	**Wetland Assessment for the pipeline route for the drought relief pipeline in Laingsburg** Undertakaing of the wetland assessment assocaited with the 25km pipeline route from the watersource to the town of Laingsburg in the Western Cape.	Wetland Specialist
Seche International	**Wetland and Biodiversity Assessment for the proposed new uMgungundlovu Landfill Site** Preliminary wetland and biodiversity assessment for the proposed new uMgungundlovu Landfill site outside of Pietermaritzburgg.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**Wetland and Vegetation Assessment associated with the upgrading of the N1 between Heuningspruit and Koppies** Undertaking of the wetland and biodiversity assessment for the upgrading of the N1 between Heuningspruit and Koppies in the Freestate Province.	Wetland and Biodiversity Specialist

Previous Experience

Client	Project Description	Role/ Responsibility
Terratest (Pty) Ltd	**Wetland and Vegetation Assessment associated with the upgrading of the Nelson Mandelar Museum at Qunun** Undertaking of the wetland and vegetation assessment associated with the upgrading of the Nelson Mandela Museum in Qunu in the Eastern Cape Province.	Wetland and Biodiversity Specialist
GreenScene Environmental	**Wetland and Vegetation Assessment associated with the construction of the Ulundi Water Supply Scheme** Undertaking of the wetland and biodiverstiy assessment of the Ulundi water supply scheme near town of Eshowe in KwaZulu-Natal.	Wetland and Biodiversity Specialist
MOZAL	**Biodiversity Assessment for the raw water supply pipeline for the Mozal Aluminium Smelter in Mozambique** Undertkaing of the biodiversity assessment for the raw water supply pipeline from the desalination plant in the Port of Matola to the MOZAL smelter int Boane, Maputo, Mozambique.	Biodiversity Specialist
JG Afrika (Pty) Ltd	**Wetland and Biodiveristy Assessment for various water supply schemes in the Cedarberg Municpality** Undertaking of the wetland and biodiversity assessments for the water supplys schemes for the town of Whupperthal, Clanwilliam and Citrusdal in the Western Cape.	Biodiversity Specialist
uKhozi Environmentalists	**Phalanndwa Coal Mine Biodiversity and Wetland Assessment** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Phalanndwa Coal Mine Expansion near Delmas.	Wetland and Biodiversity Specialist
Kongiwe Environmental Consultants	**Lephalale Coal Mine Biodiversity and Wetland Assessment** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Lephalale Coal Mine near Lephalale.	Wetland and Biodiversity Specialist
Nzingwe Consultancy	**Riversdale Coal Mine Wetland Assessment** Undertaking the wetland specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the Riversdale Coal Mine near Vryheid.	Wetland Specialist
WSP Environmental	**SAPPI Saiccor Wetland Assessment** Undertaking the wetland specialist study in support of the Application for Environmental Authorisation for the construction of flood protection	Wetland Specialist

Client	Project Description	Role/ Responsibility
	measures associated with the SAPPI Saiccor Mill, uMkomaas.	
WSP Environmental	**11th Avenue Interchange Wetland Assessment** Undertaking the wetland specialist study in support of the Application for Environmental Authorisation for the construction of the 11th Avenue Interchange, Durban	Wetland Specialist
WSP Environmental	**SAPPI Saiccor Alien Invasive Plant – Risk Assessment** Undertaking of the risk assessment of the presence of various listed category I and II alien invasive plant species on the SAPPI Saiccor Mill site, uMkomaas.	Vegetation Specialist
Environmental Resources Management	**Bhangazi Community Tented Camp Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the establishment of the Bhangazi Community Tented Camp in the isiMangoliso Wetland Park, St. Lucia.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**N3 – Market Road Interchange Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Market Road Interchange, Pietermaritzburg.	Wetland and Biodiversity Specialist
ESKOM SOC	**ESKOM 22 kVA Lines Vegetation Assessments** Undertaking of vegetation assessments for the establishment of various 22kVA electrification lines in KwaZulu-Natal.	Vegetation Specialist
ESKOM SOC	**Tombo to Mafini 300kVA Line Vegetation Assessments** Undertaking of vegetation assessment for the route alignment of the 300kVA high voltage electricity line from the Tombo Substation to Mafini, Port St. Johns.	Vegetation Specialist
Element Consulting Engineers	**Port St. Johns Water Treatment Works Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the establishment of the Port St. Johns Water Treatment Works, Port St. Johns.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**N2 – uMgeni Road Interchange Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the	Wetland and Biodiversity Specialist

Client	Project Description	Role/ Responsibility
	N2 – uMgeni Road Interchange, Durban.	
South African National Roads Agency Limited	**N2 – Mt Edgecombe Interchange Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N2 – Mt Edgecombe Interchange, Durban.	Wetland and Biodiversity Specialist
Afrimat	**Ladysmith Quarry Wetland and Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Afrimat Quarry, Ladysmith.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**N3 – Epworth Road Interchange Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Epworth Road Interchange, Pietermaritzburg	Wetland and Biodiversity Specialist
Millennium Challenge Account - Mozambique	**Nacala Dam rehabilitation Biodiversity Assessment** Undertaking of the biodiversity specialist study in support of the Application for an Environmental Permit for the rehabilitation and raising of the Nacala Dam, Mozambique.	Biodiversity Specialist
WSP Environmental	**SAPPI Ngodwana Mill Expansion Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the expansion of the Ngodwana Mill, Waterval Boven.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**N3 – Chota Motala Road Interchange Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Chota Motala Road Interchange, Pietermaritzburg.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**R30 Glen Lyon to Brandfort Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the R30 between Glen Lyon and Brandfort.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**R30 Virginia to Beatrix Mine Wetland and Biodiversity Assessment** Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the R30 between Virginia and Beatrix Mine.	Wetland and Biodiversity Specialist

Client	Project Description	Role/ Responsibility
Miranda Minerals	**Sesikhona Colliery Wetland and Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Sesikhona Colliery, Dannhauser.	Wetland and Biodiversity Specialist
Miranda Minerals	**Uithoek Colliery Wetland and Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Uithoek Colliery, Dundee.	Wetland and Biodiversity Specialist
Miranda Minerals	**Burnside Colliery Wetland and Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Burnside Colliery, Dundee.	Wetland and Biodiversity Specialist
Ultimate Goal	**Ultimate Goal Colliery Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Ultimate Goal Colliery, Dundee.	Biodiversity Specialist
Canton Trading	**Taylors Halt Quarry Wetland and Biodiversity Assessment** Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Taylor Halt Quarry, Pietermaritzburg.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	**uMtamvuna Quarry Biodiversity Assessment** Undertaking the biodiversity specialist study in support of the Mining Right Application for the establishment of the SANRAL Quarry, Kokstad.	Biodiversity Specialist

APPENDIX B
IMPACT ASSESSMENT METHODOLOGY

IMPACT ASSESSMENT METHODOLOGY

Likely impacts associated with the proposed development on the identified aquatic and terrestrial biodiversity baseline have been identified through the undertaking of site visits, consultation of published information, comments from Interested and Affected Parties, comments from the relevant authority and independent assessment by the Environmental Project Team. Impacts have also been identified by the specialist assessments undertaken.

The impact assessment will make provision for the assessment of the following impacts:

- No-go impacts;
- Planning and design phase impacts;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- Cumulative impacts.

Impacts identified were assessed according to the criteria outlined below. Each impact was ranked according to extent, duration, magnitude and probability. These criteria are based on the Department of Environmental Affairs and Tourism (DEAT) (now the Department of Environmental Affairs, Forestry and Fisheries) Guideline Document to the EIA Regulations(1998). A significance rating was calculated as per the methodology outlined below. Where possible, mitigatory measures were recommended for the impacts identified.

Status of the Impact

The impacts were assessed as having either of the following:

Table 1: Impact status classification

Classification	Definition
Negative effect	at a cost to the environment
Positive effect	a benefit to the environment
Neutral	Neutral effect on the environment

Extent of the Impact

The extent of each impact was rated as being one of the following:

Table 2: Impact extent classification

Classification	Definition
1	Site - within the boundaries of the development site
2	Local - the area within 5 km of the site
3	Municipal - the Local Municipality
4	Regional - The Province
5	National – South Africa
6	International – Southern Africa

Duration of the Impact

The duration of each impact was rated as being one of the following:

Table 3: Impact duration classification

Classification	Definition
1	Immediate - > 1 year
2	Short term – 1 to 5 years
3	Medium term – 6 to 15 years
4	Long Term – the impact will cease when the operation stops
5	Permanent – no mitigation measure will reduce the impact after construction

Magnitude of the Impact

The intensity or severity of each impact was rated as being one of the following:

Table 4: Impact severity classification

Classification	Definition
0	None – where the aspect will have no impact on the environment
2	Minor – where the impact affects the environment in such a way that natural, cultural and social functions / processes are not affected
4	Low – where the impact affects the environment in such a way that the natural, cultural and social functions / processes are slightly affected
6	Moderate – where the affected environment is altered but natural, cultural and social functions / processes continue, albeit in a modified way
8	High – natural, cultural or social functions / processes are altered to the extent that they will temporarily cease
10	Very high / unknown – natural, cultural or social functions / processes are altered to the extent that they will permanently cease

Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

Table 5: Impact probability classification

Classification	Definition
0	None – the impact will not occur
1	Improbable – the possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate corrective actions
2	Low – there is a probability that the impact will occur
3	Medium – the impact may occur
4	High – it is most likely that the impact will occur
5	Definite / unknown – the impact will occur regardless of the implementation of any prevention or corrective actions, or it is not known what the probability will be, based on a lack of published information

Significance of the Impact

Based on the information contained in the points above, the potential impacts have been assigned a significance weighting (S). This weighting is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.

$S = (E+D+M)*P$

The significance weightings are ranked as:

Table 6: Impact significance rating

Impact rating	Definition
< 30	Low – the impact would not have a direct influence on the decision to develop in the area;
30 – 60	Medium – the impact could influence the decision to develop in the area unless it is effectively managed / mitigated;
> 60	High - the impact must have an influence on the decision-making process for development in the area.

APPENDIX E3: Soil and Agricultural Potential Assessment

SOIL AND AGRICULTURAL POTENTIAL ASSESSMENT

FOR THE TRANSNET NATIONAL PORT AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

Prepared for:

Gerda Bothma

GCS Environment SA (Pty) Ltd

Tel: 011 803 5726

Email: gerdab@gcs-sa.biz

Prepared by:

Dr. Rowena Harrison

Land Matters Environmental Consulting (Pty) Ltd

Tel: 078 023 0532

Email: rowena@lmenvironmental.co.za

Draft Version 2

Juune 2024

LAND MATTERS
ENVIRONMENTAL CONSULTING

Declaration of Independence by Specialist

I, Rowena Harrison**,** in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent soil consultant.
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998).
- Have and will not have vested interest in the proposed activity proceeding.
- Have no, and will not engage in, conflicting interests in the undertaking of the activity.
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998).
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability.
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.

An abridged CV of the author is provided in Appendix C as per the 'Minimum Report Content Requirements' for Specialist Reports (as per GN 320 GG 43110, dated 20 March 2020)

_____

Rowena Harrison
Soil Scientist
SACNASP Reg. No. 400715/15
Date: 20th of June 2024

Reporting Conditions

The findings, results, observations, conclusions, and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as information available at the time of compilation. The author, however, accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and by the use of the information contained in this document. No form of this report may be amended without the prior written consent of the author

EXECUTIVE SUMMARY

Land Matters Environmental Consulting (Pty) Ltd was appointed by GCS Environment SA (Pty) Ltd on behalf of the Transnet National Ports Authority (TNPA) to conduct a soil and agricultural impact assessment for the proposed TNPA 22MW GENSET Richards Bay project. This project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel of liquid natural gas.
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3.
- The installation of a 200m^3 tank storage of demineralised water.
- Evacuation lines to the substations.
- Fencing for the site.
- An auxiliary pit.
- A drain facility for the used diesel and sludge.
- A transmission line in the form of cable will be laid in an existing servitude from the generator to the west and east substations.
- Gas pipeline of approximately 1 to 1.4km in length.

The outputs of the 'National Web Based Environmental Screening Tool site (Department of Forestry, Fisheries, and the Environment), indicated that the study site was classified as having a very high sensitivity to agricultural production. The primary aim of this assessment was therefore to confirm or dispute the site's current environmental sensitivity classification. This was undertaken according to the protocols for a specialist Agricultural Assessments as per Government Notice No. 320; Government Gazette No. 43110 of 2020.

Use was made of available literature and the latest spatial databases associated with the area of interest to identify the climate, topography, the potential soils, and land types relating to the study site as well as the proposed infrastructure. These databases included (but were not limited to) the vegetation type of South Africa, the climate of South Africa, the Bioresource Unit information for KwaZulu-Natal, raster layers to determine the topography of the site, the National Biodiversity Assessment (National Wetland Map 5) and the Land Type data from the Agricultural Research Council (ARC). The following information regarding the site was obtained:

- The mean annual precipitation is 1209 mm, with the bulk of the rainfall occurring between September and April (summer months). Mean temperatures vary between 17.7 ^{O}C to 24.1 ^{O}C with a mean annual temperature of 21.1 ^{O}C. Climate is not a limitation to agricultural production.
- The vegetation of the study site is classified as belonging to the Azonal Vegetation Biome and more specifically the Subtropical Alluvial Vegetation type. During the field investigation the vegetation within the site was however noted to be completely transformed through the construction and operation of the Port area. The majority of the project site is now developed with portions of land under pioneer graminoid and alien invasive species.

- The site is located within the coastal area of the Richards Bay Port, which is characterised by flat topography as well as gentle slopes. The proposed infrastructure is located between 4 m to 6 m above sea level on slopes between 0.05 % to 2 % and is thus in a flat area. Slope is therefore not seen as a limitation to agricultural production.
- The NWM5 database classified the area in which the proposed infrastructure will be located as part of the Estuarine Functional Zone. As such no wetlands were classified within the study site. With the development of the Richards Bay Port in 1972, the site has however been considerably changed and is now developed for the export of coal.
- The project site is situated within the Richards Bay Bioresource Unit (Za8). The BRU is sub-divided into Za8a and Za8b, with the study site located in Za8a. The BRU is predominantly considered arable (44.4% of the area) with sandy soils making up 12% of the area. Soils of moderate to poor drainage occupy 5.0%. There is a high erosion hazard on the sandy soils if not managed correctly.
- The area in which the infrastructure is proposed is situated in the Ia74 land type as defined in the relevant Land Type Map (2830 Richards Bay). The Ia land type represents land where at least 60 % of the area is pedologically youthful, deep, and unconsolidated. Common soil forms include Oakleaf, Dundee, and Namib soils. These soil forms are not generally associated with high agricultural potential with the exception of the Oakleaf soil form which can be very productive under the correct management.
- Historic and current aerial imagery show that the project site has undergone considerable changes from the original Mhlathuze Estuary to the development of the Richards Bay Port in 1972. These changes have led to the complete modification of the soils of the site. These impacts reduce the viability of the area for any agricultural activities (cultivation and/or livestock grazing) both in its current form as well as in the future. Changes include, topography, the presence of hardened surfaces and the mixing, transport, and pollution of the original soil profiles within the area.

A field investigation was furthermore undertaken as part of this assessment. Soil augur sample points were taken throughout the study site. This was to determine the extent of soil types and this information was then utilised to create a soil map. The study site conforms to the Land Type classification with the original soil form being associated with an old estuarine area and therefore having pedogenetically young soils. However, the construction of the Port in the 1970s has drastically changed the soils and this area must now be classified in terms of an anthropogenic classification and thus belong to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Anthrosols and Technosols are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied. Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form). This is as a result of the intentional deposition of soil material over the original estuarine site to create the Port as well as the polluted nature of a large majority of the soils from settled coal dust and other chemicals. This soil is not suitable for agricultural production as it cannot be remediated to being agriculturally productive within one life span .

Utilising the soil information, climatic information, topography and vegetation information, the study site was assessed in terms of its land potential. The site has been categorised into the Class VII and Class VIII categories. The Class VII category has been mapped where the Witbank and Grabouw soils were recorded. The soils are not suitable for agricultural production in the area but do not consist of polluted soil or hardened surfaces. They are physically disturbed or are deposited. The Class VIII soils were mapped where settled coal dust as well as the presence of hardened surfaces completely reduces the use of these areas for any agricultural production. These areas are also unlikely to be rehabilitated to be used for agriculture in the future.

Taking into account the above factors the soil and agricultural assessment has reclassified the very high sensitivity classification of the site for agricultural production to a low classification for agricultural production. This considers the use of the area as the Richards Bay Port as well as the non-arable to problematic soil characteristics of the site.

Screening tool results for the proposed TNPA 22MW GENSET Richards Bay Project

SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT
SOIL AND AGRICULTURAL AGRO-ECOSYSTEMS		
Very High	**Low**	Agricultural Agro-Ecosystem Specialist Assessment has been conducted

The study site is located within the Richards Bay Port and as such no impact will occur on any agriculturally productive land. Impacts to the receiving environment are therefore associated with the soil compaction and subsequent sedimentation, and the potential for soil pollution from the construction and operation of the proposed generator and associated infrastructure. Several general and specific measures are proposed to mitigate these impacts.

Given the low sensitivity of the site to agricultural production, coupled with the polluted soils and the associated unlikelihood of any agricultural production within the site in the future, it is the author's opinion that the proposed project be approved from a soil and agricultural perspective. This is provided that mitigation measures as outlined in this report as well as other specialist reports are implemented as part of the construction and operational phases of the project.

Cross Reference Table to the requirements of an Agricultural Agro-Ecosystem Assessment Report

MINIMUM REPORT CONTENT REQUIREMENTS FOR AN AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT REPORT (AS PER GN 320 GG 43110, DATED 20 MARCH 2020)	CROSS REFERENCE IN THIS REPORT
The report must contain the contact details of the specialist, their South African Council for Natural Scientific Professions (SACNASP) registration number, their field of expertise and a curriculum vitae.	Declaration of Independence by Specialist (pg. i). As well as Specialist CVs in Appendix C (pg. 41).
A signed statement of independence by the specialist.	A signed declaration of independence is provided on pg. i.
The duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment.	The methodology is provided in Section 2 (pgs. 4-5).
A description of the methodology used to undertake the on site assessment inclusive of the equipment and models used, as relevant.	The methodology is provided in Section 2 (pgs. 4-5).
A map showing the proposed development footprint (including supporting infrastructure) with a 50 m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool.	A soil map, and a land capability class map is provided on pgs. 19-22 and 26 respectively.
An indication of the potential losses in production and employment from the change of the agricultural use of the land as a result of the proposed development.	No losses in production and employment will be incurred from the project. This is detailed throughout the report.
An identification of any areas to be avoided, including any buffers.	No buffers have been placed within the assessment as the infrastructure is not located within a sensitive site or a site utilised for agricultural activities.
Confirmation from the soil scientist or agricultural specialist that all reasonable measures have been considered in the micro-siting of the proposed development to minimise fragmentation and disturbance of agricultural activities.	The Impact assessment is provided in Section 6 (pgs. 27 to 32).
A substantiated statement from the soil scientist or agricultural specialist with regards to agricultural resources on the acceptability or not of the proposed development and a recommendation on the approval or not of the proposed development.	The Impact assessment is provided in Section 6 (pgs. 27 to 32).
Where identified, proposed impact management outcomes or any monitoring requirements for	The Impact assessment is provided in Section 6 (pgs. 27 to 32).

MINIMUM REPORT CONTENT REQUIREMENTS FOR AN AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT REPORT (AS PER GN 320 GG 43110, DATED 20 MARCH 2020)	**CROSS REFERENCE IN THIS REPORT**
inclusion in the Environmental Management Programme (EMPr).	
A description of the assumptions made and any uncertainties or gaps in knowledge or data.	This is provided in Section 1.4 (pg. 4).

LIST OF ABBREVIATIONS AND UNITS OF MEASURE

ARC – Agricultural Research Council.
BGIS – Biodiversity GIS
CARA - Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).
DEA - Department of Environmental Affairs.
DWS - Department of Water and Sanitation.
IAIA – International Association for Impact Assessment.
ISRIC – International Soil Reference and Information Centre.
GENSET – Generator Set
NEMA - National Environmental Management Act, 1998 (Act No. 107 of 1998).
NWA - National Water Act, 1998 (Act No. 36 of 1998).
NWM5 – National Wetland Map 5.
SACNASP - South African Council for Natural Scientific Professions
SANBI - South African National Biodiversity Institute
TNPA – Transnet Port Authority

m – metres.
km – kilometres.
mm – millimetres.
mabsl – metres above sea level.
^{O}C – degrees centigrade

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1 INTRODUCTION

1.1 Project Locality and Description

Land Matters Environmental Consulting (Pty) Ltd was appointed by GCS Environment (Pty) Ltd on behalf of the Transnet National Ports Authority (TNPA) to conduct a soil and agricultural impact assessment for the proposed TNPA 22MW GENSET Richards Bay project. This project entails the construction of the following infrastructure within the existing port areas:

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- A drain facility for the used diesel and sludge.
- A transmission line in the form of cable will be laid in an existing servitude from the generator to the west and east substations.
- Gas pipeline of approximately 1 to 1.4km in length.

The proposed project is located within the existing Richards Bay Port, uMhlathuze Local Municipality, KwaZulu-Natal (Figure 1; Figure 2).

Soil forms are the primary components creating the pedosphere and are integral in the sustainability of life on earth. They are formed through the integration of five key components, namely: parent material (geology); time; climate; microorganisms; and water. The primary attributes of soil forms include:

- Soils are the primary mediums on earth for biological processes and activity.
- They provide and sustain integral ecological processes including water retention, nutrient cycling, and the organic carbon cycle, and
- The soil characteristics of a particular area determine the botanical and faunal composition. Therefore, soils provide an important system in which the ecology of the area is founded upon.

South African soils can be classified into approximately 135 forms and is based on the presence of defined diagnostic horizons or materials. Ineffective conservation efforts coupled with increased development within South Africa has exerted pressure on these vital soil resources. It is imperative that all developments employ techniques to ensure the conservation of soils forms (Soil Working Group, 2018).

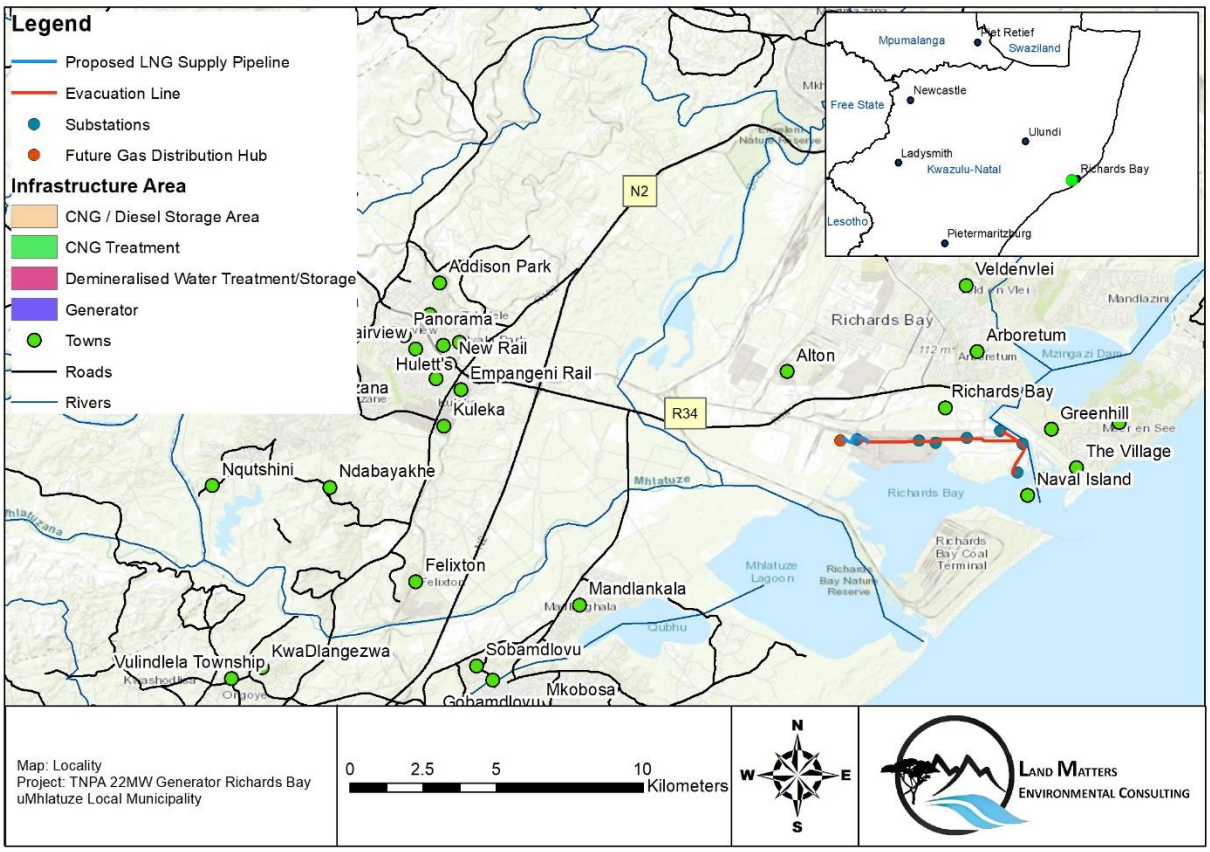


Figure 1: Locality map of the proposed project site

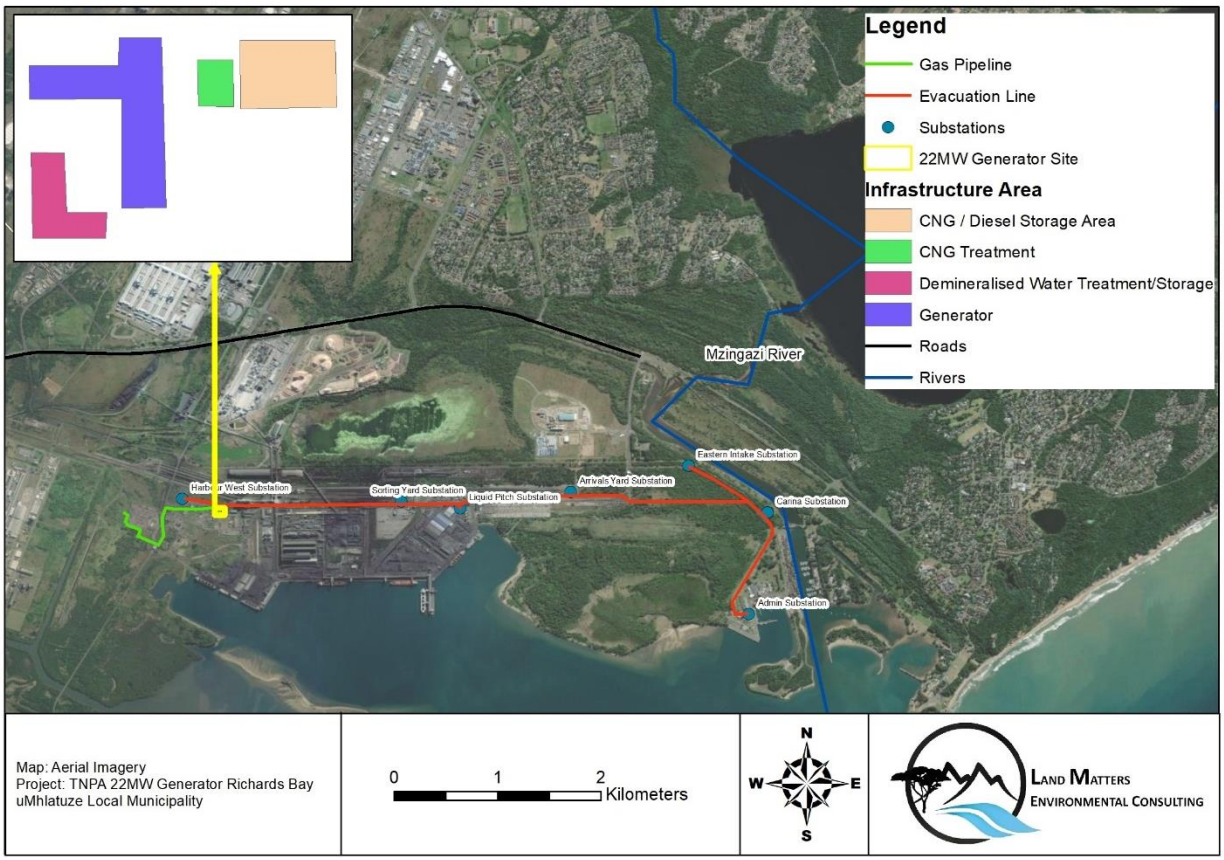
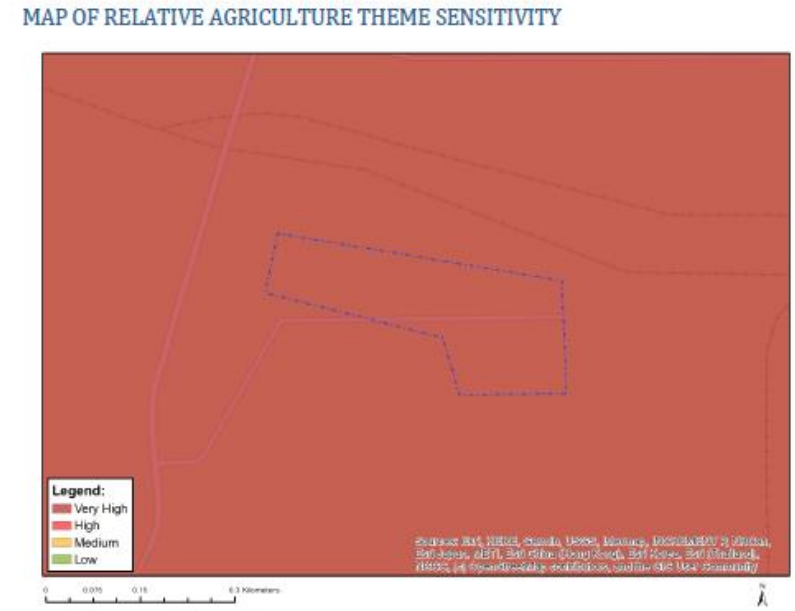


Figure 2: Aerial map of the project site showing the proposed infrastructure area and lines

1.2 Screening tool

The outputs of the 'National Web Based Environmental Screening Tool site (Department of Forestry, Fisheries, and the Environment), indicated that the study site was classified as having a very high sensitivity to agricultural production (Figure 3). The primary aim of this assessment was therefore to confirm or dispute the site's current environmental sensitivity classification. This is undertaken by determining the soil types and agricultural capability of the area. Furthermore, the protocols for a specialist Agricultural Assessments as per Government Notice No. 320; Government Gazette No. 43110 of 2020 are followed and described in Section 1.3



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Figure 3: Agricultural theme sensitivities identified at the project site (Department of Environmental Affairs, 2022)

Soil and agricultural resources within South Africa are furthermore governed by legislation including, Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013), Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), and Chapter 11 of the Nature Conservation Ordinance, 1974 (No. 15 of 1974). The aims of this assessment are furthermore set out in the Natural Resources Survey Specifications document (2012) and is to determine the general soil types in the study area, as well as their land capability and agricultural potential. This was achieved through a survey of the soils within the study site as well as through an investigation into aerial imagery; the climate of the area; the geology; the erosion hazard (slope); and the water resources. Recommendations resulting from these findings will be aimed at ensuring soil resources are utilised in a sustainable manner.

1.3 Scope of this Assessment

The terms of reference for the current study were as follows:

- Conduct a soil survey and mapping exercise of the study site.
- Describe the physical properties of the soils sampled at each sampling location.

- Describe the slope and climate of the site.
- Describe the agricultural potential of the site based on the information attained from the soils identified within the site; slope; climatic data, rockiness, surface crusting and wetness.
- Confirm or dispute the project site's current environmental sensitivity classification of very high for agricultural production as identified by the screening tool (Department of Forestry, Fisheries, and the Environment).
- Identify current and possible negative impacts of the proposed project on the soil and land capability of the site.
- Recommend mitigation measures to lessen these impacts within the study site and the implementation of suitable rehabilitation measures if necessary.

1.4 Assumptions and Limitations

It is difficult to apply pure scientific methods within a natural environment without limitations or assumptions. The following apply to this study:

i. Soil mapping was inferred from extrapolations from the auger sampling points. The locations of the sampling points were recorded using a GPS with an accuracy of 3m to 6m. The boundaries of the soil forms delineated within the site are based on these waypoint locations. It is impossible to achieve 100% purity in soil mapping, the delineated soil forms could include other soil types as the boundaries between the mapped soils are not sharp but rather gradual in reality.
ii. Soils classified as suitable to arable agriculture are also suited to other less intensive agricultural land uses, for instance pasture, natural grazing, and wildlife.
iii. Soil fertility status was not undertaken in this assessment.

2 METHODOLOGY

2.1 Assessment techniques and tools

The techniques and tools utilised for this assessment can be divided into baseline data and a field investigation. Baseline data was utilised during the desktop component to determine the biophysical context of the site as well as National and Provincial legislation that governs the proposed activity.

2.2 Desktop Study Methodology

The desktop study involved the examination of aerial photography and Geographical Information System (GIS) databases. The study made use of the following data sources:

- Google Earth™ satellite imagery was used at the desktop level.
- Relief dataset from the Surveyor General was used to calculate slope.
- Climatic data was obtained from the Bioresource Unit (Za8 -Richards Bay) for the area (Camp, 1999).
- Historical imagery was obtained from the Department of Rural Development and Land Reform and the National Geospatial Information website (http://cdngiportal.co.za/cdngiportal/).
- Land Type data was obtained from the Agricultural Research Council (ARC) utilising the relevant Land Type map (2830 Richards Bay).
- Vegetation type dataset from Mucina & Rutherford (2006), with amendments by SANBI (NBA, 2018) were used in determining the vegetation type of the study area.

- Background Information was gathered from GCS Environmental (Pty) Ltd.

2.3 Site Investigation

In field data collection was taken on the 08th of May 2024. Soil sampling was conducted throughout the site using a standard hand-held auger with a depth of 1200 mm. At each sampling point the soil was described to form level according to Soil Classification: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018).

The following properties were recorded:

- Soil diagnostic horizons.
- Soil Form and Family.
- Effective depth of the profile.
- Soil colour – as per the Munsell System.
- Soil field texture.
- Permeability of the B horizon (wetness indicators).
- Observations at the sampling point including any surface crusting, vegetation cover and rockiness.

The infield methods of determining soil texture and clay percentage are described in more detail in Appendix A.

Topography was also taken into account during this assessment, as together with soil form, it plays a large part in determining the land potential of the sites as well as any rehabilitation measures that may need to be taken as a result of the project.

Climate is used as an important determinant in the agricultural potential of the site. Climate determines the volume of rainfall precipitation, the type of precipitation, the seasonal occurrence, soil moisture evaporation rate as well as the effect of sunshine hours, heat and chill units on crop yield and ground cover.

Information from the soil samples, the topography and land type information were utilised to produce the land capability class map.

3 RESULTS

3.1 Climate

The study area is located within the Za8 – Richards Bay Bioresource Unit (BRU) of KwaZulu-Natal (Camp, 1995). The mean annual precipitation is 1209 mm, with the bulk of the rainfall occurring between September and April (summer months). The wettest time of the year is January with an average of 120 mm and the driest is August with 61 mm (Table 1). Mean temperatures vary between 17.7 ^{O}C to 24.1 ^{O}C with a mean annual temperature of 21.1 ^{O}C for the BRU. The area is coldest in July with minimum average temperatures of 12.0 ^{O}C and hottest in February with a maximum average temperature of 28.9 ^{O}C (Table 2) (Camp, 1995). Climate is not considered a limitation to agricultural production.

Table 1: Mean Annual Rainfall for the area (BRU Za8-Richards Bay)

	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Mean annual rainfall	1209	120	134	163	105	84	70	63	61	81	98	112	118

Table 2: Temperatures for the area (BRU Za8-Richards Bay)

	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Mean Temp (^{0}C)	21.1	24.1	24.1	24.0	22.0	20.0	17.7	17.2	18.1	20.0	20.8	22.0	23.7
Min Temp (^{0}C)	16.4	20.0	20.0	19.1	17	14.9	12.2	12.0	13.1	15.0	16.0	17.9	19.0
Max Temp (^{0}C)	25.7	28.0	28.9	28.0	26.0	25.0	23.0	23.0	23.6	24.0	25.0	26.0	28.0

3.2 Vegetation Type

The project site is located within the Azonal Vegetation Biome and more specifically in the Subtropical Alluvial Vegetation type (Mucina & Rutherford, 2006; updated 2018 on BGIS) (Figure 4). During the field investigation the vegetation within the site was however noted to be completely transformed through the construction and operation of the Port area (Figure 5). The majority of the project site is now developed with portions of land under pioneer graminoid and alien invasive species including *Sporobolus* sp., *Eragrostis sp.,* and *Aristida* species.

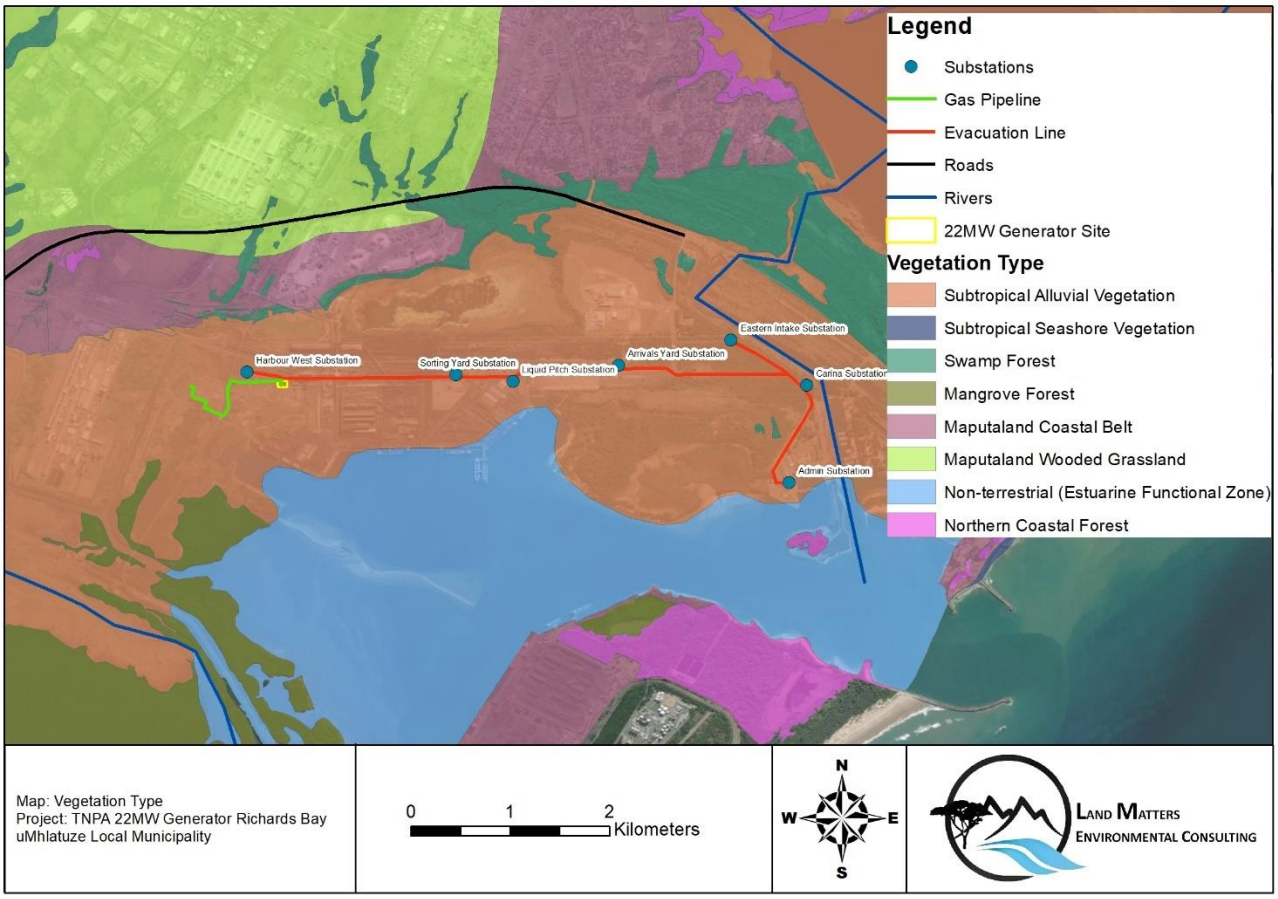


Figure 4: Vegetation type associated with the project site

Figure 5: Vegetation identified within the site which included (A, B and C) completely developed areas with some pioneer graminoid *species noted along the edge of roadways, and (D) pioneer* graminoid *vegetation where the infrastructure is proposed to be located*

3.3 Topography

The study site is located within the coastal area of the Richards Bay Port, which is characterised by flat topography as well as gentle slopes. The infrastructure is located between 4 m to 6 m above sea level on slopes between 0.05 % to 2 % and is thus in a flat area (Figure 6, Figure 7). The topography of the site has been changed through the development of the Port, including the construction of roads, the coal terminal, substations, and associated infrastructure. Slope is however not seen as a limitation to agricultural production.

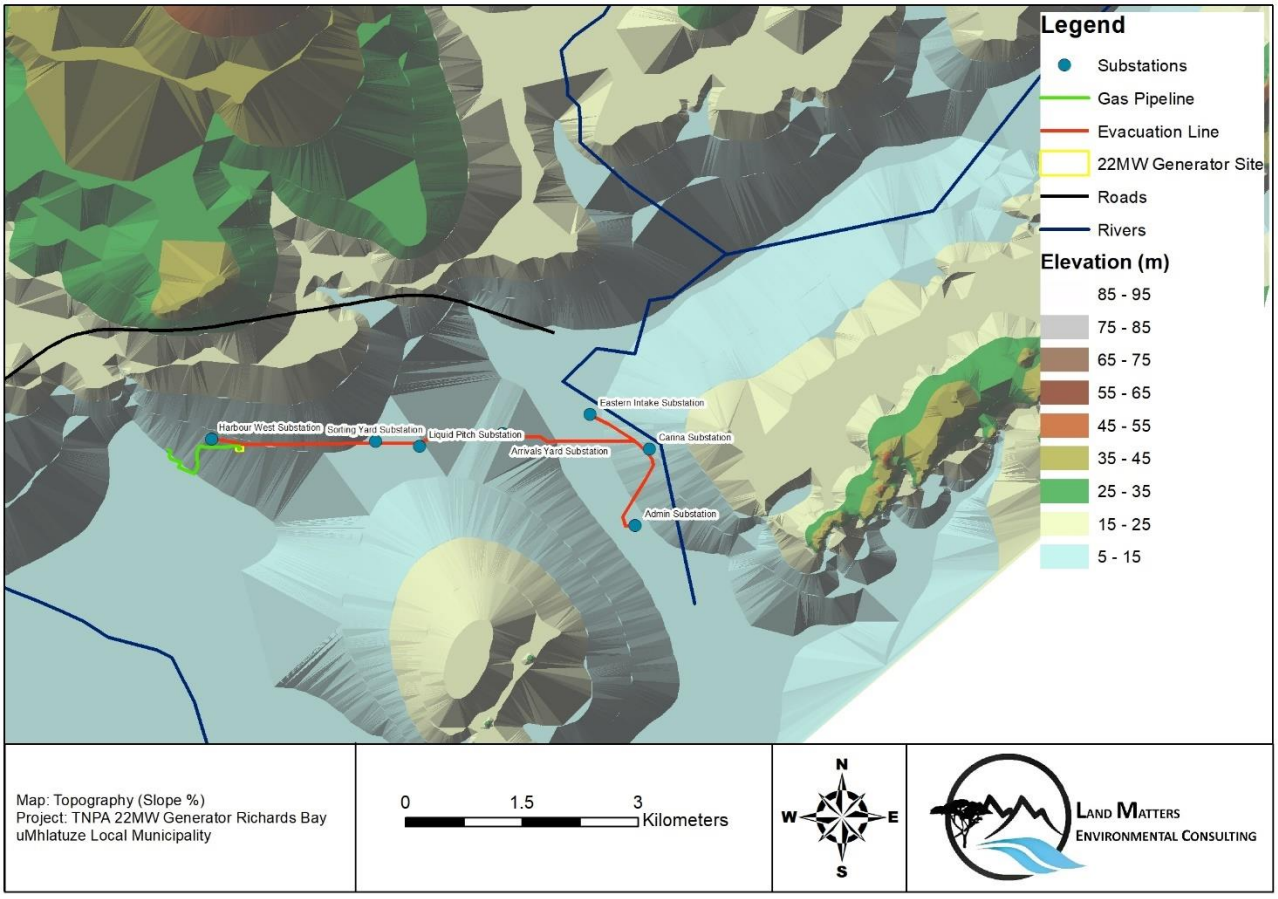


Figure 6: Topography (elevation) associated with the proposed TNPA infrastructure project site

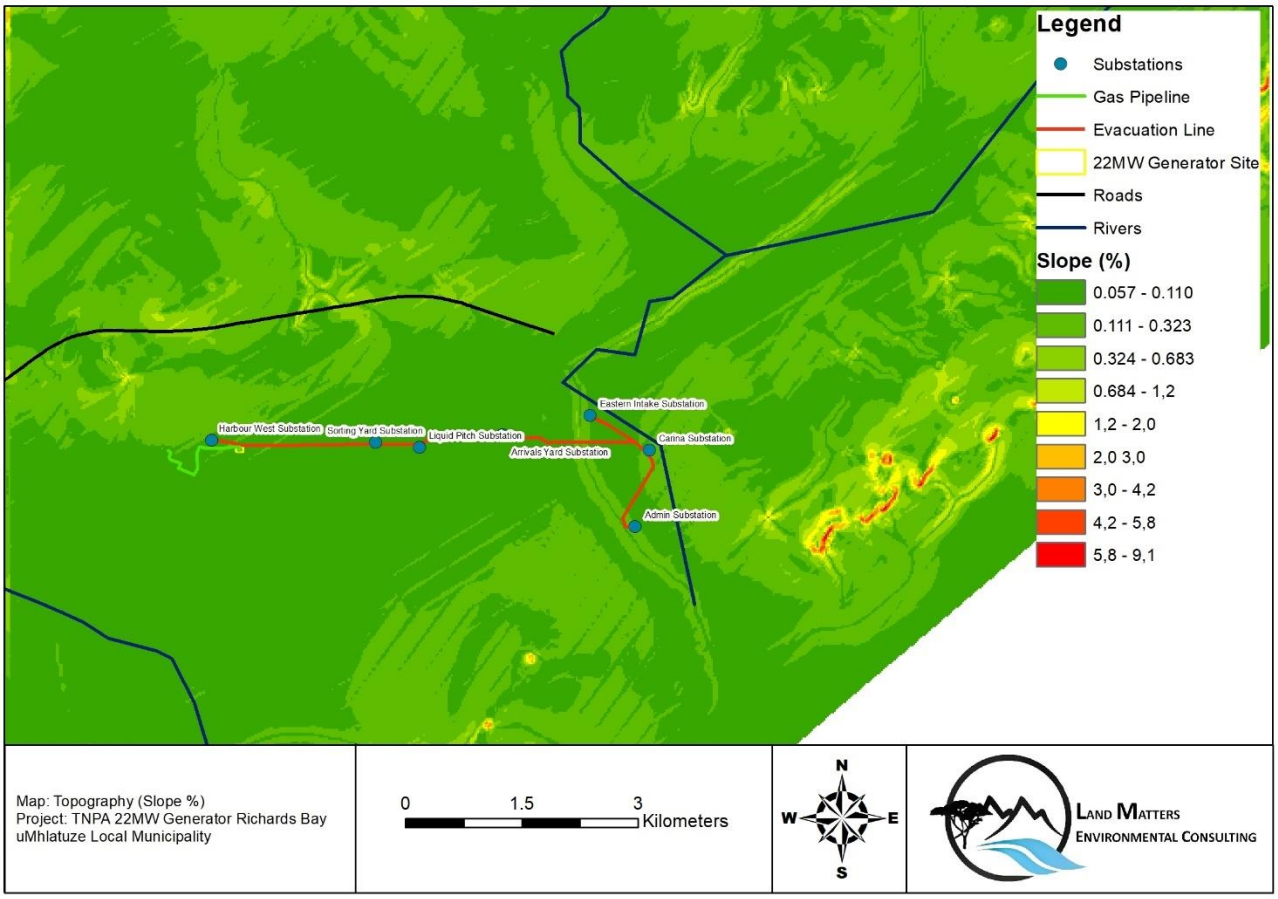


Figure 7: Slope (%) of the study area

3.4 Wetland systems

The recent publication of the National Wetland Map 5 (Van Deventer et al., 2019) (NWM5) database forms part of the National Biodiversity Assessment (2018), within the category of the Inland Aquatic (Freshwater) Realm. This project is a multi-partner project through the CSIR and SANBI. The NWM5 has significantly improved the representation of inland wetland ecosystem types. The representation of the extent of inland wetlands has improved by 123%, whereas the incorrect representation of terrestrial ecosystems as wetlands has been reduced (Van Deventer et al, 2018).

The NWM5 database classified the area in which the proposed infrastructure will be located as part of the Estuarine Functional Zone (Van Deveter et al., 2019) (Figure 8). As such no wetlands were classified within the study site. With the development of the Richards Bay Port in 1972, the site has however been considerably changed and is now developed for the export of coal.

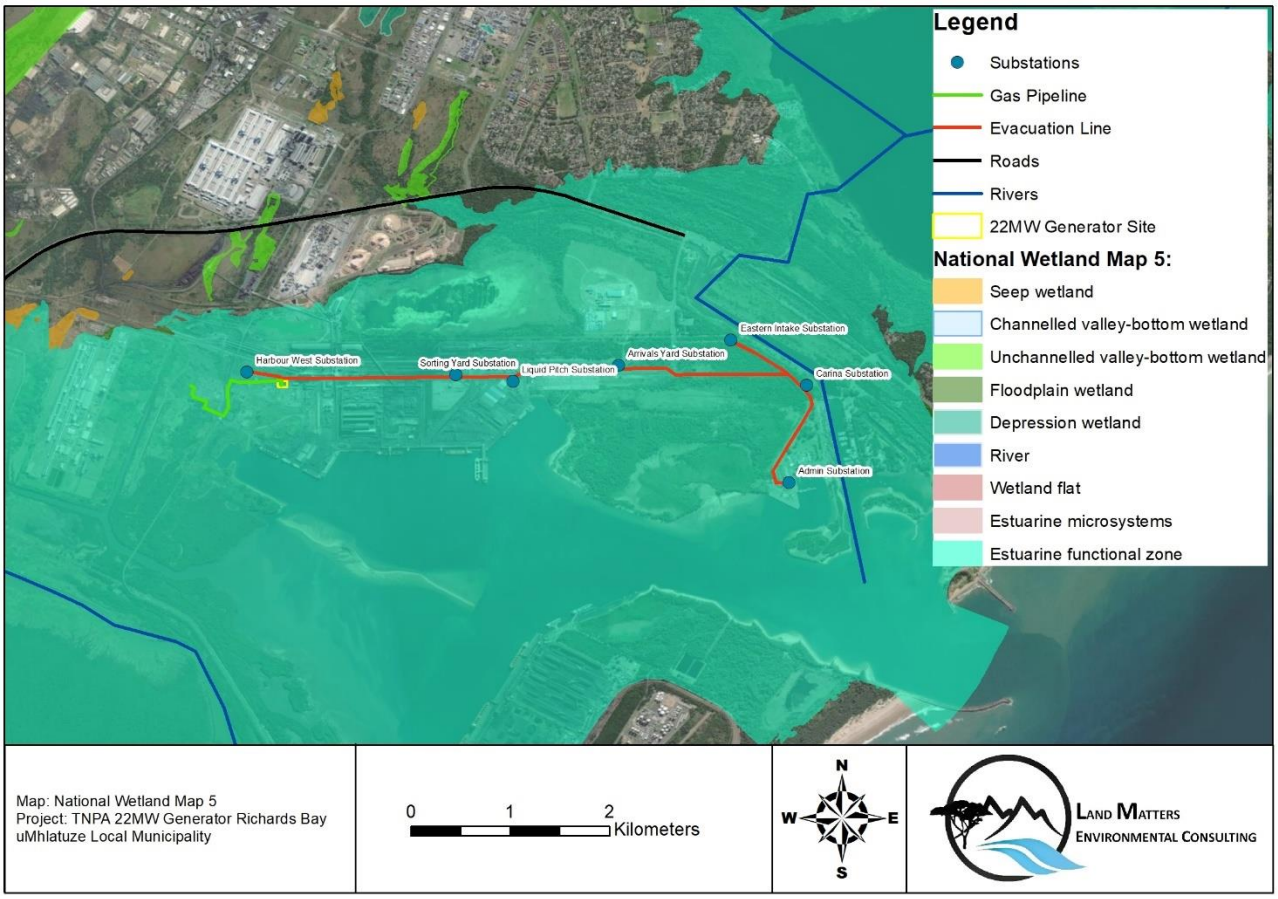


Figure 8: The estuarine functional zone in which the study site is situated as indicated by the National Wetland Map 5 (NBA, 2018)

3.5 Bioresource Unit

The proposed TNPA 22MW Genset project is situated within the Richards Bay Bioresource Unit (BRU) Za8 (Figure 9). The BRU is sub-divided into Za8a and Za8b, with the study site located in Za8a. A general description of the natural resources occurring within the whole BRU is presented within Table 3. The BRU is predominantly considered arable (44.4% of the area) with sandy soils making up 12% of the area. Soils of moderate to poor drainage occupy 5.0%. There is a high erosion hazard on the sandy soils if not managed correctly. Site selection for any activity must therefore be carefully considered to avoid degradation of natural resources (Camp, 1995).

Table 3: Summary of the BRU information in which the site is situated

CHARACTERS	ZA8 – RICHARDS BAY BRU
Area	12120 ha
Terrain, Slope and Erosion Hazard	Mainly flat with gentle slopes (<5 %) with a High Risk for erosion (4.1). The high erosion risk is associated with more inland areas.
Vegetation	Group 1 defined as "Moist Coast Forest, Thorn and Palm Veld. The vegetation consists of bushveld and swamp.
Water Resources	2 perennial rivers, Mhlatuze, Nseleni. Wetland coverage is 7196ha, with 6209ha in Za8a and 987ha in Za8b.
Soil Patterns	B – Well drained: 16.8 % C – Alluvial: 39.5 %

CHARACTERS	ZA8 – RICHARDS BAY BRU
	G - black poorly drained soils 3.5 % K – Organic soils: 1.8 %

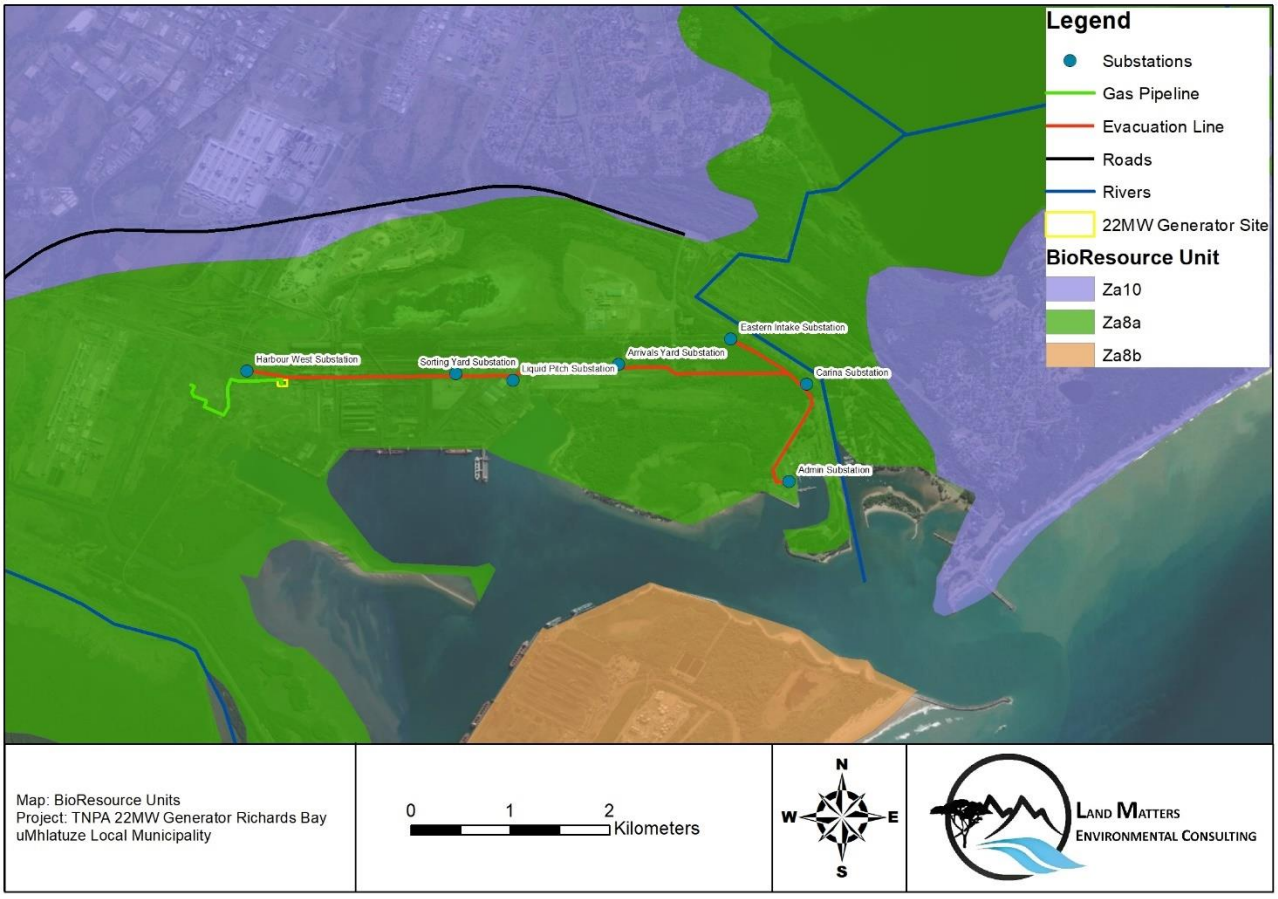


Figure 9: Bioresource unit associated with the study site

4 ASSESSMENT RESULTS

4.1 Land Type Data

Land type data for the site was obtained from the Agricultural Research Council (ARC). The land type data is presented at a scale of 1:250 000 and entails the division of land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System. The soil data was interpreted and re-classified according to the Taxonomic System (Land Type Survey Staff, 1972-2006).

The study site is situated in the Ia74 land type as defined in the relevant Land Type Map (2830 Richards Bay). (Figure 10). The Ia land type represents land where at least 60 % of the area is pedologically youthful, deep, and unconsolidated. Common soil forms include Oakleaf, Dundee, and Namib soils. These soil forms are not generally associated with high agricultural potential with the exception of the Oakleaf soil form which can be very productive under the correct management.

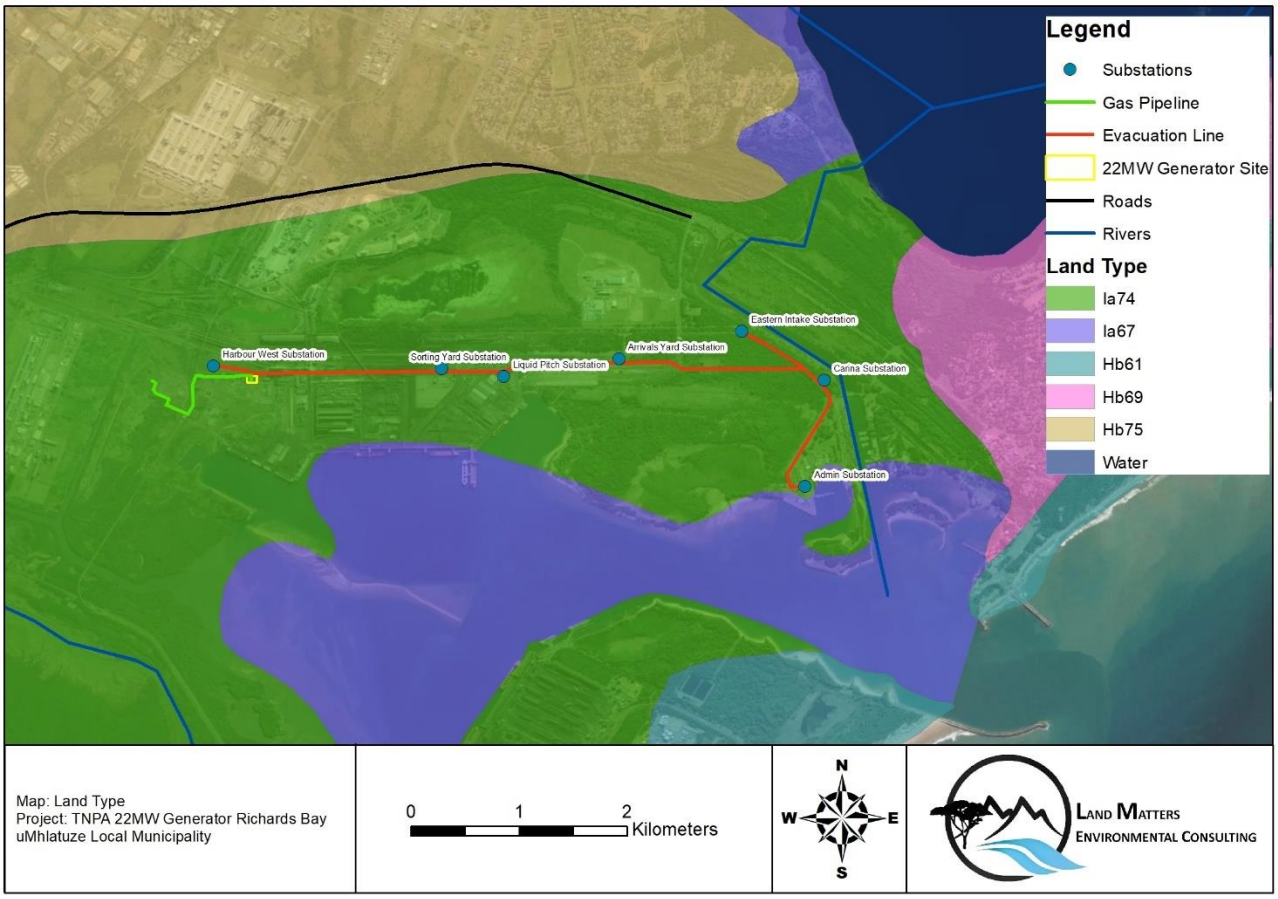


Figure 10: Land type data for the study site

4.2 Historic and Current Land Use

An investigation into historic aerial imagery of the site was undertaken. Aerial imagery from 1957 (Figure 11) shows the proposed infrastructure site was located within the Mhlathuze River mouth site before the Richards Bay Port was constructed. The site is associated with a single, large, relatively undistrubed estuarine system. However in 1972, construction for the Richards Bay Port was started, with the construction of a berm, or causeway and canal system that divided the estuarine system into two zones (1) the Mhlathuze River mouth and (2) the Richards Bay Harbour and Port. The northern section has been developed into South Africa's largest shipping harbour (Richards Bay Port) whilst the southern area was designated as a nature sanctuary (Mhlathuze Estuary) (Weerts and Cyprus, 2002).

Historic aerial imagery from 1977 (Figure 12) shows the newly constructed Port and the diversion of the Mhlathuze River away from construction area. The site where the proposed infrastructure is to be constructed is now located in a developed area that is anthropogenically modified.

Figure 11: Historic aerial imagery from 1957

Figure 12: Historic aerial imagery from 1977

Imagery from 1983 shows the continued development of the study site (Figure 13) and thus the continued modification to the soils of the site. These impacts reduce the viability of the area for any agricultural activities (cultivation of livestock grazing) both currently as well as in the future.

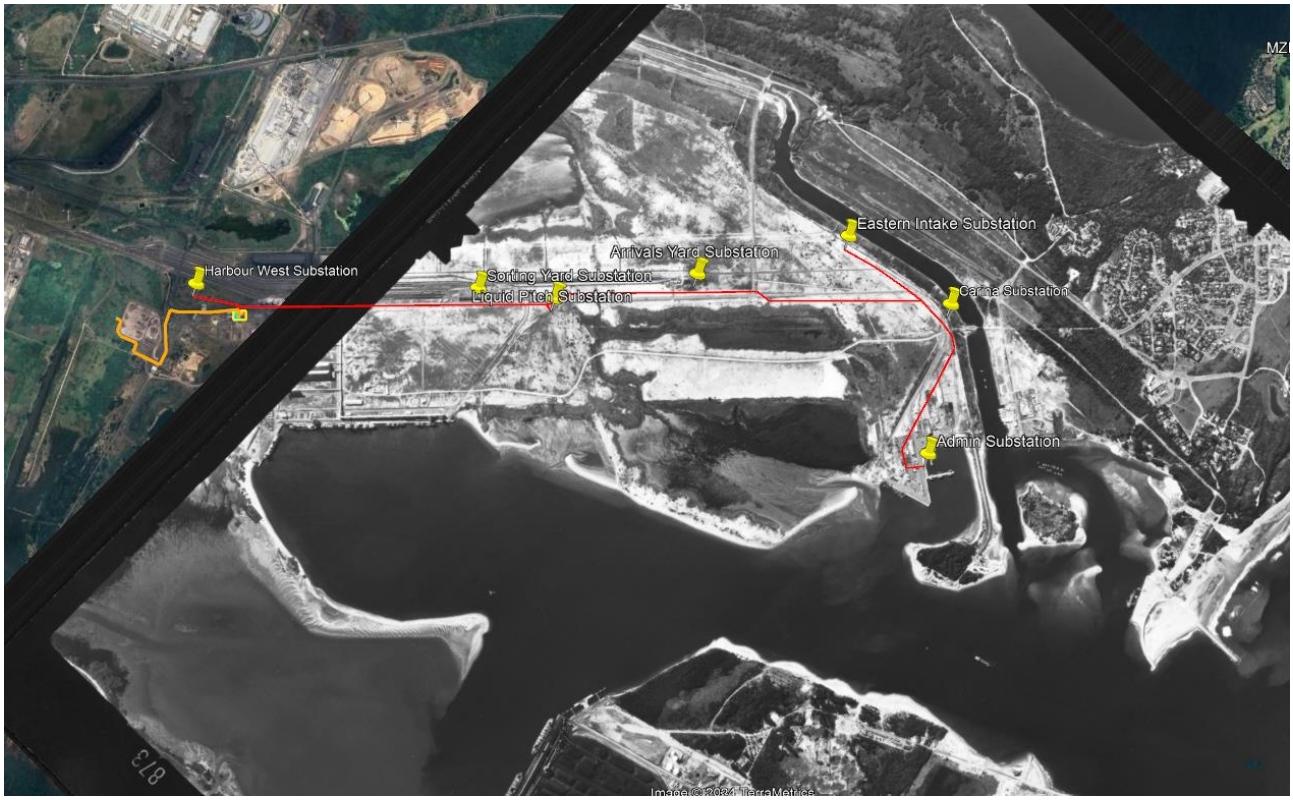


Figure 13: Historic aerial imagery from 1983 showing the Richards Bay Harbour as well as the proposed infrastructure site in an area that has already been developed

In most recent aerial imagery available (2024) (Figure 14), one can see the full development of the Port and the completely changed area in which the infrastructure is proposed to be located. Changes include, topography, the presence of hardened surfaces and the mixing, transport, and pollution of the original soil profiles within the area.

Figure 14: Current aerial imagery from 2024

4.3 Field Survey – Soil Assessment

Soil augur sample points were taken throughout the study site (Figure 17). This was to determine the extent of soil types and this information was then utilised to create a soil map for the study site (Figure 18, Figure 19, Figure 20, and Figure 21).

The study site conforms to the Land Type classification with the original soil form being associated with an old estuarine area and therefore having pedogenetically young soils. However, the construction of the Port in the 1970s has drastically changed the soils and this area must now be classified in terms of an anthropogenic classification and thus belongs to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Anthrosols and Technosols are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied. Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form). This is as a result of the intentional deposition of soil material over the original estuarine site to create the Port as well as the polluted nature of a large majority of the soils from settled coal dust and other chemicals (Figure 15, Figure 16). This soil is not suitable for agricultural production as there is no intention to rehabilitate it and it cannot be remediated to being agriculturally productive within one life span.

Figure 15: Soils identified in the infrastructure site including (A) the Witbank soil which includes deposited material on top of (B) the original estuarine soils

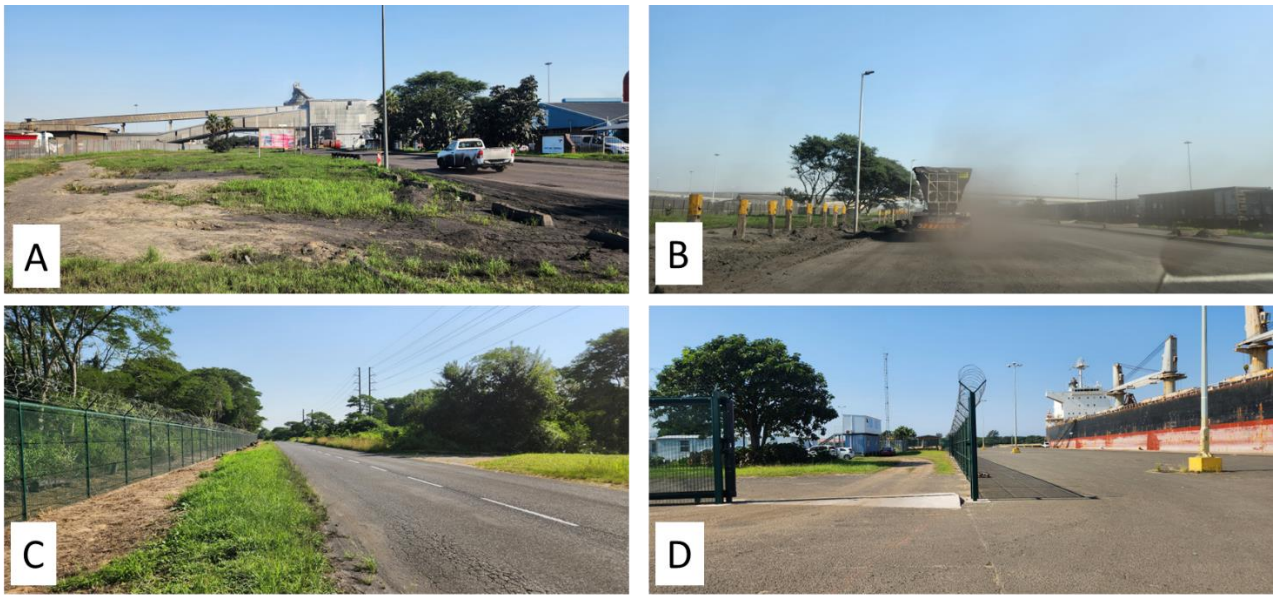


Figure 16: (A and B) Chemically polluted soils predominantly from coal dust which are situated on the roadside in which the evacuation line will be placed and (C and D) transported soils and physically disturbed soils (Witbank and Grabouw) along the road edge

Table 4 gives information on the different soil characteristics identified at each auger sampling site. Soil sampling points are displayed in Figure 17. These characteristics include:

- Soil form and family;
- Soil colour;
- Soil field texture;
- Effective rooting depth;

- Subsoil permeability; and
- Slope at sampling location.

Table 4: Soil Properties identified at each auger sampling point

Number of Sample (as per Fig. 17)	Soil Form	Soil Family Code	Soil Colour	Field Texture	Effective Rooting Depth (mm)	Permeability	Slope Class (%)	Observations
1	Witbank	1100	10YR 3/4	Loamy Sand	700	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
2	Witbank	1100	10YR 3/3	Sandy	>1000	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
3	Witbank	1100	10YR 3/3	Sandy	1200	Slightly restricted	0-2	Located in open area, deposited soil over original alluvial soils. Deep deposited soils
4	Industria	1200	10YR 5/3	Loamy Sand	200	Restricted	3-5	Polluted soils predominantly from settled coal dust adjacent to road.
5	Industria	1200	10YR 4/3	Loamy Sand	300	Restricted	0-2	Polluted soils predominantly from settled coal dust adjacent to road.
6	Industria	1200	10YR 5/3	Loamy Sand	200	Restricted	0-2	Polluted soils predominantly from settled coal dust

Number of Sample (as per Fig. 17)	Soil Form	Soil Family Code	Soil Colour	Field Texture	Effective Rooting Depth (mm)	Permeability	Slope Class (%)	Observations
								adjacent to road.
7	Grabouw	2000	10YR 5/3	Sandy	400	Restricted	0-2	Adjacent to road side, disturbed soils.
8	Grabouw	2000	10YR 5/3	Sandy	600	Restricted	0-2	Adjacent to road side, disturbed soils.

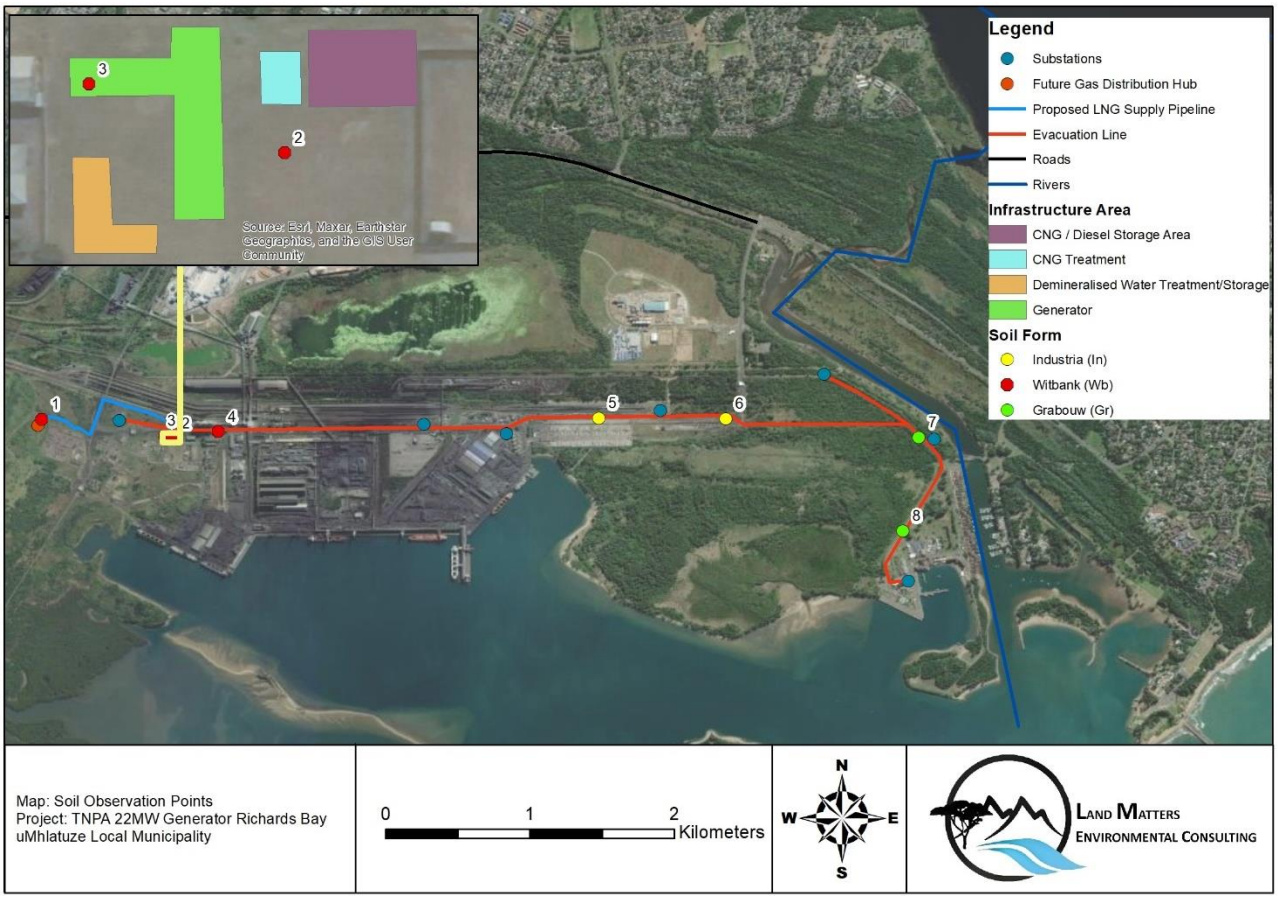


Figure 17: Soil observation points within the proposed infrastructure area

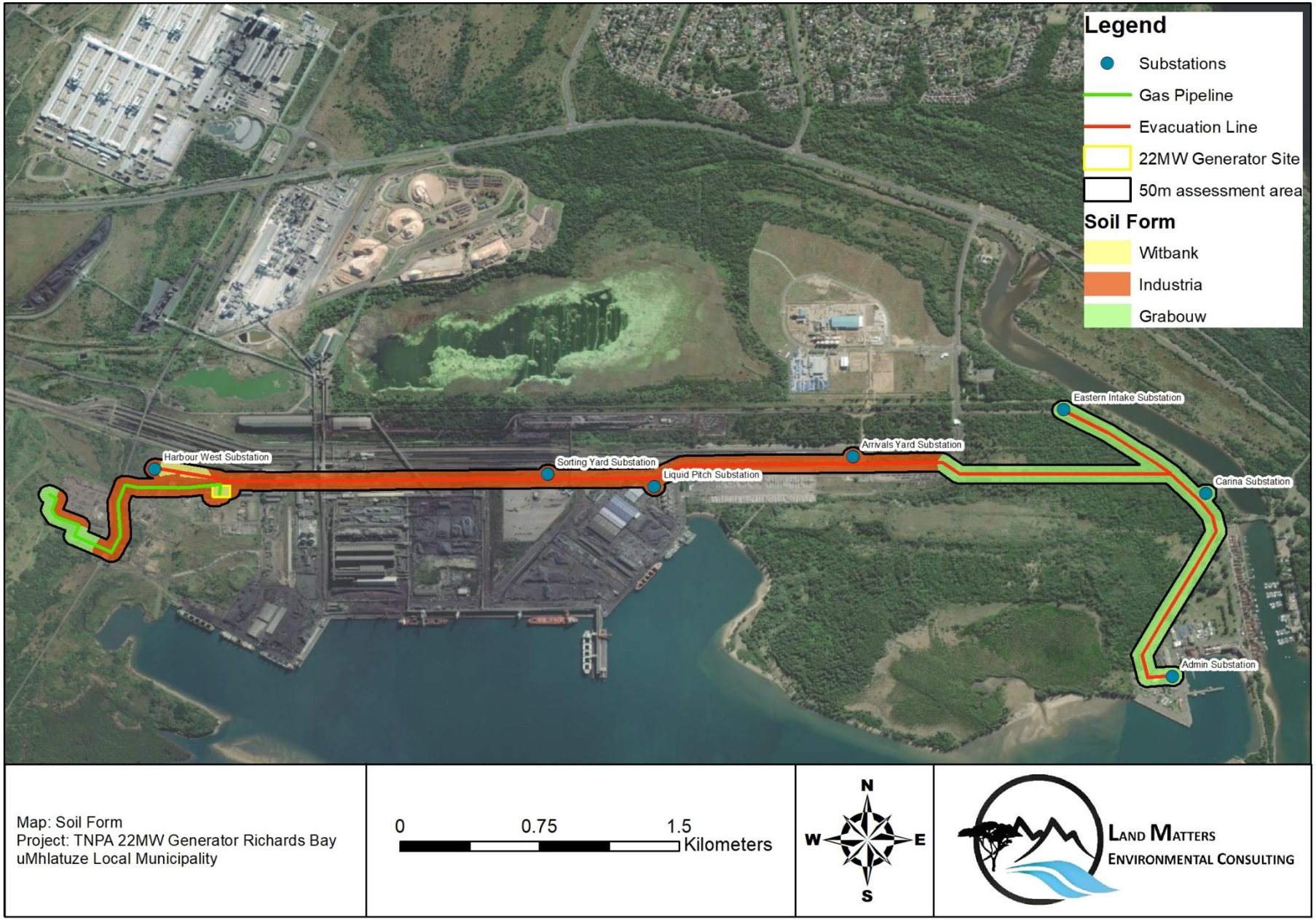


Figure 18: Soil forms recorded in the study site

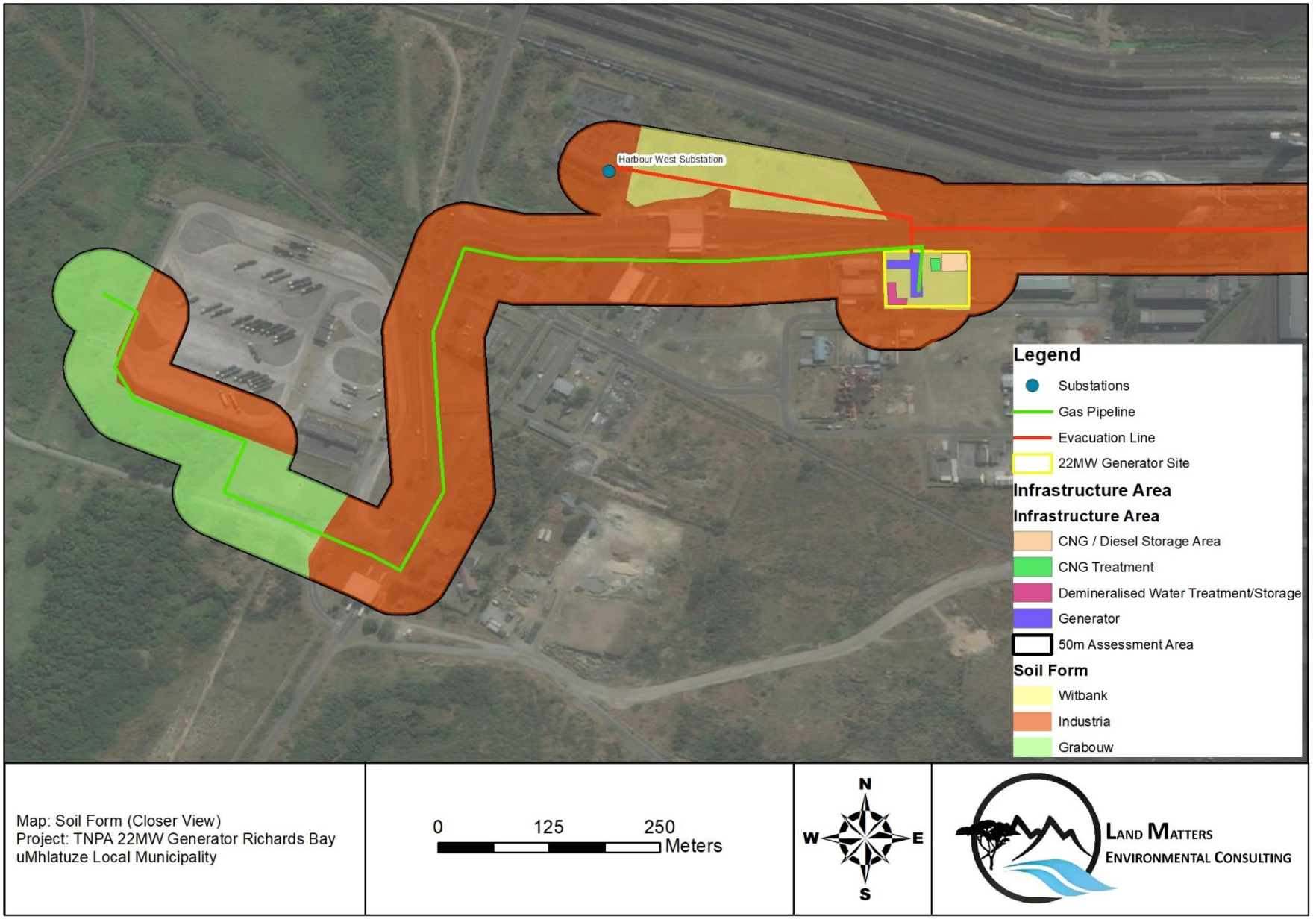


Figure 19: Closer view of the soil forms recorded in the study site

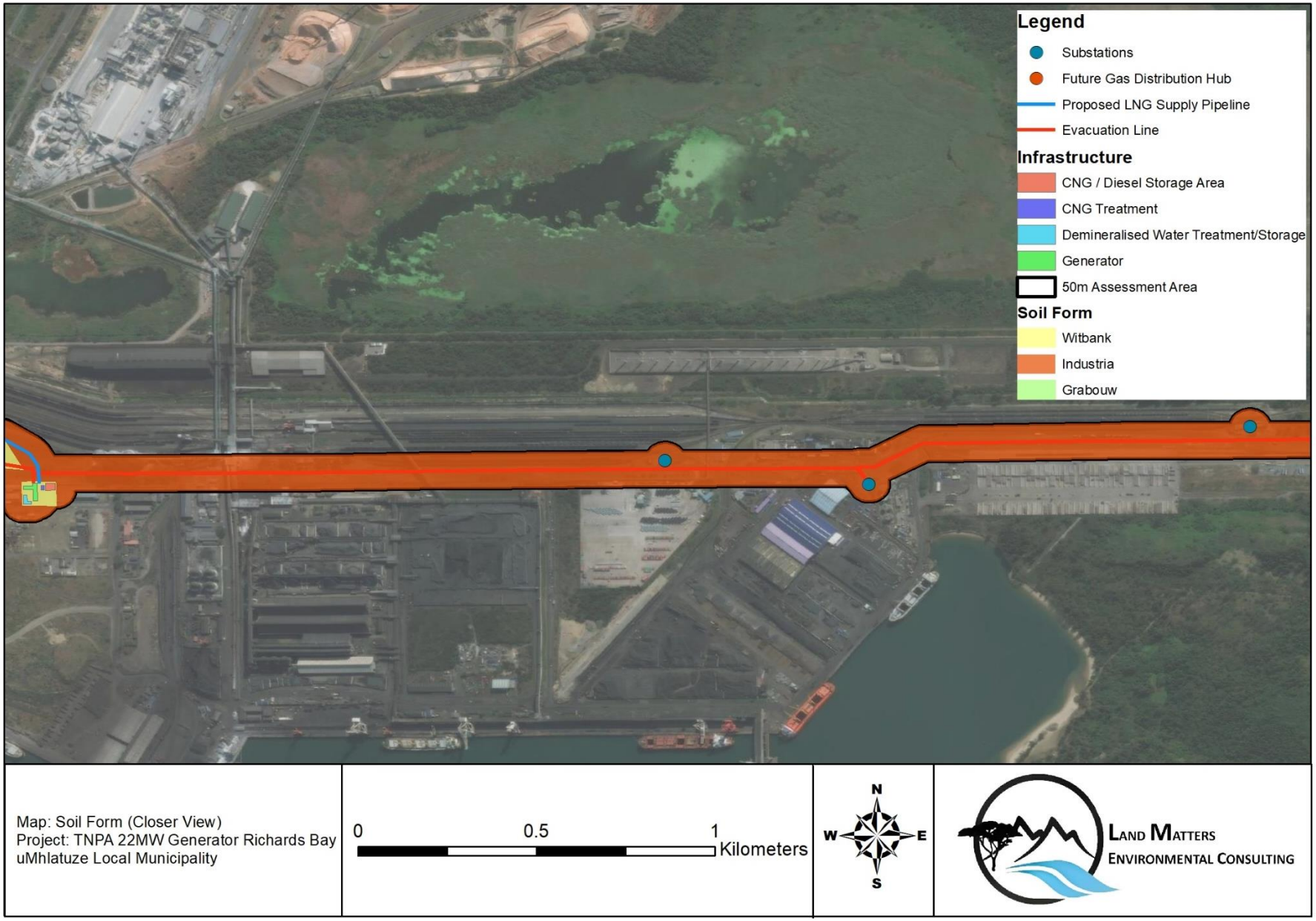


Figure 20: Closer view of the soil forms recorded in the study site

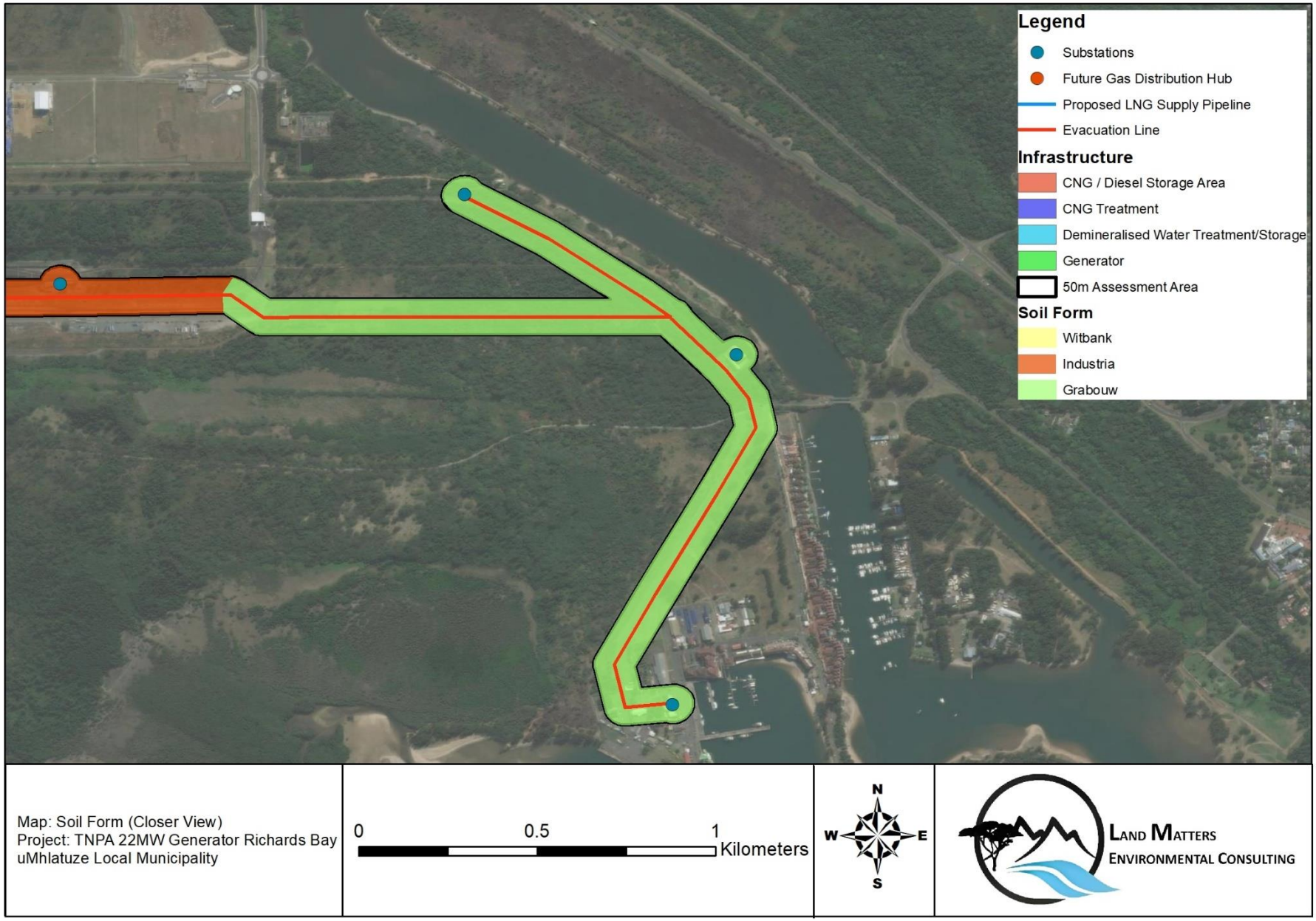


Figure 21: Closer view of the soil forms recorded in the study site

5 SOIL AGRICULTURAL POTENTIAL

Land evaluation is the process of estimating the production potential for alternative land uses. The land capability and agricultural production for the proposed infrastructure site was determined through an evaluation of the soil, terrain, vegetation, and climatic features. The methodology provided by Smith (2006) was utilised. This methodology is an attempt to grade the potential of the land in terms of its best and worst uses in an arable situation. The land is classified according to its limitations, either on a permanent or temporary basis. The system is biased towards soil conservation and is based on the negative features of the land. The classification system is categorised into eight classes (I to VIII) and three capability groups (Table 5). Classes I to IV are suitable for arable land, classes V to VII are suitable for grazing land and class VIII is suitable for wildlife. The flowsheets used to determine Land Potential Class are shown in Appendix B.

Table 5: Land capability classification descriptions

Land Capability Class	**Increased Intensity of Use**									**Land Capability Groups**
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W		LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife

W - Wildlife	MG – Moderate Grazing	MC – Moderate Cultivation	
F - Forestry	IG – Intensive Grazing	IC – Intensive Cultivation	
LG – Light Grazing	LC – Light Cultivation	VIC – Very Intensive Cultivation	

The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in Table 6. The final land potential results are then described in Table 7.

Table 6: Climate combination table for land potential classification

Land Capability Class	**Increased Intensity of Use**							
	C1	C2	C3	C4	C5	C6	C7	C8
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

Table 7: Land potential classes descriptions

Class	Description
I	Very high potential. No limitations. Appropriate contour protection must be implemented and inspected.
II	High potential. Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
III	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate contour protection must be implemented and inspected.
IV	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall. Appropriate permission is required before ploughing virgin land.
V	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures, or rainfall.
VI	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures, or rainfall. Non-arable
VII	Low potential: Severe limitations due to soil, slope, temperatures, or rainfall. Non-arable.
VIII	Very low potential: Very severe limitations due to soil, slope, temperatures, or rainfall. Non-arable.

The primary function of land evaluation is to predict the possible effects, both detrimental and beneficial for a change in land use. The most important soil and landscape characteristics when applying this system are texture (Clay %), soil depth, permeability, slope, rockiness, surface crusting and wetness. At the study site these were found to occur according to the following broad patterns.

- **Soil texture:** Soils were examined for texture within the field. Soils were recorded as having a sandy or loamy sand texture. This is most likely as a result of the original area in which the Port is located as being the estuary of the Mhlathuze River. Soils were brought in and deposited on top of the original soil profiles. This deposited soil is also sandy to loamy sand in nature. The majority of soils were furthermore coated by coal particles from settled dust along the roadway. Sandy to loamy sand textures are not generally agriculturally productive as they do not retain water for long enough to allow for the optimal crop of a large variety of crops. This limitation coupled with the polluted nature of the soils reduces the use of these soils for agricultural production.
- **Soil depth:** Soil depths were generally shallow and compacted as a result of the anthropogenic environment. Soil depth is considered a limitation to agricultural production.
- **Soil permeability:** As a result of the anthropogenic nature of the soils, permeability is limited in the majority of the study site. This is due to the existence of hardened surfaces, the compacted nature of the soils, and in some instances the polluted nature of the soil. Soil permeability is therefore a limitation to agricultural production.
- **Slope/Topography:** The site consisted of gentle terrain with the slope percentages recorded in the 0-10% category. Slope is therefore not a limitation to cultivation.

- **Surface crusting:** Compaction of the first 100 - 200 mm of the majority of soil profiles examined was noted and is an impeding layer for water infiltration. It is a limitation to the productivity of the soils.
- **Rockiness:** Rockiness was not identified as a limitation to cultivation Surface rocks were not encountered on the site. Rockiness is not seen as a limitation to cultivation.
- **Current activities on site:** The Richards Bay Port is a completely transformed area, utilised as a coal terminal for the export of coal. It consists of hardened surfaces, pollution from settled coal dust, stockpiles of coal, and other material and in open areas, pioneer and alien invasive species exist. It is not utilised at all for agricultural production and is unlikely to be rehabilitated for agricultural production in the future.

Considering the above factors, the study site has been categorised into the Class VII and Class VIII categories (Figure 18).

The Class VII category has been mapped where the Witbank and Grabouw soils were recorded. The soils are not suitable for agricultural production in the area but do not consist of polluted soil or hardened surfaces. They are physically disturbed or are deposited. The Class VIII soils were mapped where settled coal dust as well as the presence of hardened surfaces, completely reduces the use of these areas for any agricultural production. These areas are also unlikely to be rehabilitated to be used for agriculture in the future.

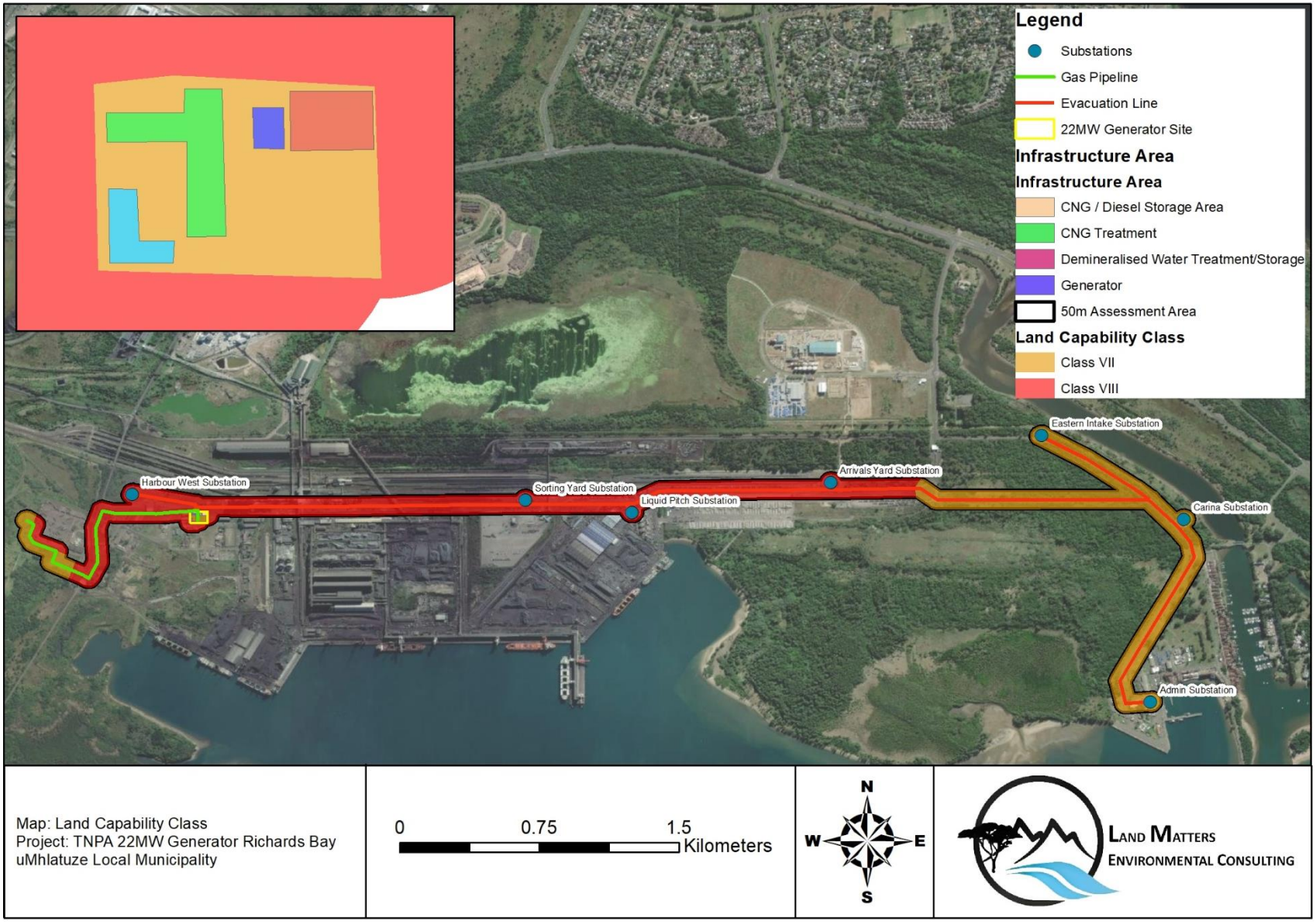


Figure 22: Land Capability Classes of the study site

6 IMPACT ASSESSMENT

The purpose of this phase of the study was to identify and assess the significance of the impacts caused by the proposed infrastructure on the agricultural potential and soils of the site. Furthermore, mitigation measures are recommended to limit the identified negative impacts on the receiving environment.

The study site is located within the Richards Bay Port and as such no impact will occur on any agriculturally productive land. Impacts to the receiving environment are therefore associated with the soil compaction and subsequent sedimentation, and the potential for soil pollution from the construction and operation of the proposed generator and associated infrastructure. Several general and specific measures are proposed to mitigate these impacts.

6.1. Methodology

Impacts of the agricultural activities on the site were assessed in terms a formalised method, whereby a typical risk assessment process was undertaken in order to determine the significance of the impacts without the application of mitigation/management measures (WOMM). Once the significance of the impacts without the application of mitigation/management measures was known, the impacts were then re-evaluated, taking cognisance of proposed mitigation/management measures provided in order to reduce the impact (WMM), thus enabling an understanding of the overall impact after the implementation of mitigation/management measures. The process that was undertaken is described in the section below.

The **EXTENT** refers to the impact footprint. What that means is that if a species were to be lost then the extent would be global because that species would be lost to the world. If human health is threatened, then the impact is likely to be no more than local and possibly regional.

Table 8: Descriptors and scoring for the Extent of an impact

Descriptors	Definitions	Score
Site only	The impact remains within the footprint or cadastral boundary of the site.	1
Local	The impact extends beyond the footprint or cadastral boundary of the site, to include the immediately adjacent and surrounding areas.	2
Regional	The impact includes the greater surrounding area within which the site is located.	3
National	The scale/extent of the impact is applicable to the Republic of South Africa.	4
Global	The scale /extent of the impact is global (i.e. world-wide).	5

The **DURATION** is the period of time for which the impact would be manifest. Importantly, the concept of reversibility is taken into consideration in the scoring. In other words, the longer the impact endures, the less likely is the reversibility of the impact.

Table 9: Descriptors and scoring for the Duration of an impact

Descriptors	Definitions	Score
Temporary	The impact endures for only a short period of time (0-1 years).	1
Short term	The impact continues to manifest for a period of between 1-5 years.	2
Medium term	The impact continues to manifest for a period of 5-15 years.	3
Long term	The impact will cease after the operational life of the activity.	4
Permanent	The impact will continue indefinitely.	5

The **MAGNITUDE** is the measure of the potential severity of the impact on the associated environment. As with duration, the concept of reversibility is taken into account when considering the magnitude of the potential impact.

Table 10: Descriptors and scoring for the Magnitude of an impact

Descriptors	Definitions	Score
Negligible	The ecosystem pattern, process and functioning are not affected, although there is a small negative impact on quality of the ecosystem.	1
Minor	Minor impact - a minor impact on the environment and processes will occur.	2
Low	Low impact - slight impact on ecosystem pattern, process and functioning.	4
Moderate	Valued, important, sensitive or vulnerable systems or communities are negatively affected, but ecosystem pattern, process and functions can continue albeit in a slightly modified way.	6
High	The environment is affected to the extent that the ecosystem pattern, process and functions are altered and may even temporarily cease. Valued, important, sensitive or vulnerable systems or communities are substantially affected.	8
Very High	The environment is affected to the extent that the ecosystem pattern, process and functions are completely destroyed and may permanently cease.	10

The **PROBABILITY** is the likelihood of the impact manifesting. Although likelihood and probability may be considered interchangeable, the term likelihood is preferred as probability has a very specific mathematical and/ or statistical connotation. As such the expectation created by the term probability is that there will be an accurate empirically or mathematically defined expression of risk, which is not necessarily required.

Table 11: Descriptors and scoring for the Probability of an impact

Descriptors	Definitions	Score
Very improbable / Rare	Where it is highly unlikely that the impact will occur, either because of design or because of historic experience	1
Unlikely	Improbable – where the impact is unlikely to occur (some possibility), either because of design or historic experience.	2
Probable	there is a distinct probability that the impact will occur (< 50% chance of occurring)	3
Highly Probable	Most likely that the impact will occur (50 – 90% chance of occurring)	4
Definite	The impact will occur regardless of any prevention or mitigating measures (>90% chance of occurring).	5

The **SIGNIFICANCE** of impacts will be derived through a synthesis of ratings of all criteria in the following calculation:

(Magnitude+ Duration + Extent) x Probability = Significance

Table 12: Impact Significance Ratings

Descriptors	Definitions	Score
Low	The perceived impact will not have a noticeable negative influence on the environment and is unlikely to require management intervention that would incur significant cost.	0 – 19
Low to Moderate	The perceived impact is considered acceptable, and application of recommended mitigation measures recommended.	20 – 39
Moderate	The perceived impact is likely to have a negative effect on the receiving ecosystem and is likely to influence the decision to approve the activity. Implementation of mitigation measures is required, as is routine monitoring to ensure effectiveness of recommended mitigation measures.	40 – 59
Moderate to High	The perceived impact will have a significant impact on the receiving ecosystem and will likely to have an influence on the decision-making process. Strict implementation of mitigation measures as provided is required, and strict monitoring and high levels of compliance and enforcement in respect of the impact in question are required.	60 – 79
High	The impact on the receiving ecosystem is considered of high significant and likely to be irreversible, and therefore highly likely to result in a fatal flaw for the project. Alternatives to the proposed activity are to be investigated as impact will have an influence on the decision-making process.	80 - 100

The significance of an impact gives one an indication of the level of mitigation measures required in order to minimise negative impacts and reduce environmental damage. Suitable and appropriate mitigation measures were identified for each of the potential impacts.

6.1 Impacts associated with the loss of agricultural activities

IMPACTS ASSOCIATED WITH SOIL EROSION AND SEDIMENTATION										
Potential impact	Magnitude		Duration		Extent		Probability		Significance scoring without mitigation	Significance scoring with mitigation
	WOMM	WMM	WOMM	WMM	WOMM	WMM	WOMM	WMM		
IMPACTS OF THE INFRASTRUCTURAL PROJECT										
CONSTRUCTION PHASE										
Soil Compaction and Erosion	1	1	1	1	1	1	1	1	**3 (Low)**	**3 (Low)**
OPERATIONAL PHASE										
Pollution potential from the use of fertilisers	1	1	1	1	1	1	1	1	**3 (Low)**	**3 (Low)**

As discussed in this report, the proposed infrastructure site is located in the Richards Bay Port area and as such is not utilised for any agricultural production. The site consists of anthropogenically modified soils that are classified as Witbank, Industria and Grabouw. Compaction of the soils as well as the polluted nature of the area reduces the likelihood that this site will be considered for any future agricultural production should rehabilitation be implemented. As such there is no impact on agricultural production from the proposed project.

6.2 Impacts associated with the soil compaction

IMPACTS ASSOCIATED WITH SOIL COMPACTION AND EROSION										
Potential impact	Magnitude		Duration		Extent		Probability		Significance scoring without mitigation	Significance scoring with mitigation
	WOMM	WMM	WOMM	WMM	WOMM	WMM	WOMM	WMM		
IMPACTS OF THE INFRASTRUCTURAL PROJECT										
CONSTRUCTION PHASE										
Soil Compaction and Erosion	4	2	1	1	1	1	3	2	**18 (Low)**	**8 (Low)**
OPERATIONAL PHASE										
Continued Soil Compaction and Erosion	2	1	5	5	1	1	2	1	**16 (Low)**	**7 (Low)**

The clearing of any vegetation and the stripping of soil for the infrastructure will result in the movement of sediment into the receiving environment. Furthermore, the use of heavy machinery or vehicles during construction, will lead to the compaction of these disturbed soils. This will increase the soil bulk density, reduce the porosity further of the soil and the hydraulic conductivity, leading to a greater potential for the formation of erosion if storm water is not managed.

6.3 Impacts associated with the soil pollution

IMPACTS ASSOCIATED WITH SOIL POLLUTION										
Potential impact	Magnitude		Duration		Extent		Probability		Significance scoring without mitigation	Significance scoring with mitigation
	WOMM	WMM	WOMM	WMM	WOMM	WMM	WOMM	WMM		
IMPACTS OF THE INFRASTRUCTURAL PROJECT										
CONSTRUCTION PHASE										
Soil Pollution Potential	6	4	1	1	2	1	3	2	**27 (Low to Moderate)**	**12 (Low)**
OPERATIONAL PHASE										
Continued Soil Pollution Potential	6	4	5	5	2	1	4	3	**52 (Moderate)**	**30 (Low to Moderate)**

Mismanagement of waste and pollutants during the construction and operational phases including hydrocarbons, construction waste, and other hazardous chemicals will result in these substances entering and polluting the soils. Furthermore, stormwater runoff emanating from the existing Port area is polluted with contaminates such as petroleum residues, oil, metals from brake linings, rubber particles from tyres, nitrous oxide from vehicle exhausts, and grease. These pollutants can enter the soil profile, where they will remain as do not break down like organic compounds. An increase in pollutants will lead to a decline in the quality of the soils utilised for any future rehabilitation purposes. Pollution of the soils is an existing problem within the study site largely as a result of settled coal dust which lines the roadways and covers any remaining vegetation. Any further pollution as a result of the project will lead to more costly rehabilitation requirements in the future.

6.4 Mitigation measures

No severe and/or irreversible impacts are anticipated as far as the soil agricultural land capability aspect is concerned. The following integrated mitigation measures are recommended to reduce the impact of the proposed project on the receiving environment:

- Any recommendations provided by a storm water management plan must be adhered too.
- Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created.
- All stockpiles created from the construction activities must be protected from erosion, stored on flat areas, where runoff will be minimised.
- Stockpiles must also only be stored for the minimum amount of time necessary.
- Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures.
- Vehicles are to be maintained in good working order so as to reduce the probability of leakage of fuels and lubricants.

- A dedicated store with adequate concrete flooring or bermed area must be used to accommodate chemicals such as fuel, oil, paint etc.
- Concrete is to be mixed on mixing trays only, not on exposed soil. Concrete and tar must be mixed only in areas which have been specially demarcated for this purpose. After all the concrete / tar mixing is complete all waste concrete / tar must be removed from the batching area and disposed of at an approved dumpsite.
- An Environmental Management Plan must be implemented to ensure that all waste and pollutants are handled, stored, and disposed of correctly.

7 CONCLUSION

A desktop and field investigation were undertaken for this assessment. The study site conforms to the Land Type classification with the original soil form being associated with an old estuarine area and therefore having pedogenetically young soils. However, the construction of the Port in the 1970s has drastically changed the soils and this area must now be classified in terms of an anthropogenic classification and thus belong to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form). This is as a result of the intentional deposition of soil material over the original estuarine site to create the Port as well as the polluted nature of a large majority of the soils from settled coal dust and other chemicals. This soil is not suitable for agricultural production as it cannot be remediated to being agriculturally productive within one life span.

Utilising the soil information, climatic information, topography and vegetation information, the study site was assessed in terms of its land potential. The site has been categorised into the Class VII and Class VIII categories. The Class VII category has been mapped where the Witbank and Grabouw soils were recorded. The soils are not suitable for agricultural production in the area but do not consist of polluted soil or hardened surfaces. They are physically disturbed or are deposited. The Class VIII soils were mapped where settled coal dust as well as the presence of hardened surfaces completely reduces the use of these areas for any agricultural production. These areas are also unlikely to be rehabilitated to be used for agriculture in the future.

Taking into account the above factors the soil and agricultural assessment has reclassified the very high sensitivity classification of the site for agricultural production to a low classification for agricultural production. This considers the use of the area as the Richards Bay Port as well as the non-arable to problematic soil characteristics of the site.

Screening tool results for the proposed TNPA 22MW GENSET Richards Bay Project

SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT
SOIL AND AGRICULTURAL AGRO-ECOSYSTEMS		
Very High	**Low**	Agricultural Agro-Ecosystem Specialist Assessment has been conducted

The study site is located within the Richards Bay Port and as such no impact will occur on any agriculturally productive land. Impacts to the receiving environment are therefore associated with the soil compaction and subsequent sedimentation, and the potential for soil pollution from the construction and operation of the proposed generator and associated infrastructure. Several general and specific measures are proposed to mitigate these impacts.

Given the low sensitivity of the site to agricultural production, coupled with the polluted soils and the associated unlikelihood of any agricultural production within the site in the future, it is the author's opinion that the proposed project be approved from a soil and agricultural perspective. This is provided that mitigation measures as outlined in this report as well as other specialist reports are implemented as part of the construction and operational phases of the project.

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9 APPENDICES

9.1 Appendix A

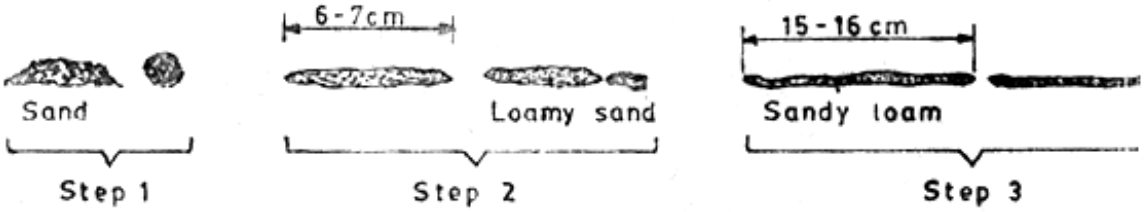
9.1.1. Soil Sampling and Mapping

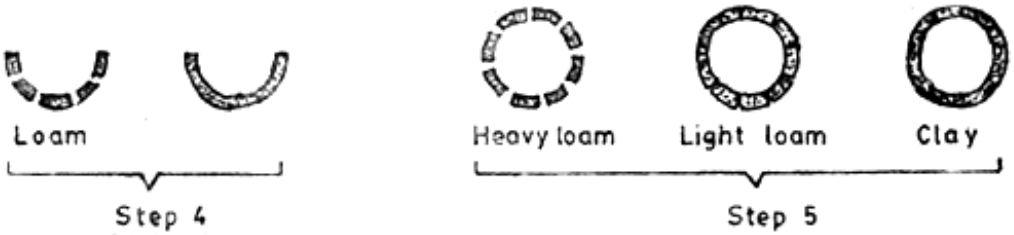
Soil sampling was conducted throughout the study site during a field assessment using a standard hand-held auger with a depth of 1200mm. At each sampling point the soil was described to form and family level according to "Soil Classification – A Taxonomic System for South Africa" and the following properties were recorded:

- Soil colour – as per the Munsell System
- Soil texture including clay percentage
- Surface rockiness
- Surface crusting
- Vegetation cover
- Permeability of the B horizon (Wetness)
- Effective rooting depth.

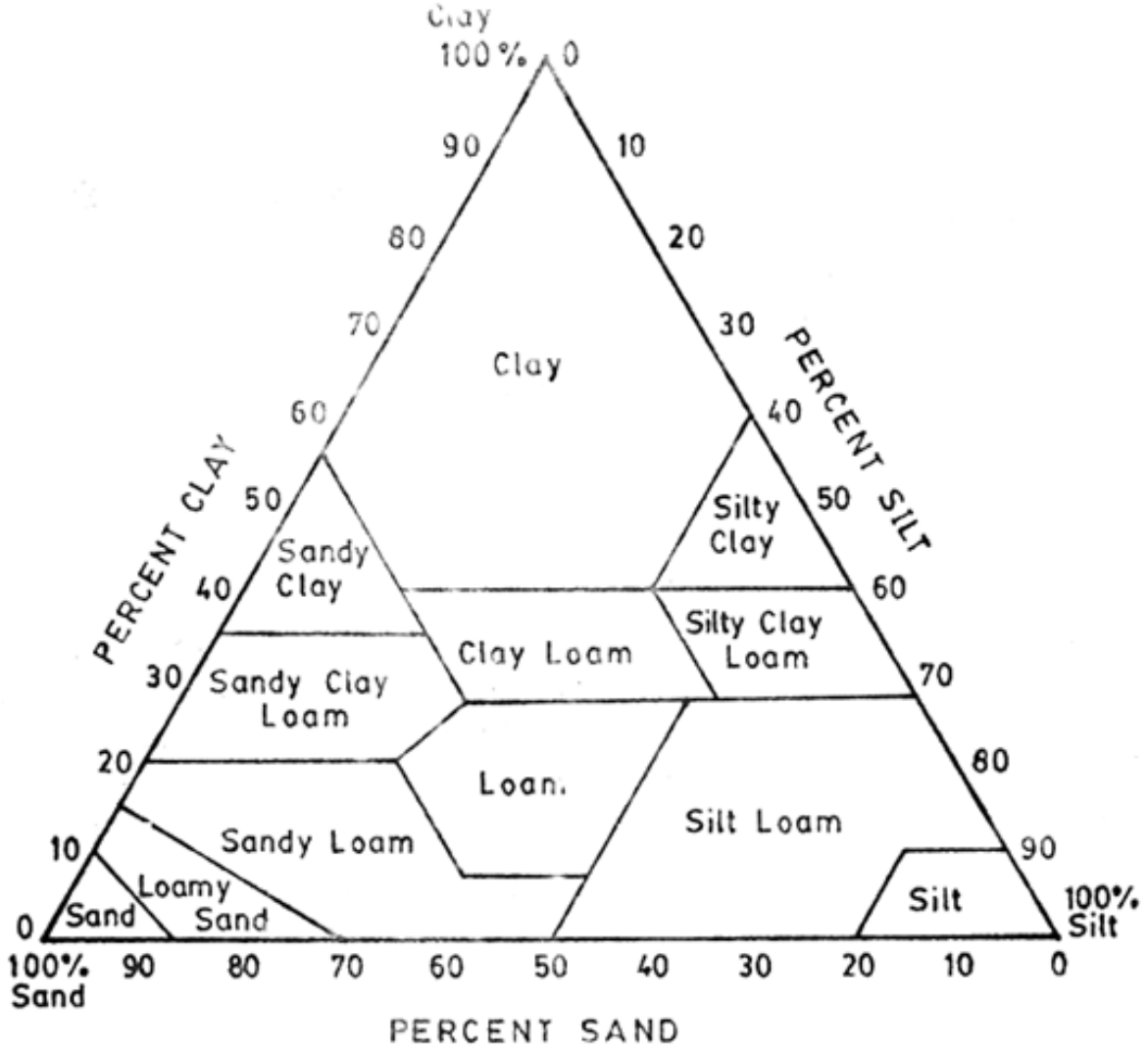
An in-field assessment technique was utilised with the texture triangle to determine soil texture.

FEEL METHOD





BALL AND RIBBON METHOD


Clay
100%
0
90
10
80
20
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50
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60
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20
80
10
90
0
100%
Sand
100%
Silt
PERCENT CLAY
PERCENT SILT
PERCENT SAND
Clay
Sandy Clay
Silty Clay
Clay Loam
Silty Clay Loam
Sandy Clay Loam
Loam
Silt Loam
Sandy Loam
Loamy Sand
Sand
Silt

9.2 Appendix B

9.2.1. Land Capability Classes

All factors regarding the assessment of the agricultural potential and land capability of the site were undertaken including an assessment of the:

- Topography
- Climate
- Soil texture
- Soil depth
- Subsoil permeability
- Rockiness and Surface Crusting

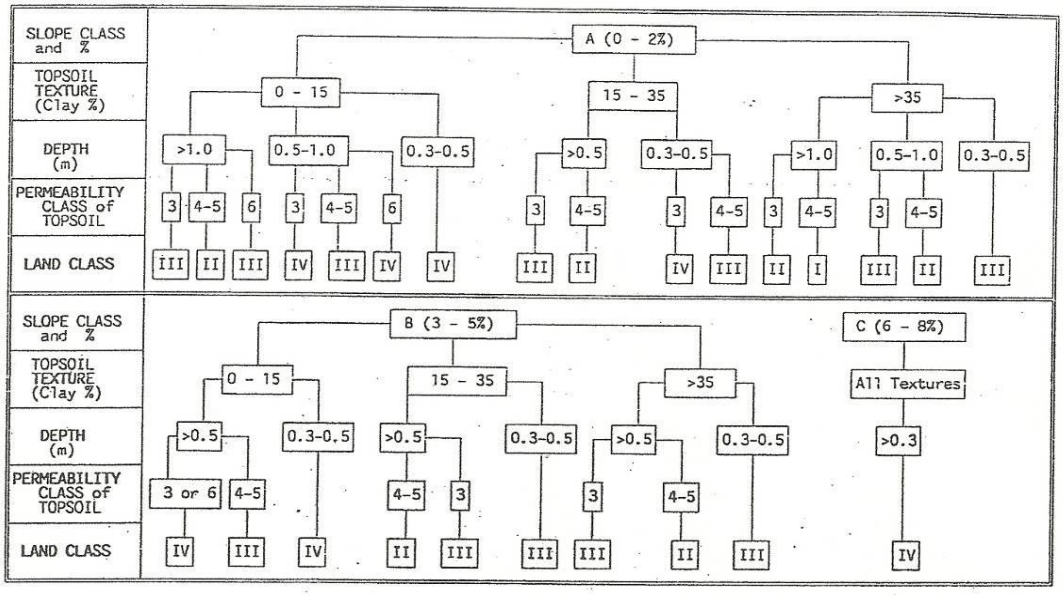
Using the information gathered at the site as well as during the literature review, a soil form map was produced. Information was also gathered from the BioResource Unit (BRU) database as well as the Land type information. This information was utilised in conjunction with the soil data recorded on site (i.e. soil form, depth, permeability, wetness) to produce the Land Capability Map.

33

CAPABILITY CLASS DETERMINATION GUIDELINE for BRGs:

Dry Zululand Thornveld (20), Valley Bushveld (21), Lowveld (22), Sandy Bushveld (23) (Average annual rainfall 587-830 mm)

Use the following flow chart to determine the land capability classes for land to be cropped in the above Bioresource Groups.



PERMEABILITY CLASS DESCRIPTION*			
Class	Rate (seconds)	Description	Texture
7	<1	Extremely rapid	Gravel and Coarse Sand. 0 to 10 % clay.
6	1-3	Rapid	5% to 10% clay.
5	4-8	Good	> 10% clay.
4	9-20	Slightly restricted	
3	21-40	Restricted	Strong structure, grey colours, mottles. > 35% clay.
2	41-60	Severely restricted	Strong structure, weathered rock. > 35% clay.
1	>60	Impermeable	Rock and very strong structure. > 35% clay.

* If roots can penetrate the subsoil, test permeability of upper subsoil.
If roots cannot penetrate the subsoil, test the permeability of the mid-topsoil.
Dark structured clay topsoil (vertic & melanic) with a Class 2 permeability should be assessed in the chart as if it has a Class 3 permeability. If permeability is Class 7, downgrade to Land Class IV.

Now refer to the opposite page to make adjustments for wetness, rockiness, crusting or permeability.

USE THE FOLLOWING LAND CHARACTERISTICS TO MODIFY THE LAND CLASS OBTAINED OPPOSITE, IF NECESSARY: The land capability class determined using the "flow chart" cannot be upgraded through consideration of wetness, rockiness, surface crusting or permeability classes given below, but it may be downgraded as indicated.

WETNESS		
Class	Definition	Land Class
W0	Well drained - no grey colour with mottling within 1.5 m of the surface. Grey colour without mottling is acceptable.	No change
W1	There is no evidence of wetness within the top 0.5 m. Occasionally wet - grey colours and mottling begin between 0.5 m and 1.5 m from the surface.	Downgrade Class I to Class II, otherwise no change
W2	Temporarily wet during the wet season. No mottling in the top 0.2 m but grey colours and mottling occur between 0.2 m and 0.5 m from the surface. Included are: soils with G horizons (highly gleyed and often clayey) at depths deeper than 0.5 m; soils with an E horizon overlying a B horizon with a strong structure; soils with an E horizon over G horizons where the depth to the G horizon is more than 0.5 m.	Downgrade to Class IV
W3	Periodically wet. Mottling occurs in the top 0.2 m, and includes soils with a heavily gleyed or G horizon at a depth of less than 0.5 m. Found in bottomlands.	Downgrade to Class Va
W4	Semi-permanently / permanently wet at or above soil surface throughout the wet season. Usually an organic topsoil or an undrained vlei. Found in bottomlands.	Downgrade to Class Vb

PERMEABILITY	
Permeability Class	Adjustment to be made
1 - 2	If in sub-soil, rooting is likely to be limited: Use the permeability of the topsoil in the flow chart. If this is the permeability of the topsoil, then the topsoil is probably a dark structured clay, in which case a permeability Class 3 can be used in the flow chart.
3 - 5	Classify as indicated in the flow chart.
6	Topsoil should have < 15% clay - use the flow chart.
7	Downgrade Land Classes I to III to Land Class IV.

ROCKINESS		
Class	Definition	Land Class
R0	No rockiness	No change
R1	2 - 10% rockiness	Downgrade Classes I to II, otherwise no change
R2	10 - 20% rockiness	Downgrade Classes I to II, otherwise no change
R3	20 - 30% rockiness	Downgrade to Class IV
R4	> 30% rockiness	Downgrade Classes I, II, III & IV to Class VI

SOIL SURFACE CRUSTING		
Class	Definition	Land Class
t0	No surface crusting when dry	No change
t1	Slight surface crusting when dry	Downgrade Class I to Class II, otherwise no change
t2	Unfavourable surface crusting when dry	Downgrade Classes I & II to Class III, otherwise no change

NB **Any land not meeting the minimum requirements shown is considered non-arable (Class V, VI, VII or VIII).**
Non-arable land in BRGs 2, 4, 6, 9, 12, 14, 15, 16, 17, 18 & 19 includes:
* all land with W3, W4 or R4,
* all land with slope exceeding 20%,
* land with slope 13-20%, if clay < 15% or depth < 0.4m,
* land with slope 8-12% and clay > 15%, if depth < 0.25m,
* land with slope 8-12% and clay < 15%, if depth < 0.5m, and
* land with slope 0-7%, if depth < 0.25m.

20 March 1996

9.3 Appendix C – Specialist's CV

Rowena Harrison

PERSONAL DETAILS

Name	Rowena Harrison
Date of Birth	21 April 1982
Identity Number	8204210320081
Nationality	South African
Address	6 Wills Close, Hilton, KwaZulu-Natal, 3245
Current Position	Director (Soil Scientist)
Office Location	Hilton, KwaZulu-Natal
Tel	+27 (0)78 023 0532
Email	rowena@lmenvironmental.co.za

ACADEMIC QUALIFICATIONS

2023	PhD Soil Science (University of Free State, South Africa and the University of Burgundy, France)
2015	Certificate in Wetland Rehabilitation – University of the Free State
2009	MSc (Soil Science) – University of KwaZulu-Natal
2008	Certificate course in Wetland Delineation, Legislation and Rehabilitation, University of Pretoria
2006	BSc (Environmental Science) – University of KwaZulu-Natal
2005	BSc (Applied Environmental Science) – University of KwaZulu-Natal

EMPLOYMENT RECORD

July 2021 – Present	Land Matters Environmental Consulting (Pty) Ltd – Director (Soil Scientist and Wetland Specialist)
April 2016 – June 2021	Malachite Specialist Services (Pty) Ltd – Director (Soil Scientist and Wetland Specialist)
March 2014 – March 2016	Afzelia Environmental Consultants (Pty) Ltd. – Soil Scientist and Wetland Specialist
Sept 2012 – February 2014	Strategic Environmental Focus (Pty) Ltd – Junior Wetland Specialist
February 2008 – December 2009	Afzelia Environmental Consultants cc. – Soil Scientist and Junior Environmental Assessment Practitioner

PROFESSIONAL AFFILIATIONS

- South African Council for Natural Scientific Professions – SACNASP (Pr. Sci.Nat 400715/15: Soil Science)
- International Association for Impact Assessments – IAIAsa

- South African Wetland Society
- Soil Science Society of South Africa

PUBLICATIONS

Harrison. R. (2023). Interaction entre le carbone organique dissous et l'hydropédologie dans les bassins afromontagnards (Afrique du Sud). Earth Sciences. Université Bourgogne Franche-Comté; University of the Free State (Bloemfontein, Afrique du Sud ; 1904-.).English. ffNNT : 2023UBFCK036ff. fftel-04521423.

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PROJECT EXPERIENCE

Rowena has obtained her PhD in Soil Science under joint collaboration at the University of the Free State, South Africa and the University of Burgundy, France. She is professionally affiliated to the South African Council for Natural Scientific Professions (Pr. Sci. Nat) and has 15 years consulting experience in the wetland and soil science field. She has conducted numerous wetland, hydropedology and soil assessments for a variety of development types across South Africa, Swaziland, Zimbabwe, Cameroon, and the Democratic Republic of Congo. She is a member of the International Association for Impact Assessment (IAIA), the South African Soil Science Society, as well as a founding member of the South African Wetland Society.

forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Soil and Agricultural Potential Assessment for the Proposed Establishment of the Transnet National Ports Authority (TNPA) 22MW Dual Fuel Generator and Associated Transmission Lines at the Port of Richards Bay, KwaZulu-Natal.

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with *'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Soil and Agricultural Potential Assessment
Specialist Company Name	Land Matters Environmental Consulting (Pty) Ltd
Specialist Name	Rowena Harrison
Specialist Identity Number	8204210320081
Specialist Qualifications:	PhD (Soil Science)
Professional affiliation/registration:	SACNASP Pr.Sci.Nat 400715/15
Physical address:	6 Wills Close, Hilton, KwaZulu-Natal
Postal address:	6 Wills Close, Hilton
Postal address	3245 KwaZulu-Natal
Telephone	078 023 0532
Cell phone	078 023 0532
E-mail	rowena@lmenvironmental.co.za

2. DECLARATION BY THE SPECIALIST

I, Rowena Harrison declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

Signature of the Specialist

Land Matters Environmental Consulting

Name of Company:

27 May 2024

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Rowena Harrison, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

RHarrison

Signature of the Specialist

Land Matters Environmental Consulting

Name of Company

27th May 2024

Date

L MTEKA 68428286 CA

Signature of the Commissioner of Oaths

2024.05.27

Date

SOUTH AFRICAN POLICE SERVICE
COMMUNITY SERVICE CENTRE
27 MAY 2024
HILTON
KWAZULU-NATAL

APPENDIX E4: Baseline Soil Surface and Groundwater Assessment

63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

Baseline Soil Surface Water and Groundwater Assessment for the Proposed TNPA 22MW Genset Development

Report

Version – Final 1

19 June 2024

Transnet National Ports Authority

GCS Project Number: 23-0807

Client Reference: TNPA 22MW Baseline Assessment

GCS (Pty) Ltd. **Reg No:** 2004/000765/07 Est. 1987
Offices: **Johannesburg** (Head Office) | Durban | Gaborone | Maseru | Windhoek | Ostrava
Directors: AC Johnstone (CEO) | W Sherriff (Financial) | N Marday (HR) | H Botha

Report
Version – Final 1

19 June 2024

Transnet National Ports Authority

23-0807

DOCUMENT ISSUE STATUS

Report Issue	Final 1		
GCS Reference Number	GCS Ref - 23-0807		
Client Reference	TNPA 22MW Baseline Assessment		
Title	Baseline Soil Surface Water and Groundwater Assessment for the Proposed TNPA 22MW Genset Development		
	Name	**Signature**	**Date**
Author	Hendrik Botha (MSc, PriSciNat	19/06/2024 12:05:49 Pr.Sci.Nat (400139/17)	19 June 2024
Proof Reader	Lisa Botha (BSc. Hons)		19 June 2024
Director	Hendrik Botha (MSc, PriSciNat)	19/06/2024 12:05:49 Pr.Sci.Nat (400139/17)	19 June 2024

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DECLARATION OF INDEPENDENCE

GCS (Pty) Ltd was appointed to conduct this specialist soil and water study and to act as the independent hydrological specialist. GCS objectively performed the work, even if this resulted in views and findings that were not favourable. GCS has the expertise to conduct the specialist investigation and does not have a conflict of interest in the undertaking of this study. This report presents the findings of the investigations which include the activities set out in the scope of work.

EXECUTIVE SUMMARY

GCS Water and Environment (Pty) Ltd (GCS) was appointed by Transnet National Ports Authority (TNPA) to undertake a baseline soil, surface water and groundwater assessment for the proposed development of a 22MW Genset Switching Station, situated in the port of Richards Bay, KwaZulu-Natal.

This investigation report was requested to supplement the EIA and Water Use License (WULA) for the proposed activities, with a specific focus on the proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site.

The study aimed to achieve the following objectives:

- Understand and characterise the geohydrological, hydrological and soil setting, to set a basis for evaluating potential impacts relating to the proposed activities.
- Undertake a site walkover assessment and soil/water screening to determine the status quo of the site before any construction takes place.
- Assess the impacts on the soil, groundwater, and surface water environments as a result of the proposed activities.
- Produce a comprehensive baseline soil and water report which can be used for decision-making purposes and input into the EIA/WUL and Environmental Management Programme (EMPr) process.

The study found that:

- The project falls within quaternary catchments W21F of the Pongola to Mtamvuna Elevations for the site area range from 5 to 20 metres above mean sea level (mamsl). The mean annual precipitation (MAP) for the area is in the order of 1071 mm/yr with mean annual evaporation (MAE) exceeding 1300 mm/yr.
- The project stretches from Meerensee towards the eastern side of the Richards Bay Port to the west of the Tansnet Permit Office (Harbour West area). The proposed Evacuation Lines follow existing access and service line servitudes, and no recognised rivers or streams are associated with the evacuation line that connects the Admin, Carina, Eastern Intake, Arrivals Yard, Storage Yard, Sorting Yard, and Harbour West Substations. The proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site is located within an area of about 0.44Ha with no recognised drainage lines or nearby rivers and streams. The site is bound towards the east and west by industrial storage houses and towards the north by Newmark Road. Rainfall-runoff generated on-site, and therefore overall drainage, is towards the north and the south of the site towards the access roads and into dedicated and existing storm drains.

- The soil survey undertaken in the vicinity of the proposed generator and diesel storage tank area suggests no existing hydrocarbon contamination is present. Soil augering during this investigation confirmed the presence of built-up quaternary sands with refusal reached ranging from 1.4 to 2.2 m. No seepage was observed in any of the auger holes, placing the water level of the site deeper than 2.2 m.
- The source-pathway-receptor (SPR) model (DWAF, 2008) was used to evaluate potential pollution sources and primary receptors within the study area. SPR is considered as follows:
    - S: Activities listed above and associated work in the development and operation of the facilities.
    - P: Overland flow/runoff and direct seepage.
    - R: There are no surface water receptors associated with the project site and no recognised rivers/streams fall within proximity of the generator site and evacuation lines. The soils associated with the project area and where work will be conducted, as well as the groundwater table, are the only receptors identified.
- Several soil-water risks were identified and are presented in Section 4 as well as several mitigation measures that can be considered. A monitoring plan is available in Section 5.
- Based on the existing activities and mitigations to offset impacts, GCS believes that the authorisation of the activities should be considered. The final decision rests with the Government Authorities and should be based on the predicted soil-water impacts as well as the socio-economic value of the project. This statement is further founded on the assumption that the proposed mitigation measures and EMPr recommendations be implemented during the life of the project.

APPENDIX 6 OF THE EIA REGULATION – CHECKLIST AND REFERENCE FOR THIS REPORT

Table 1 - Requirements from Appendix 6 of GN 326 EIA Regulation 2017

Requirements from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of: (i) The specialist who prepares the reports; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Document Issue (Page ii) Appendix C.
(b) Declaration that the specialist is independent in a form as may be specialities by the competent authority	Appendix C.
(c) Indication of the scope of, and purpose for which, the report was prepared	Section 1. and 3.
(cA) Indication of the quality and age of base data used for the specialist report	Sections 1, 2 and 3.
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 4.
(d) Duration, Date and seasons of the site investigation and the relevance of the season to the outcome of the assessment	Section 1.3.
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process including equipment and modelling used	Section 1.4.
(f) Details of an assessment of the specifically identified sensitivity of the site related to the proposed activity or activities and its associate's structures and infrastructure, inclusive of a site plan identifying alternative	Sections 2 and 3
(g) Identification of any areas to be avoided, including buffers	Section 6.1
(h) Map superimposing the activity and associated structures and infrastructure on environmental sensitivities of the site including areas to be avoided, including buffers	Sections 1, 2, 5 and 4
(i) Description of any assumptions made and uncertainties or gaps in knowledge	Section 1.5.
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities	Executive summary, Section 4.
(k) Mitigation measures for inclusion in the EMPr	Section 6.2
(l) Conditions for inclusion in the environmental authorisation	Refer to recommendations in Section 6.
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Refer to recommendations in Section 6.
(n) Reasoned opinion – (i) as to whether the proposed activity, activities or portions thereof should be authorised. (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities, or portions thereof should be authorised, and avoidance, management, and mitigation measures should be included in the EMPr, and where applicable, the closure plan	Section 6.3.
(o) Description of any consultation process that was undertaken during preparing the specialist report	*None required.*
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto	*None required.*
(q) Any other information requested by the competent authority	*None required.*

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LIST OF ACRONYMS

Acronym	Description
µg	microgram
Al	aluminium
B	boron
Ba	barium
BF	Baseflow
BH	Borehole
BHN	Basic Human Needs
Br	bromide
Ca	calcium
$CaCO_3$	calcium carbonate
Cd	cadmium
Cl	chlorine
Cr	chromium
CRT	Constant Rate Test
Cu	copper
d	day
DMEA	Department of Mineral and Environmental Affairs
DTM	Digital Terrain Model
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
E	East
EC	Electrical Conductivity
F	Fluorine
Fe	Iron
Fm	Formation
G3	Best Practice Guidelines: Monitoring
G4	Best Practice Guidelines: Impact Prediction
GCS	GCS Water and Environment (Pty) Ltd
GPS	Global Positioning System
GRAII	Groundwater Resource Assessment Ver. 2
GRDM	Groundwater Resource Directed Measures
GRIP	Groundwater Resource Information Project
GW	groundwater
HCO_3	bicarbonate
Hg	Mercury
IGRD	Intermediate Groundwater Reserve Determination
IWULA	Integrated Water Use License Application
K	potassium
km	kilometre
K-value	hydraulic conductivity
l	litres
m	metres
MAE	Mean Annual Evaporation
Mag	magnetometer
mamsl	metres above mean sea level
MAP	Mean Annual Precipitation
mbgl	metres below ground level
mg	milligram
Mg	magnesium
mm	millimetres
Mn	manganese
Mo	molybdenum
mS	Milli Siemens
N	North
N	nitrogen
Na	sodium
Ni	nickel
NO_3	nitrate
nT	magnetic intensity
NWA	National Water Act, 1998
O_2	oxygen
Pb	lead
Re	Recharge
Rem	Remainder
s	second
S	South

S_2	Di-Sulphur
SANS	South African National Standard
Se	selenium
SO_4	sulphate
SPR	Source-Pathway-Receptor Model/Principle
SRTM	Shuttle Radar Topography Mission
T	Transmissivity
W	West
WL	Water level
WRC	Water Research Council
Zn	zinc

1 INTRODUCTION

GCS Water and Environment (Pty) Ltd (GCS) was appointed by Transnet National Ports Authority (TNPA) to undertake a baseline soil, surface water and groundwater assessment for the proposed development of a 22MW Genset Switching Station, situated in the port of Richards Bay, KwaZulu-Natal (refer to Figure 1-1 and Figure 1-2).

1.1 Project background

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay (PoRB) is one of the country's largest ports in size, with total land and water surfaces of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for ensuring that the ports are economic hubs for the country while ensuring that they also comply with the South African Laws and Regulations which are governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The PoRB is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. Approximately half of the PoRB has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity. This project is needed to generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or load-shedding.

This Project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas.
- The installation of diesel fuel tank(s) storage of a total capacity of 600m³.
- The installation of a 200m³ tank storage of demineralised water;
- Evacuation lines to the substations.
- Fencing for the site
- An auxiliary pit.
- A drain facility for the used diesel and sludge.
- A transmission line from the generator to the Harbour West Substation, Sorting Yard Substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the NEMA Environmental Impact Assessment (EIA) Regulations (2014, as amended), a full Scoping and Environmental Impact Report (S&EIR) Process is required for the construction of the Genset 22MW Generation Plant, fuel storage areas, the connecting powerline and the connecting LNG pipeline Project.

This investigation report was requested to supplement the EIA and Water Use License (WULA) for the proposed activities, with a specific focus on the proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site.

Figure 1-1: Total project area

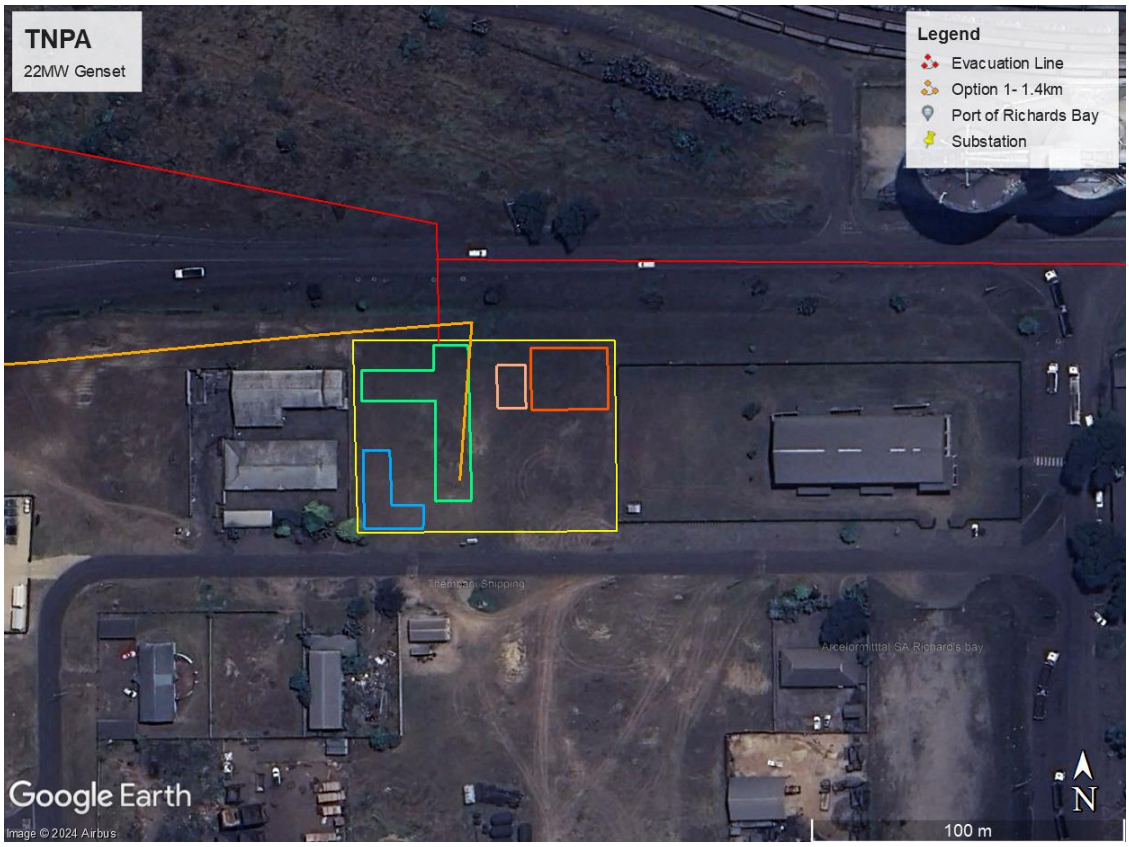


Figure 1-2: Proposed generator development site

1.2 Objectives of this report

The study aimed to achieve the following objectives:

- Understand and characterise the geohydrological, hydrological and soil setting, to set a basis for evaluating potential impacts relating to the proposed activities.
- Undertake a site walkover assessment and soil/water screening to determine the status quo of the site before any construction takes place.
- Assess the impacts on the soil, groundwater, and surface water environments as a result of the proposed activities.
- Produce a comprehensive baseline soil and water report which can be used for decision-making purposes and input into the EIA/WUL and Environmental Management Programme (EMPr) process.

1.3 Study relevance to the season in which it was undertaken

This study was undertaken as a once-off study and relies on historical hydrological and climate data for the site; as well as recognised geological and water resource databases for South Africa. Data generated during the time of this study is not seasonally bound, even though low, and high flow yield estimates were evaluated, as average yearly data was applied where required and as scientifically acceptable.

1.4 Scope of works

The scope of work was as follows:

1. Data review of previous studies and public data.
    a. This includes an overview of the soils, groundwater flow fields, groundwater levels, nearest watercourses, wetlands, geology, and hydrogeology.
2. Fieldwork:
    a. Inspections:
        i. Initial site inspection and inspection for visible spillages and contamination on-site.
        ii. Inspection of all drains and existing monitoring boreholes (if they exist or if wells are close by from neighbours).
        iii. Collect photo-ionisation-detector (PID) readings in the drains and monitoring wells on the site. This will help determine if there are volatile organic carbons (VOC) on the premises.
        iv. Field hydrocensus within a 500 m radius of the site to verify if there are groundwater boreholes.
        v. Field survey of watercourses/rivers and streams within a 500 m radius of the site.
    b. Auger hole drilling:
        i. Drill several auger test holes to evaluate sub-soils on a preliminary level.
        ii. Soils were profiled per SA guidelines, and the PID was used to screen for VOCs at depths of 30 cm down to the bottom of the hole.
    c. Sampling:
        i. 4 soil samples were budgeted, for hydrocarbon screening. Composite samples were taken.
3. Risk Assessment:
    a. Identify potential pathways and receptors.
    b. Determine if there is existing site contamination and what the potential impact would be if the proposed activities take place.
4. Reporting:
    a. A writeup of the status quo of the site based on the groundwater, surface water and soil data that was gathered for the site. Several maps were produced.

2 AREA OF INVESTIGATION

The site is situated in Quaternary Catchment W21F of the Pongola to Mtamvuna Water Management Area (DWS, 2016). Elevations on the site typically range from 0 to 25 meters above mean sea level (mamsl) – refer to Figure 1-1. The dominant land types associated with the project area are shown in Figure 2-8 (DFFE, 2021).

Figure 2-1: Typical cross-section of site topography

The project stretches from Meerensee towards the eastern side of the Richards Bay Port to the west of the Tansnet Permit Office (Harbour West area). The proposed Evacuation Lines follow existing access and service line servitudes, and no recognised rivers or streams are associated with the evacuation line that connects the Admin, Carina, Eastern Intake, Arrivals Yard, Storage Yard, Sorting Yard and Harbour West Substations – refer to Figure 2-7.

The proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site is located within an area of about 0.44Ha with no recognised drainage lines or nearby rivers and streams. The site is bound towards the east and west by industrial storage houses and towards the north by Newmark Road. Rainfall-runoff generated on-site, and therefore overall drainage, is towards the north and the south of the site towards the access roads and into dedicated and existing storm drains.

2.1 Climate

Climate, amongst other factors, influences soil-water processes. The most influential climatic parameter is rainfall. Rainfall intensity, duration, evaporative demand, and runoff were considered in this study to indicate rainfall partitioning within the project area.

2.1.1 Temperature

The average yearly temperature (refer to Figure 2-2) for the project area ranges from 24 to 39°C (high) and 7 to 12°C (Low). The study area is situated in a humid subtropical climate or warm temperate climate (Cfa) area, as per the Köppen Climate Classification (Kottek, Grieser, Beck, Rudolf, & Rubel, 2006). The project area receives summer rainfall.

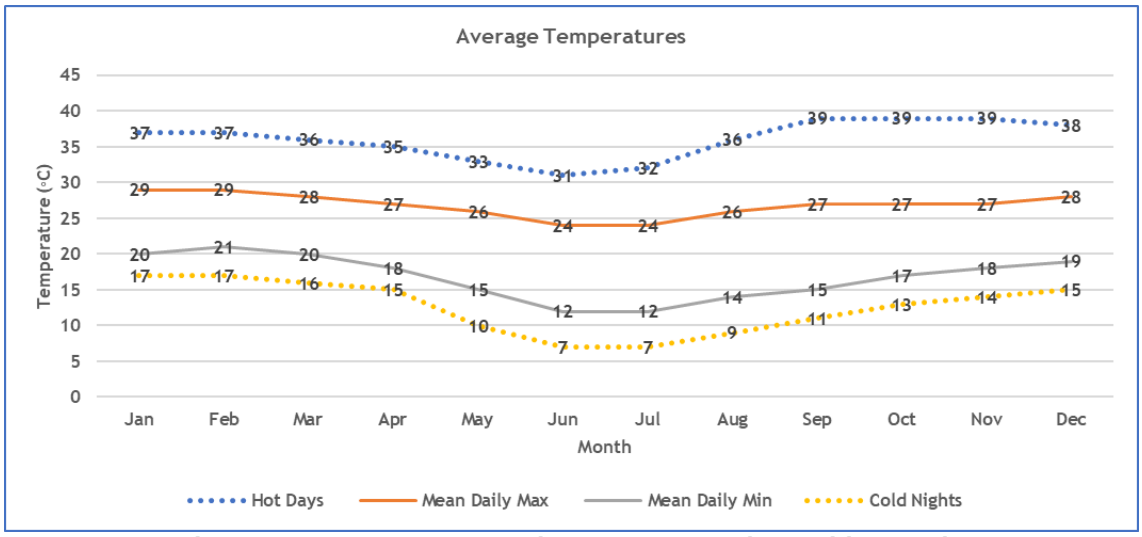


Figure 2-2: Average yearly temperatures (Meteoblue, 202)

2.1.2 Wind speed and direction

Figure 2-3 shows the wind rose for the project area (Richards Bay used as reference) and presents the number of hours per year the wind blows from the indicated direction. The wind blows from N, NNE, SSW and S more often, at velocities > 28 km/hr; and from other directions but less frequently and at lower velocities (< 19 km/hr).

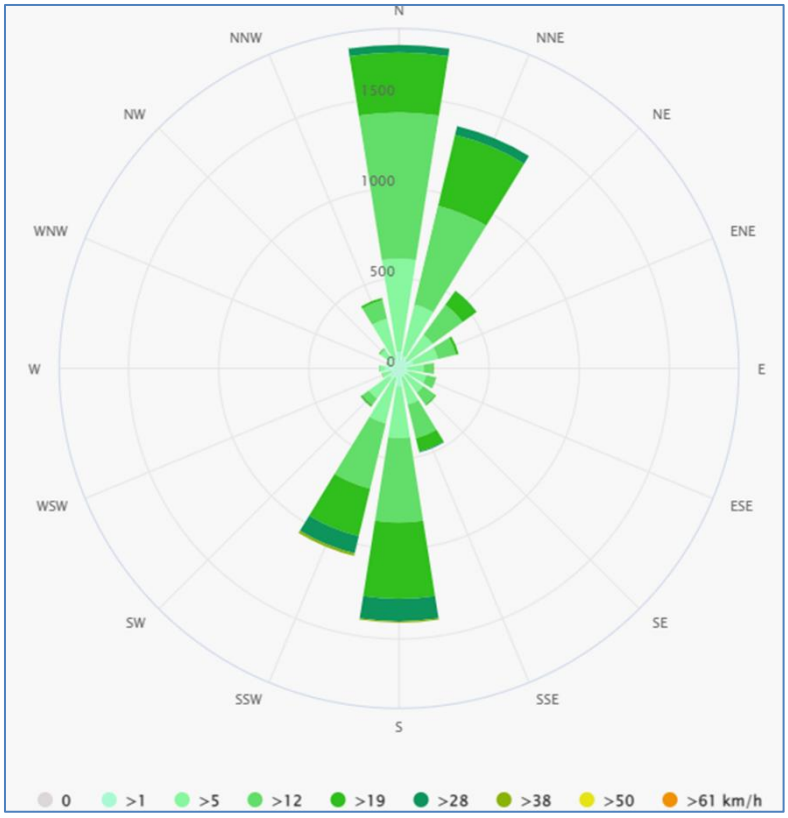


Figure 2-3: Wind rose (Meteoblue, 202)

2.1.3 Rainfall and evaporation

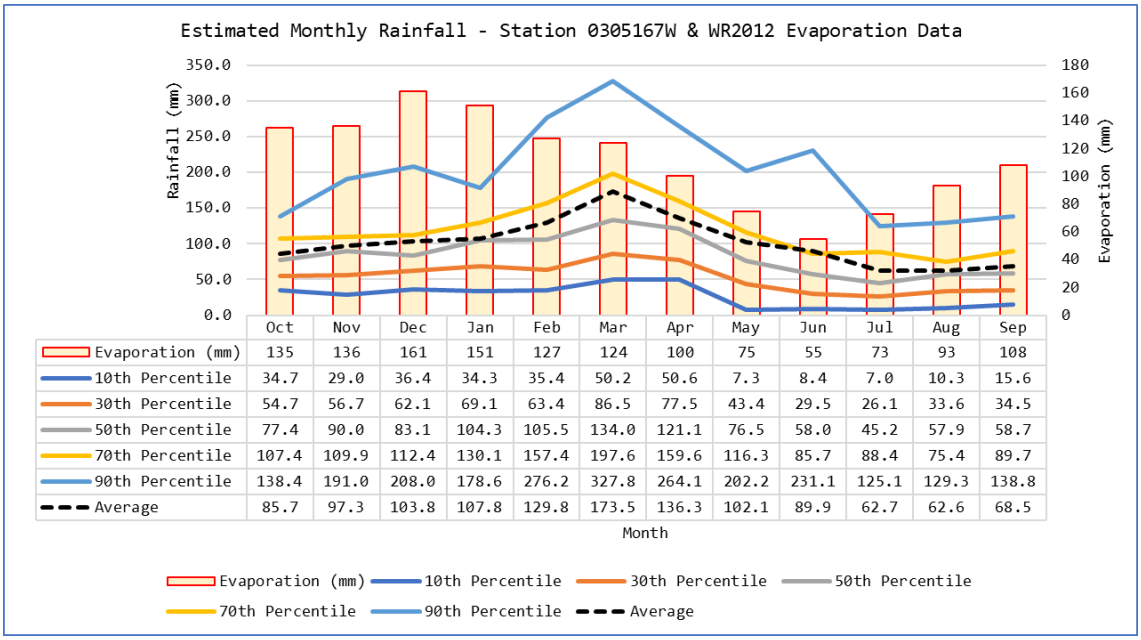
The project area is situated in rainfall zone W1D. The mean annual precipitation (MAP) measured at several rainfall stations that fall close to the site is summarised in Table 2-1, below.

Table 2-1: MAP of nearest rainfall stations

Station Name	Station ID	Rain Record (Years)	MAP (mm/yr)
RICHARDS BAY (MUN)	0305167_W	53	1255
ENSELENI	0305043_W	48	1124
KULU HALT	0304823_S	69	1080
KULU HALT	0304822_W	72	1109
Average			**1142**

The monthly rainfall data used to calculate MAP was obtained from rainfall station 0305167W. The rainfall record is for the period 1919 to 1972 (53 years). Monthly rainfall for the site is likely to be distributed as shown in Figure 2-4, below.

Available rainfall data suggest a MAP ranging from 34.5 (30th percentile) to 2410 (90th percentile) mm/yr. The average rainfall is in the order of 1071 mm/yr. The project area falls within evaporation zone 22A, of which Mean Annual Evaporation (MAE) ranges from 1 300 to 1 400 mm/yr. The MAE far exceeds the MAP for the site, which implies greater evaporative losses when compared to incident rainfall. Monthly evapotranspiration for the site is likely to be distributed as shown in Figure 2-4, below.

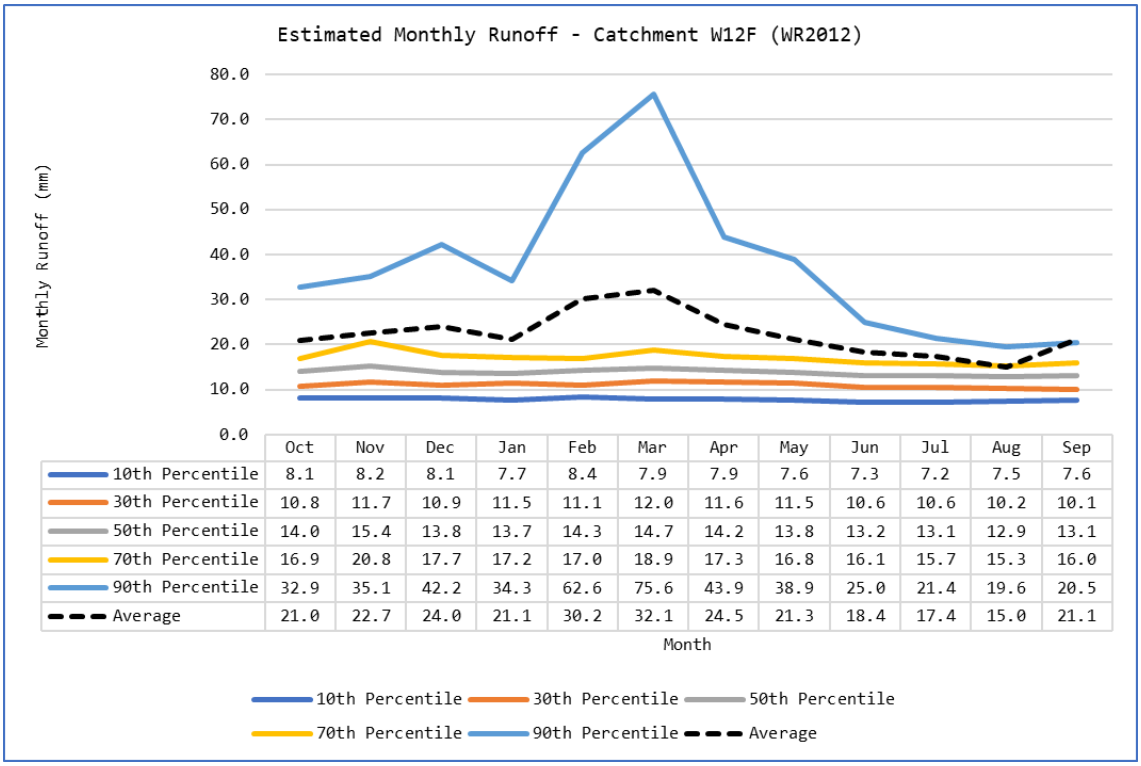


	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Evaporation (mm)	135	136	161	151	127	124	100	75	55	73	93	108
10th Percentile	34.7	29.0	36.4	34.3	35.4	50.2	50.6	7.3	8.4	7.0	10.3	15.6
30th Percentile	54.7	56.7	62.1	69.1	63.4	86.5	77.5	43.4	29.5	26.1	33.6	34.5
50th Percentile	77.4	90.0	83.1	104.3	105.5	134.0	121.1	76.5	58.0	45.2	57.9	58.7
70th Percentile	107.4	109.9	112.4	130.1	157.4	197.6	159.6	116.3	85.7	88.4	75.4	89.7
90th Percentile	138.4	191.0	208.0	178.6	276.2	327.8	264.1	202.2	231.1	125.1	129.3	138.8
Average	85.7	97.3	103.8	107.8	129.8	173.5	136.3	102.1	89.9	62.7	62.6	68.5

Figure 2-4: Average rainfall for Station 0305167W & WR2012 evaporation

2.1.4 Runoff

Runoff from natural (unmodified) catchments for quaternary catchment W12F is simulated in WR2012 (WRC, 2015) as being equivalent to 268.8 mm/yr (or 22% of the MAP). This is approximately 107.27 Mm³/yr NMAR for the surface area of U30E.



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10th Percentile	8.1	8.2	8.1	7.7	8.4	7.9	7.9	7.6	7.3	7.2	7.5	7.6
30th Percentile	10.8	11.7	10.9	11.5	11.1	12.0	11.6	11.5	10.6	10.6	10.2	10.1
50th Percentile	14.0	15.4	13.8	13.7	14.3	14.7	14.2	13.8	13.2	13.1	12.9	13.1
70th Percentile	16.9	20.8	17.7	17.2	17.0	18.9	17.3	16.8	16.1	15.7	15.3	16.0
90th Percentile	32.9	35.1	42.2	34.3	62.6	75.6	43.9	38.9	25.0	21.4	19.6	20.5
Average	21.0	22.7	24.0	21.1	30.2	32.1	24.5	21.3	18.4	17.4	15.0	21.1

Figure 2-5: Simulated natural (unmodified) runoff for W12F

2.1.5 Considerations on climate change

Based on available climate change models for the project area, derived from World Climate Data CMIP6 V2.1 (Eyring, 2016) RCP 4.5 and 8.5 scenarios were chosen, and the following is predicted for the project area:

- Temperature:
  - 2021 - 2050: increases by as much as 2.8ºC
  - 2050 - 2100: increases by as much as 2.9ºC
- Annual average hot days:
  - 2021 - 2050: additional 5.28 extremely hot days.
  - 2050 - 2100: additional 5.28 extremely hot days.
- Annual rainfall totals (MAP):
  - 2021 - 2050: increases in rainfall by as much as 135 mm/yr.
  - 2050 - 2100: increases in rainfall by as much as 109 mm/yr.
- The annual average number of extreme rainfall days:
  - 2021 - 2050: decrease by as much as 0.5 days.

- 2050 - 2100: decrease by as much as 0.6 days.

Based on the above it is predicted that there will be future temperature increases with more frequent extreme temperatures, which will result in less extreme rainfall days. Available data suggest that there will be less frequent storm events but greater precipitation intensity when storms do take place, to make up for the increased rainfall projects.

2.2 Geology and soils

According to the 1:250 000 geological series (2732 St. Lucia), the site is typically underlain by Quaternary sand, silt, and clay (alluvium) overlying siltstone and sandstone of the Ecca Group, of the Karoo Sequence – refer to Figure 2-9. The area has further been built up by an engineered fill of reclaimed and reworked sands.

According to WR2012 soil data for the area, the erodibility of the soils for the area can be considered medium (WRC, 2015). According to the Land Types of South Africa databases (Land Type Survey Staff, 1972 – 2006c,), the soils in the area typically conform to the Ia (These are typically deep alluvial soils that comprise > 60% of land type) and Hb (These are typically deep grey sands sub-dominant (comprise > 20% of land type) land types (ARC, 2006).

Soil augering during this investigation confirmed the presence of built-up quaternary sands with refusal reached ranging from 1.4 to 2.2 m (refer to Section 3.3).

2.3 Local hydrogeology & depth to groundwater

The site is situated in an area associated with undifferentiated quaternary coastal deposits, underlain by the argillaceous rock (shale, mudstone, and siltstone) of the Ecca Series, of the Karoo Supergroup (King, Maritz, & and Jonck, 1998). The aquifer has a medium hydraulic conductivity (K-value) and porosity (n-value). The aquifer can be referred to as being primarily intergranular (King, et al., 1998).

Groundwater is typically encountered in:

- Saturated sands (King, et al., 1998).

Recharge to the underlying aquifer is estimated to be in the order of 10.7% of the MAP (1219 mm) which falls within quaternary catchment W12F (DWAF, 2006). The aquifer's weathered zones are reported to be approx. 36 m thick, with the fractured zone approx. 106 m thick (DWAF, 2006). The combined aquifer thickness is estimated to be in the order of 142 m. The aquifers are important contributors to groundwater baseflow to streams and rivers (King, et al., 1998).

The aquifers associated with the quaternary sands have reported yields ranging from 0.5 to 0.2 l/sec (Type A3 aquifers). Whilst not to be misconstrued given the site's coastal setting, the regional aquifer is classified as major, the most vulnerable to contamination, with high susceptibility to anthropogenic activities.

According to (Vegter, 1995) and (DWAF, Groundwater Resource Assessment II, 2006), the groundwater levels within the region are expected to range from 5 to 15 mbgl (meters below ground level). Due to the formation of clay lenses in the quaternary sediments, perched water tables can be expected. The groundwater table is expected to mimic the topography.

2.4 Surface water and groundwater users in the study area

According to the Water Allocation Registration Management System (WARMS, 2019), there is only one (1) lawful groundwater user situated 200 m northeast of the area. A review of SADAC GIP database boreholes further suggests 17 boreholes within a 5 km radius of the site, all plotting in different drainage areas. No surface water users were identified in the project area. The registry entry into WARMS for water use is summarised in Table 2-2 and SADAC GIP boreholes within a 5 km radius of the site are presented in Table 2-3.

Table 2-2: Summary of WARMS (users within a 2.5 km radius of the site)

ID	Latitude (WGS84)	Longitude (WGS84)	User	Resource Type)e	Resource	Register Status	Lawfulness Finding	Registered Volume (m^3/yr.)
21206160	-28.81200	32.06778	RICHARDS BAY COAL TERMINAL	BOREHOLE	GROUNDWATER	ACTIVE	LAWFUL	110000

Table 2-3: Summary of SADAG GIP boreholes within a 5 km radius of the site

ID	Source	Latitude (WGS84) Decimal Degrees	Longitude (WGS84) Decimal Degrees	Elevation (mamsl)	Water Level (mbgl)
757536	SADAC GIP	-28.78734	32.09118	19.963	5.1
757538	SADAC GIP	-28.77401	32.08368	10.749	1.6
758262	SADAC GIP	-28.77168	32.08238	9.369	1.2
758263	SADAC GIP	-28.77839	32.09853	24.224	3.3
758265	SADAC GIP	-28.77277	32.07071	6.468	1.2
758266	SADAC GIP	-28.77229	32.07057	11.62	1
758267	SADAC GIP	-28.77787	32.07201	4.887	1.4
758272	SADAC GIP	-28.78853	32.07517	10.051	2.2
758273	SADAC GIP	-28.77019	32.06547	16.992	11.4
758274	SADAC GIP	-28.7734	32.07761	6.876	1.4
758280	SADAC GIP	-28.77179	32.08313	9.643	32
758281	SADAC GIP	-28.77179	32.08314	9.679	24
758284	SADAC GIP	-28.77181	32.08313	9.715	34
758285	SADAC GIP	-28.77179	32.08316	9.751	27
758286	SADAC GIP	-28.77182	32.08313	9.751	45
758340	SADAC GIP	-28.81706	32.08313	0	1.7

2.5 Desktop-identified wetland areas

Based on available National Wetland Freshwater Ecosystem Priority Areas (NFEPA) (Van Deventer, 2018), and evaluated on a desktop level, suggest that there are several wetlands associated with the project area as well as the Richards Bay lagoon Estuary. No desktop-identified wetlands were identified at the proposed Generator development site. We refer the readers of this report to the Specialist Wetland Assessment for the development of further details regarding wetlands in the project area.

In terms of wetland geo-hydrology, baseflow is considered the most important contributor to stream and wetland health. Baseflow (refer to Figure 2-6) is a non-process-related term to signify low amplitude high-frequency flow in a river during dry or fair-weather periods. Baseflow is not a measure of the volume of groundwater discharged into a river or wetland, but it is recognised that groundwater contributes to the baseflow component of a river or wetland flow.

Available literature (WRC, 2015; DWAF, 2006) suggests groundwater contribution to baseflow ranges from 51 mm/yr (PITMAN MODEL) to 131 mm/yr (HUGHES MODEL). This relates to approximately 4% to 12% of rainfall.

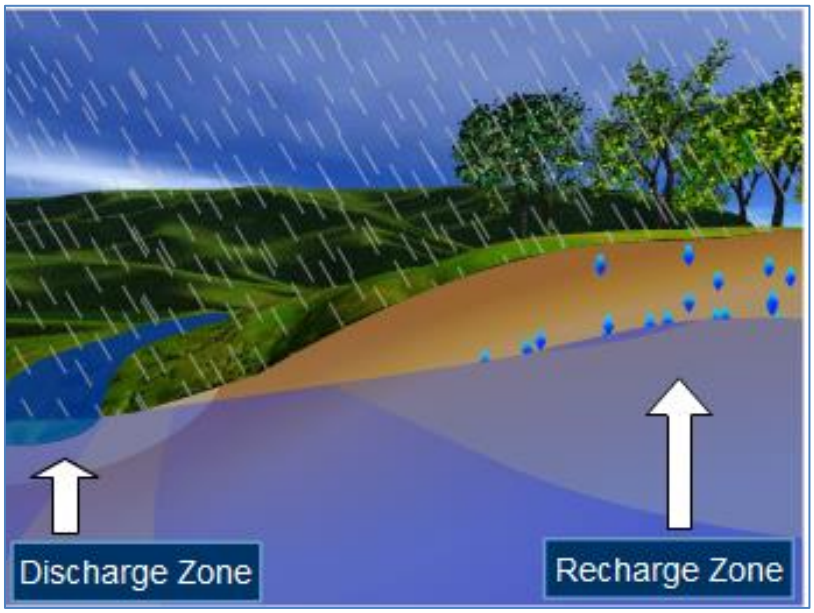


Figure 2-6: Groundwater baseflow concept (DWS, 2011)

2.6 Present ecological state (PES) and environmental sensitivity and ecological importance (EIS) – quaternary scale

Table 2-4 provides a summary of the PES and EIS for the quaternary catchment associated with the project area (WRC, 2015). The resource management objectives (RMO) for these wetlands need to maintain the current PES and EIS post-development.

Table 2-4: Summary of PES and EIS for the Quaternary Catchment

Quat	PES	EIS
W12F	Class C: Moderately Modified	Moderate

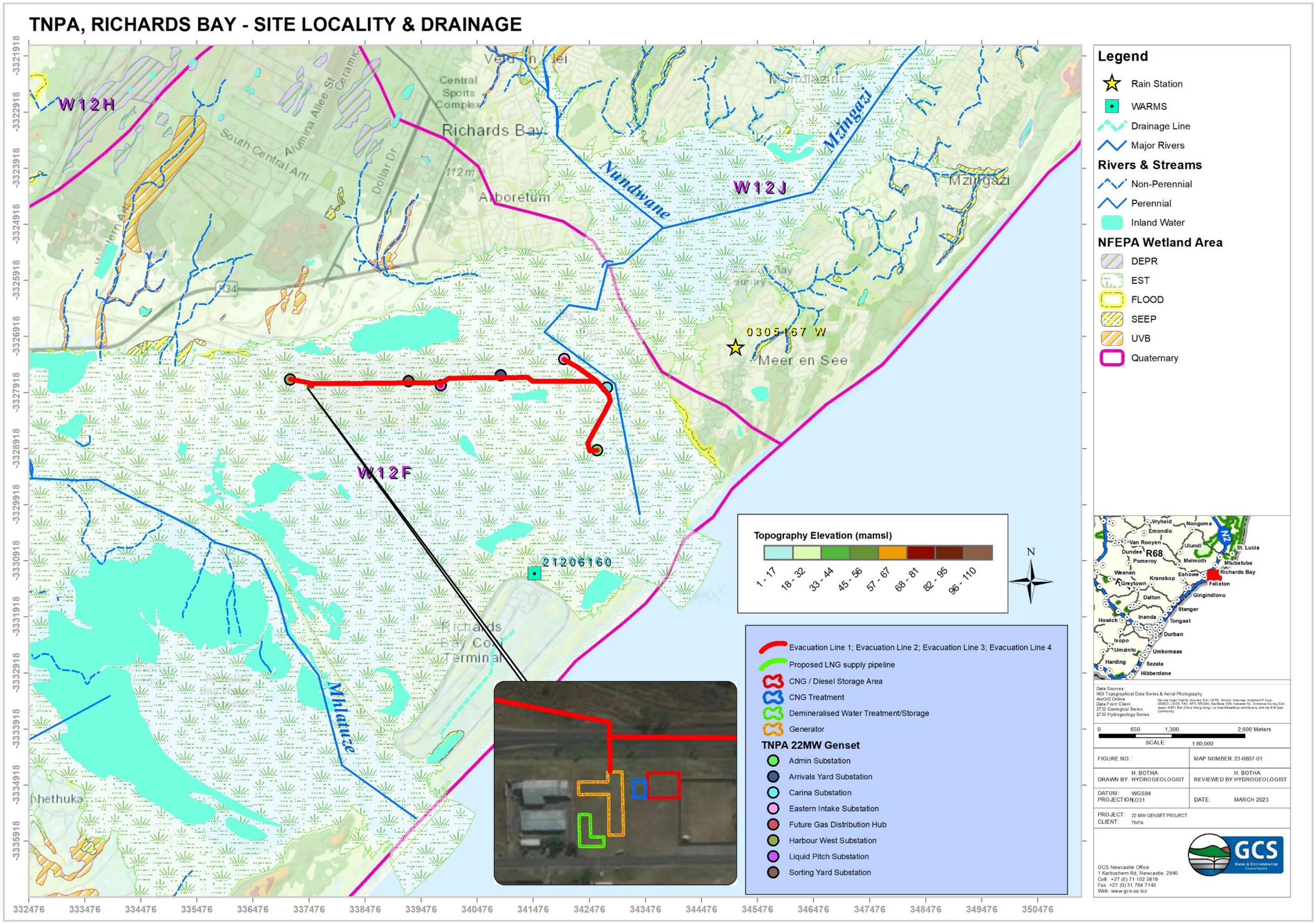


Figure 2-7: Site locality & drainage

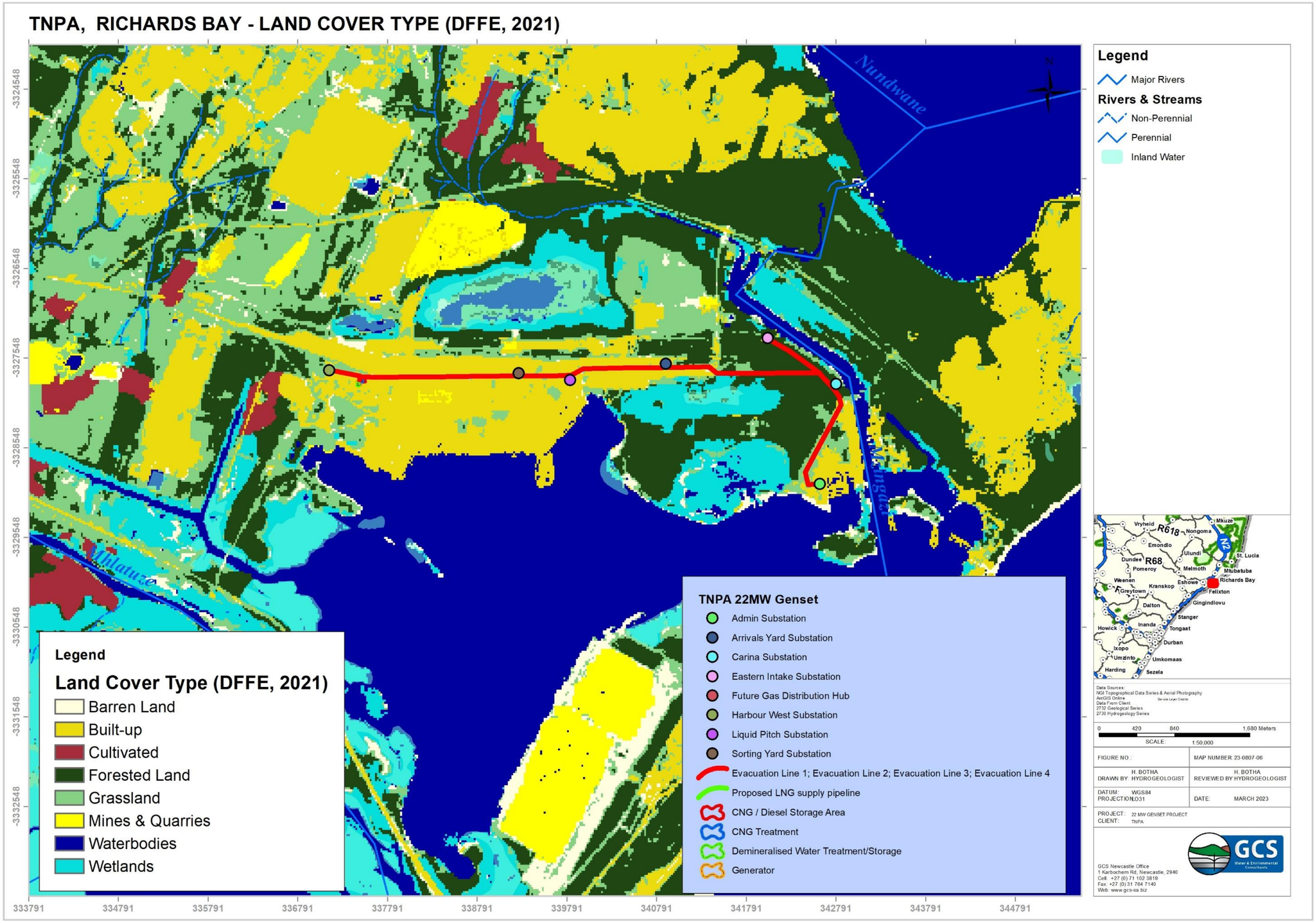


Figure 2-8: Land cover types (DFFE, 2021)

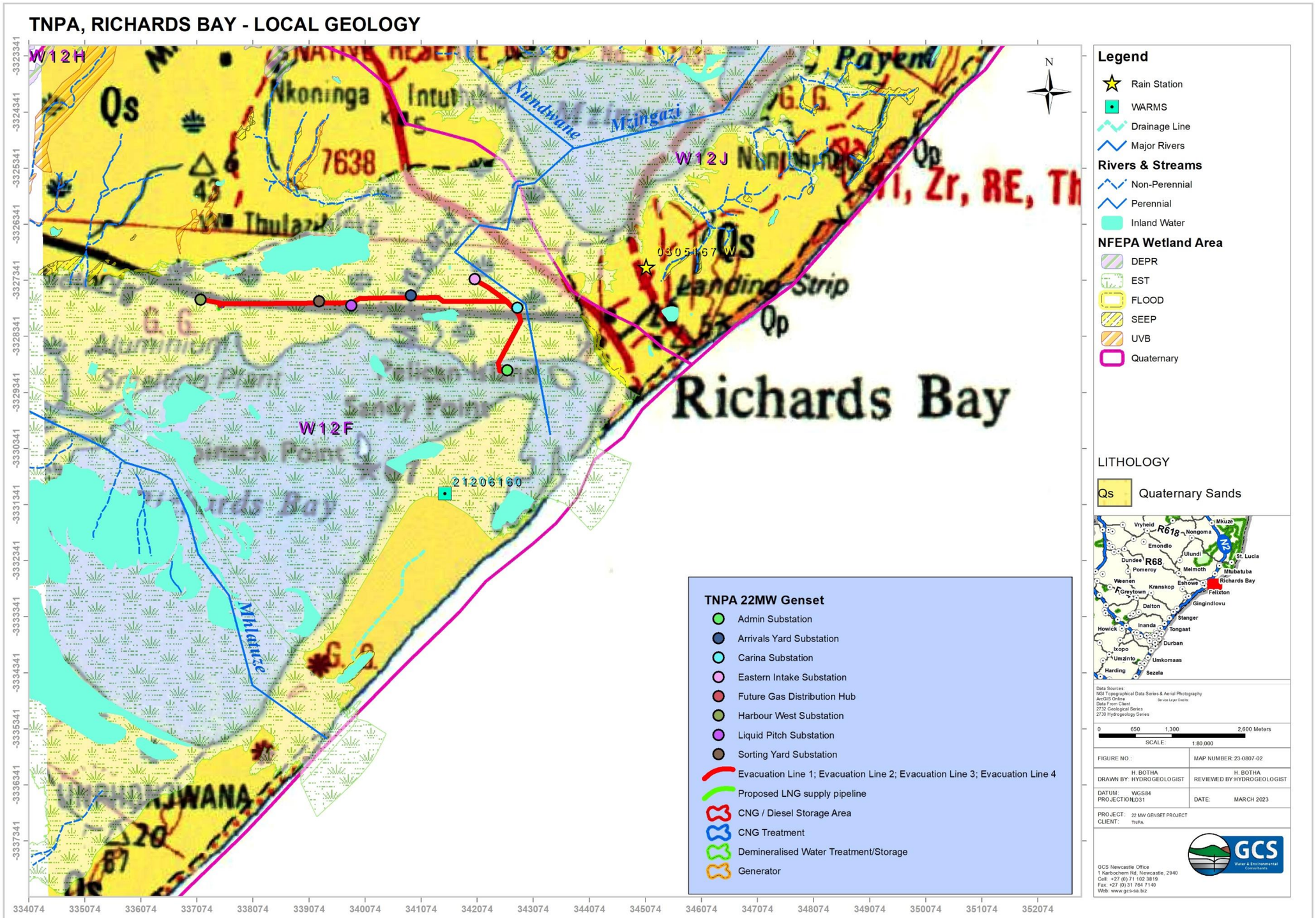


Figure 2-9: Local geology

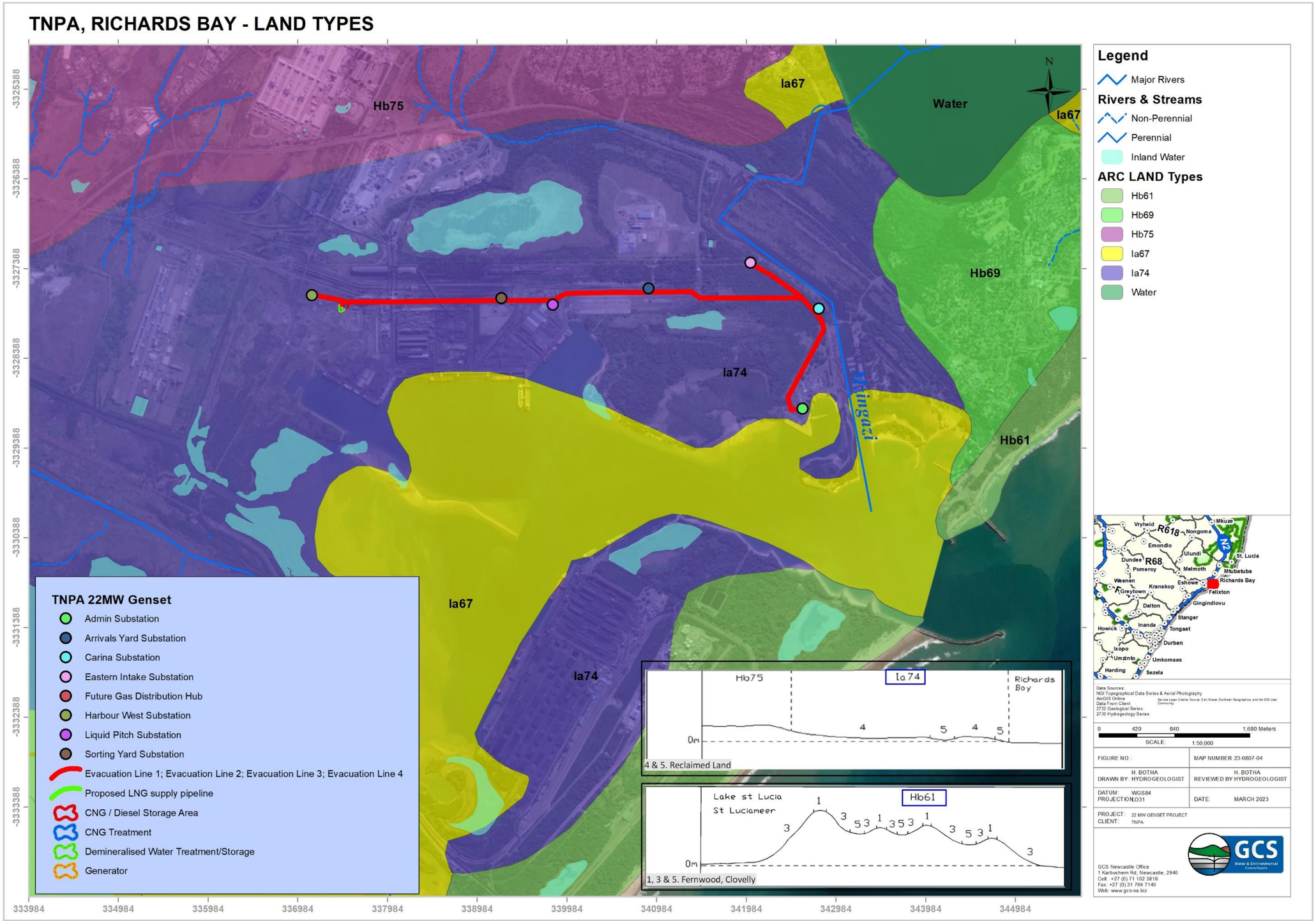


Figure 2-10: Soil/land types

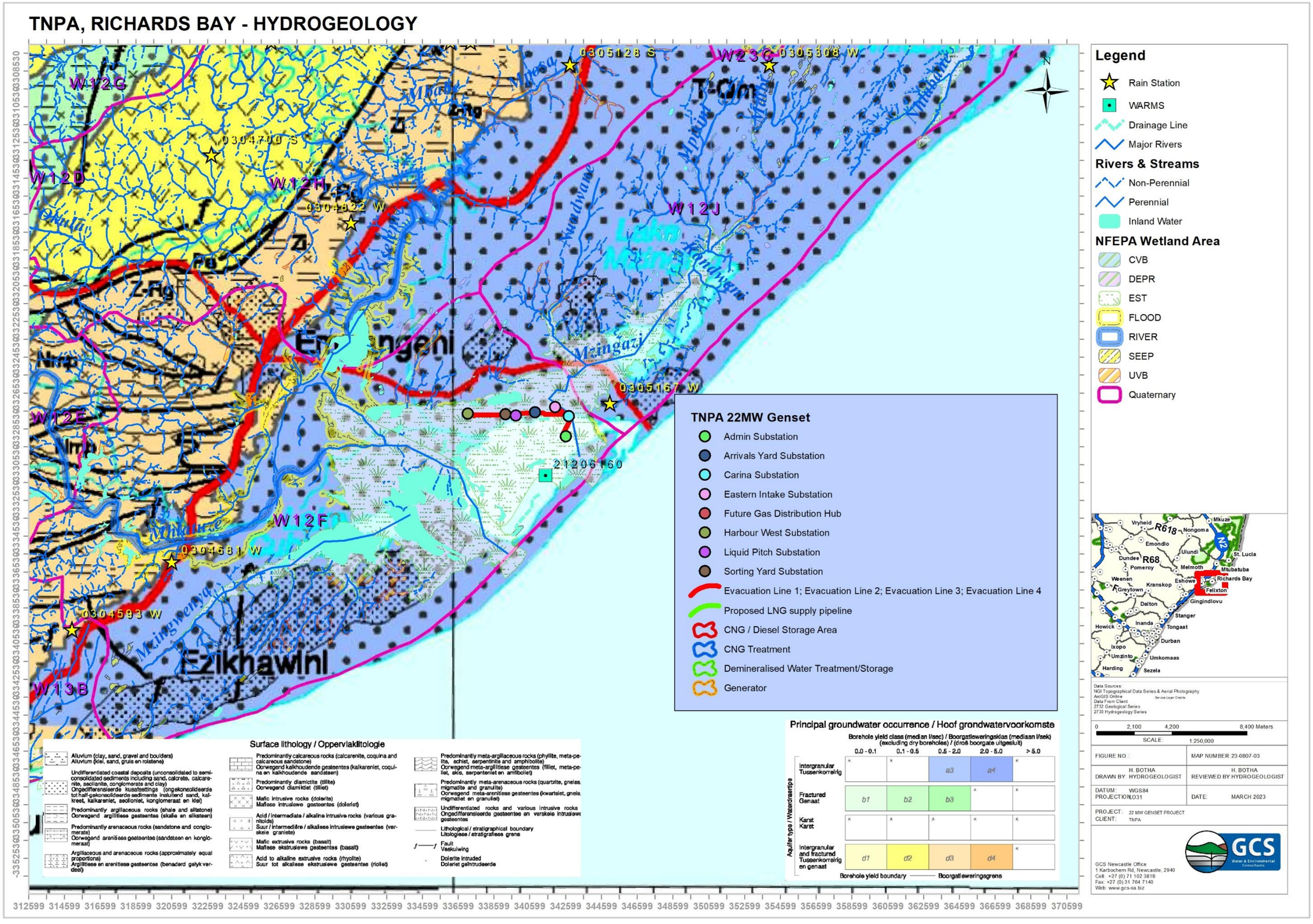


Figure 2-11: Local hydrogeology

3 SOIL AND WATER QUALITY

The soil, groundwater and surface water quality for the project area were derived from available literature and site-specific data and is discussed in the sub-sections below.

3.1 Groundwater quality

Literature suggests that the electrical conductivity (EC) for the underlying aquifers generally ranges between 0 – 70 mS/m (milli Siemens/meter) and the pH ranges from 6 to 8 (refer to Figure 3-1). Groundwater is described as Type D with sodium, potassium, chloride, and sulphate as the dominant ions. Similar conditions are expected for surface water bodies fed by natural groundwater baseflow. Water obtained from the aquifers can generally be used for domestic and recreational use.

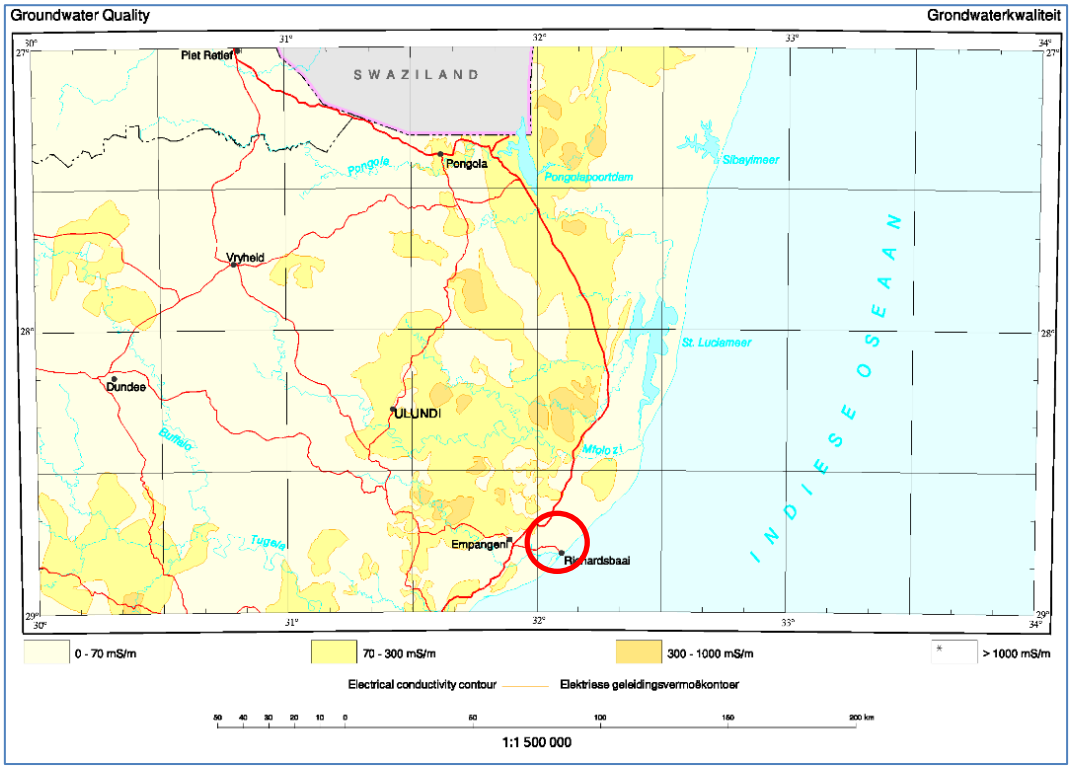


Figure 3-1: Groundwater conductivity for the study area (King, et al., 1998)

3.2 Surface water

No surface water streams exist on the site. Thus, no surface water quality data is available or could be generated.

3.3 Soil quality

GCS undertook a soil survey on the 12 and 13th of February 2024. The findings of the soil survey and site walkover assessment are summarised in Table 3-2 and the spatial distribution of the investigation points are shown in Figure 3-2.

During the soil survey, a photo-ionisation-detector (PID) was used to determine if there are volatile organic carbons (VOC) on the premises and in the soils. The VOC readings ranged from 0.4 to 30 ppm and were measured at various depths. Acceptable VOC levels for hydrocarbons are <100 ppm.

Several soil samples were collected from higher VOC reading auger holes and submitted to the EPL Testing Laboratory (SANS T0419) for hydrocarbon screening. The results of the hydrocarbon screening are summarised in Table 3-1 and laboratory certificates are available in **Appendix A**. The site is considered clean and no existing hydrocarbon contamination is observed.

Table 3-1: Hydrocarbon screening of composite soil samples

LabNo.	49365	49365	49365	49365
Date Received.	20/02/2024	20/02/2024	20/02/2024	20/02/2024
Date Analysed.	20/02/2024	20/02/2024	20/02/2024	20/02/2024
Date Reported.	2024/02/26	2024/02/26	2024/02/26	2024/02/26
Project Name.	TNP Richards Bay	TNP Richards Bay	TNP Richards Bay	TNP Richards Bay
Project Number.	23-0807	23-0807	23-0807	23-0807
Sample number.	**RB-AH1**	**RB-AH3**	**RB-AH4**	**RB-AH7**
Matrix.	Soil	Soil	Soil	Soil
BTEX/GRO Dilution.	20	20	20	20
TPH Dilution.	1	1	1	1
BTEX/GRO Units.	µg/kg	µg/kg	µg/kg	µg/kg
TPH Units.	mg/kg	mg/kg	mg/kg	mg/kg
MTBE.	<100	<100	<100	<100
TAME.	<100	<100	<100	<100
Benzene.	<8	<8	<8	<8
Toluene.	<20	<20	<20	<20
Ethylbenzene.	<8	<8	<8	<8
m+p-Xylene.	<16	<16	<16	<16
o-Xylene.	<8	<8	<8	<8
1,3,5-Trimethylbenzene.	<8	<8	<8	<8
1,2,4-Trimethylbenzene.	<8	<8	<8	<8
Naphthalene.	<8	<8	<8	<8
GROC7-C9.	<200	<200	<200	<200
TPHC10-C14.	<20	<20	<20	<20
TPHC15-C36.	<22	<22	<22	<22
TPHC10-C36 Total.	<22	<22	<22	<22

Table 3-2: Summary of soil auger hole profiles and photographs

Auger Hole ID	Coordinates		Depth (m)		Soil Description	Comments	VOC (ppm)	Photo
	Latitude	Longitude	From	To				
R-AH1	-28.78586	32.03188	0	1.5	Light brown. Fine Sand. Dry.	Refusal at 2m.	0.4 at 0.5m	
			1.5	2	Brown. Fine Sand. Dry		0 at 1m	
							13.5 at 1.5m	
							17.4 at 2m	
R-AH2	-28.785686	32.031723	0	1.4	Light Brown. Fine Sand. Dry	Refusal at 1.4m.	0 at 0.5m	
							0.1 at 1m	
R-AH3	-28.785491	32.031708	0	0.5	Dark Brown. Fine Sand. Dry.	Refusal at 2.2m.	0 at 0.5m	
			0.5	2.2	Light Brown. Fine Sand. Dry.		0 at 1m	
							0 at 1.5m	
							30.8 at 2m	
R-AH4	-28.785426	32.031471	0	0.4	Brown. Fine Sand. Dry	Refusal at 1.7m.	3.4 at 0.5m	
			0.4	1.7	Light Brown. Fine Sand. Dry		0.6 at 1m	

Auger Hole ID	Coordinates		Depth (m)		Soil Description	Comments	VOC (ppm)	Photo
	Latitude	Longitude	From	To				
							0 at 1.5m	
R-AH5	-28.785646	32.03149	0	0.4	Brown. Fine Sand. Dry.	Refusal at 1.3m.	0 at 0.5m	
			0.4	1.3	Light Brown. Fine Sand. Dry		0 at 1m	
R-AH6	-28.785818	32.031527	0	0.4	Brown. Fine Sand. Dry.	Refusal at 0.8m	0 at 0.5m	
			0.4	0.8	Light Brown. Fine Sand. Dry			
R-AH7	-28.785964	32.031536	0	0.2	Brown. Fine Sand. Dry.	Refusal at 2.3m.	0 at 0.5m	
			0.2	2.3	Light Brown. Fine Sand. Dry.		0 at 1m	
							0 at 1.5m	
							0 at 2m	

Auger Hole ID	Coordinates		Depth (m)		Soil Description	Comments	VOC (ppm)	Photo
	Latitude	Longitude	From	To				
Drain 1	-28.785379	320.31812					0.6	
Drain 2	-28.786242	32.03188					0	

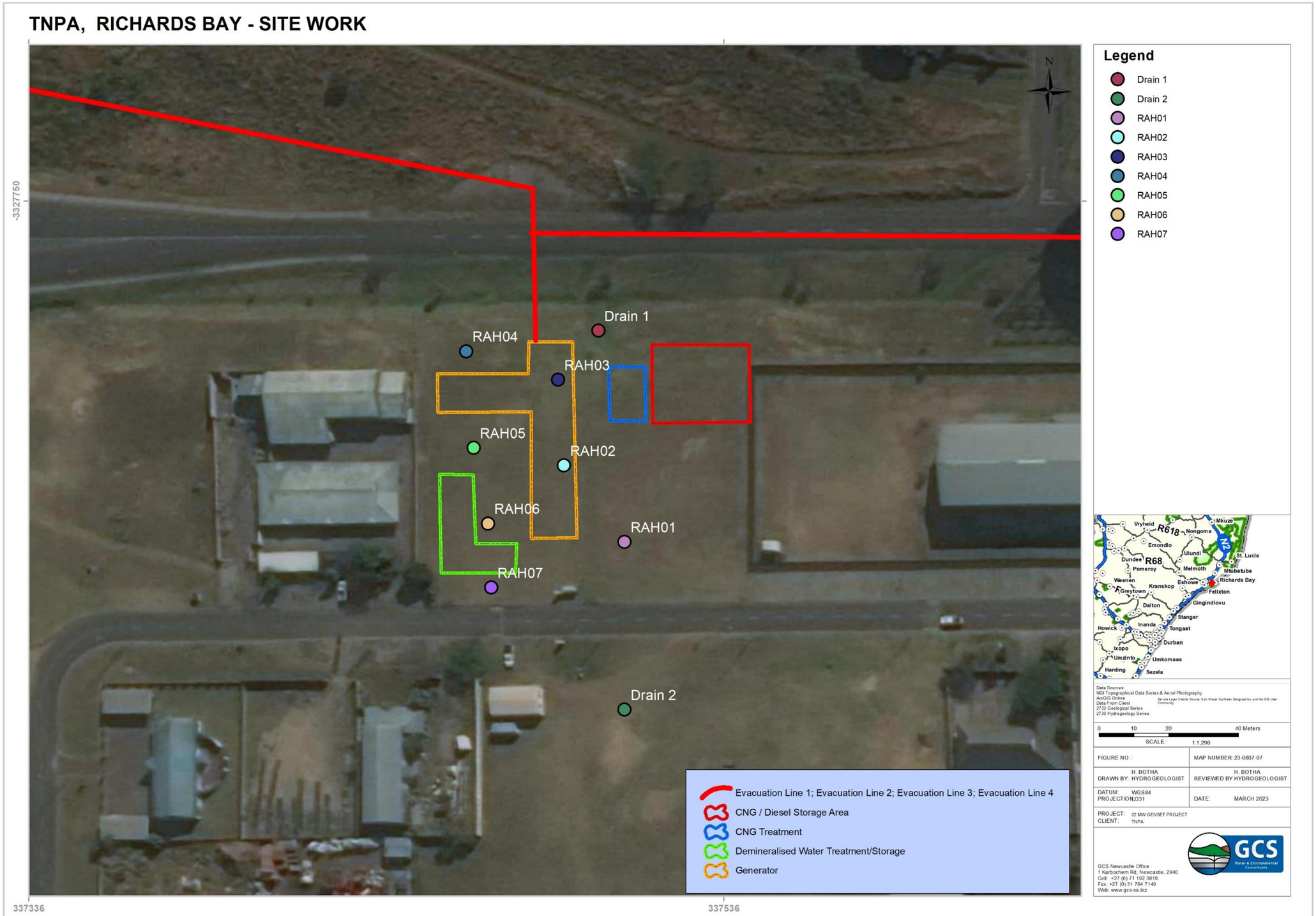


Figure 3-2: Field investigation inspection points

4 RISK ASSESSMENT & MITIGATION

The anticipated environmental risk concerning the construction and operational phase of the proposed project was evaluated. The activities entail:

- Construction of a dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas.
- The installation of diesel fuel tank(s) storage of a total capacity of 600 m^3.
- The installation of a 200 m^3 tank storage of demineralised water.
- Installation of the evacuation lines to the substations.
- Construction of a site fence.
- Development of an auxiliary pit.
- Installation of a drain facility for the used diesel and sludge.
- Installation of a transmission line from the generator to the Harbour West Substation, Sorting Yard Substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed to allow for power distribution from the generator to the rest of the port; and
- Installation of an LNG pipeline from the Gas hub to the Generator site.

The source-pathway-receptor (SPR) model (DWAF, 2008) was used to evaluate potential pollution sources and primary receptors within the study area. SPR is considered as follows:

- S: Activities listed above and associated work in the development and operation of the facilities.
- P: Overland flow/runoff and direct seepage.
- R: There are no surface water receptors associated with the project site and no recognised rivers/streams fall within proximity of the generator site and evacuation lines. The soils associated with the project area and where work will be conducted, as well as the groundwater table, are the only receptors identified.

Risk assessment entails understanding the generation of a hazard, the probability that the hazard will occur, and the consequences if it should occur. The net consequence is established by the following equation:

Consequence = (Duration + Extent + Irreplaceability of resource) x Severity

The environmental significance of an impact was determined by multiplying the consequence by probability. The risk significance rating is summarised in Table 4-1.

Table 4-1: Risk rating scale

Criteria	Rating Scales
Significance	Very high – negative (-49 to -66)
	High – negative (-37 to -48)
	Moderate – negative (-25 to -36)
	Low – negative (-13 to -24)
	Neutral - Very low (0 to -12)
	Low–positive (0 to 12)
	Moderate–positive (13 to 24)
	High–positive (37 to 48)
	Very high – positive (49 to 66)

Several risks associated with the construction and operational phase of the project were identified and are presented in Table 4-2 and Table 4-3. No closure/decommissioning phase risks are anticipated and would likely closely relate to construction phase risks (if decommissioning of the site takes place).

4.1 Construction phase

The following activities are anticipated during the construction phase of the project:

- Typical earthworks are required to clear the areas.
- Construction of access roads, housing foundations and buildings.
- Excavations.
- Establishment of service platforms, material handling areas and other temporary infrastructure.
- Dust suppression of access roads.
- Placing of topsoil in designated areas.

The identified possible hydrology impacts for the construction phase include (refer to Table 4-2):

- The destruction of the vadose zone sediments by clearing activities (levelling) or cut and fill activities. This impact is permanent and is therefore not included in the impact table as no mitigation measures can be recommended. This could lead to sediment runoff and surface water contamination.
- Clearing topsoil from footprint areas will influence the rate of infiltration of water to the shallow groundwater system and/or baseflow component to shallow streams.
- Handling of waste and transport of material can cause various types of spills (i.e. hydrocarbons) which can infiltrate and contaminate the soils and groundwater system.
- Oil and fuel spills and leakages at vehicle park areas, and in the project areas, may cause poor-quality seepage and soil contamination.

Visual monitoring of the site on an ongoing (monthly) basis will serve as a 1st order detection system for any soil and water pollution that may take place. The collected information should be used as part of an active soil/water management system and act as an early warning system for the application of mitigation measures. The identified impacts are not likely to negatively affect the commencement of the proposed projects.

4.2 Operational phase

The possible hydrological impacts for the operational phase of the project are likely to be (refer to Table 4-3):

- Poor quality stormwater discharge onto soils or into the surface environment.
- There is a potential for poor quality seepage from the generator, diesel storage areas and stormwater system that will be developed (i.e., poor workmanship, wear and tear over time or clogging of stormwater systems). Raw sewage would impact both the soils and could run into the nearby watercourses. Prolonged pollution may migrate to the shallow groundwater environment.
- Oil and fuel spillages associated with service vehicles accessing and undertaking maintenance work at the site, as well as leakages from residential vehicles parked at the site.

In general, the operational phase risk associated with the project is predicted **low**, and it is foreseen that the impacts can be managed.

4.3 Closure and decommissioning phases

No closure or decommission phase is likely to occur, and if decommission takes place it is foreseen that the risks and impacts will be similar to the construction phase.

4.4 Alternatives considerations

No alternative development sites are proposed. The proposed project takes place in an already-developed area under the control of TNPA.

4.5 Cumulative impacts

In terms of the construction and operational phase, there are expected cumulative impacts on the soils associated with the site. The impact is predicted to improve after the development has ceased.

Table 4-2: Soil-water impacts during the construction phase

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post Mitigation						
			Duration (D)	Extent (E)	Potential for impact on irreplaceable resources (I)	Severity (S)	Consequence (C)	Probability (P)	Significance		Duration (D)	Extent (E)	Potential for impact on irreplaceable resources (I)	Severity (S)	Consequence (C)	Probability (P)	Significance
Vadose zone soils and subsequent aquifer (groundwater table)	Disturbing vadose zone during soil excavations/construction activities.	Net Result of Earthworks and Construction	Medium Term (3)	Site (2)	Yes (1)	Moderate (-2)	Slightly detrimental (-7 to -12) (-12)	Definite (2)	Low – negative (-13 to -24) (-24)	• Only excavated areas apply to the project area. • Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils. • Cover excavated soils with a temporary liner to prevent contamination. • Retain as much indigenous vegetation as possible. • Exposed soils are to be protected using a suitable covering or revegetating.	Medium Term (3)	Site (2)	Yes (1)	Low (-1)	Negligible (-6 to 0) (-6)	Probable (1)	Neutral/ Negligible (0 to -12) (-6)
	Poor quality seepage from machinery used to excavate soils. Oil, grease, and fuel leaks could lead to hydrocarbon contamination of the vadose zone - which could percolate into the shallow aquifer.	Net Result of Earthworks and Construction	Medium Term (3)	Site (2)	Yes (1)	Moderate (-2)	Slightly detrimental (-7 to -12) (-12)	Definite (2)	Low – negative (-13 to -24) (-24)	• Park heavy machinery in lined areas and place drip trays under vehicles at the site. • Visual soil assessments for signs of contamination during construction (monthly)	Medium Term (3)	Site (2)	Yes (1)	Low (-1)	Negligible (-6 to 0) (-6)	Probable (1)	Neutral/ Negligible (0 to -12) (-6)

Table 4-3: Soil-water impacts during the operational phase

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post Mitigation						
			Duration (D)	Extent (E)	Potential for impact on irreplaceable resources (I)	Severity (S)	Consequence (C)	Probability (P)	Significance		Duration (D)	Extent (E)	Potential for impact on irreplaceable resources (I)	Severity (S)	Consequence (C)	Probability (P)	Significance
Vadose zone soils and subsequent aquifer (groundwater table)	Poor quality seepage from vehicles undertaking maintenance at the site	Maintenance	Medium Term (3)	Site (2)	Yes (1)	Moderate (-2)	Slightly detrimental (-7 to -12) (-12)	Definite (2)	Low – negative (-13 to -24) (-24)	• Have fuel and oil cleanup kits available to clean spillages if they occur. • Ensure maintenance vehicles are fully operational before undertaking work. • Visual soil assessments for signs of contamination during construction (monthly) • Park residential vehicles in designated areas and ensure that there are oil traps installed in the stormwater system.	Medium Term (3)	Site (2)	Yes (1)	Low (-1)	Negligible (-6 to 0) (-6)	Probable (1)	Neutral/ Negligible (0 to -12) (-6)
	Poor quality seepage from the generator, fuel storage tank and stormwater discharge onto soils over the life cycle of the operational phase.	Site occupancy	Medium Term (3)	Site (2)	Yes (1)	Moderate (-2)	Slightly detrimental (-7 to -12) (-12)	Definite (2)	Low – negative (-13 to -24) (-24)	• Have fuel and oil cleanup kits available to clean spillages if they occur. • Visual soil assessments for signs of contamination during the operational phase (monthly) • Regular inspections of the generator and fuel storage tank areas. If any pollution is observed action should be taken according to site cleanup protocols.	Medium Term (3)	Site (2)	Yes (1)	Low (-1)	Negligible (-6 to 0) (-6)	Probable (1)	Neutral/ Negligible (0 to -12) (-6)

5 MONITORING CONSIDERATIONS

Monthly visual assessments in work areas associated with the construction and operational phases are proposed. If visual and monitoring observations show areas of concern (i.e., where pollution is observed during the operational phase or in the wetland units) then it is advised mitigation measures to be formulated based on the scale of impact observed. Soil and water quality samples may also be required and will need to be determined in the field and based on the observations made at the time of site evaluation. No formal monitoring points are proposed as part of this phase.

It is proposed that the developer/land owner undertake the water quality program. The results should be reported to DWS on an annual basis if required. Otherwise, the results should be kept on record if DWS audits the site.

6 CONCLUSIONS

Based on the investigation undertaken, the following conclusions are made:

- The project falls within quaternary catchments W21F of the Pongola to Mtamvuna Elevations for the site area range from 5 to 20 metres above mean sea level (mamsl). The mean annual precipitation (MAP) for the area is in the order of 1071 mm/yr with mean annual evaporation (MAE) exceeding 1300 mm/yr.
- The project stretches from Meerensee towards the eastern side of the Richards Bay Port to the west of the Tansnet Permit Office (Harbour West area). The proposed Evacuation Lines follow existing access and service line servitudes, and no recognised rivers or streams are associated with the evacuation line that connects the Admin, Carina, Eastern Intake, Arrivals Yard, Storage Yard, Sorting Yard, and Harbour West Substations. The proposed CNG treatment, CNG/Diesel Storage Area, Demineralised Water Treatment/Storage and Generator development site is located within an area of about 0.44Ha with no recognised drainage lines or nearby rivers and streams. The site is bound towards the east and west by industrial storage houses and towards the north by Newmark Road. Rainfall-runoff generated on-site, and therefore overall drainage, is towards the north and the south of the site towards the access roads and into dedicated and existing storm drains.
- The soil survey undertaken in the vicinity of the proposed generator and diesel storage tank area suggests no existing hydrocarbon contamination is present. Soil augering during this investigation confirmed the presence of built-up quaternary sands with refusal reached ranging from 1.4 to 2.2 m. No seepage was observed in any of the auger holes, placing the water level of the site deeper than 2.2 m.
- Several soil-water risks were identified and are presented in Section 4 as well as several mitigation measures that can be considered. A monitoring plan is available in Section 5.

6.1 Avoidance areas

No avoidance areas were identified as part of this investigation.

6.2 Mitigation measures for inclusion in the EMPr

The following mitigation measures can be implemented as part of the EMPr to further reduce the risk of flooding on site and contribute to stormwater generation potential:

- **Stabilise the site entry/exiting points:**
  - A stabilised site access must be established and if possible, limited to one point only. The access allows for construction vehicles to enter the work area while preventing the unnecessary tracking of sediment onto the nearby environment from multiple locations. A stabilised entry/exit point normally consists of a stabilised rock pad.
- **Prevent erosion & manage stockpiles:**
  - Suitable material storage areas must be located up-slope of the main sediment barrier (e.g., sediment fence).
  - Stockpiles kept on site for more than two weeks will require an impervious cover (e.g., builder's plastic or geofabric) to protect against raindrop impact. Stockpiles of sandy material located behind a sediment fence will only need a protective cover if the stockpiles are likely to be exposed to strong winds.
  - On steep sites and sites with limited available space, erodible materials may need to be stored in commercial-sized bins or mini-skips before use.
- **Manage site waste:**
  - Adequate waste containers must be provided on-site and maintained in a way that potential and actual environmental harm resulting from such material waste is minimised.
  - Building activities must be carried out on a pervious surface, such as grass or open soil, or in such a manner that all sediment-laden runoff is prevented from discharging into a water body.

6.3 Reasoned opinion on whether the activity should be authorized

Based on the existing activities and mitigations to offset impacts, GCS believes that the authorisation of the activities should be considered. The final decision rests with the Government Authorities and should be based on the predicted soil-water impacts as well as the socio-economic value of the project. This statement is further founded on the assumption that the proposed mitigation measures and EMPr recommendations be implemented during the life of the project.

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APPENDIX A: LABORATORY RESULTS

ENVIRONMENTAL POLLUTION LABORATORY

TEST REPORT 49365A

Test Description: BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons
Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client:	GCS Environment South Africa				
Address:	63 Wessel Road Rivonia 2128	**Attention:** **Tel:** **Email:**	Henri Botha (011) 803 -5726 Hendrikb@gcs-sa.biz	**Project number:** **Project name:**	23-0807 TNP Richards Bay

Sample Information

Sample ID:	**RB-AH1**	**Matrix:**	Soil	**Date Received:**	2024/02/20
Dilutions:	BTEX/GRO = 20, TPH = No Dilution	**Storage:**	Fridge at 0-6°C	**Date Analysed:**	2024/02/20
Container:	Glass			**Date Issued:**	2024/02/26

BTEXMN and Gasoline Range Organics

PARAMETER	RESULT
MTBE	<100 µg/kg
TAME	<100 µg/kg
Benzene	<8 µg/kg
Toluene	<20 µg/kg
Ethylbenzene	<8 µg/kg
m+p-Xylene	<16 µg/kg
o-Xylene	<8 µg/kg
1,3,5-Trimethylbenzene	<8 µg/kg
1,2,4-Trimethylbenzene	<8 µg/kg
Naphthalene	<8 µg/kg
TPH GRO C7-C9	<200 µg/kg

Total Petroleum Hydrocarbon (C10-C36)

PARAMETER	RESULT
TPH C10-C14	<20 mg/kg
TPH C15-C36	<22 mg/kg
TPH C10-C36 Total	<22 mg/kg

Disclaimers

1) The results only relate to the test items provided, in the condition as received.
2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
4) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
5) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
Authorised Signatory

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EPL
ENVIRONMENTAL POLLUTION LABORATORY

sanas
Testing Laboratory
T0419

TEST REPORT
49365A

Test Description: BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons
Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client:	GCS Environment South Africa				
Address:	63 Wessel Road Rivonia 2128	**Attention:** **Tel:** **Email:**	Henri Botha (011) 803 -5726 Hendrikb@gcs-sa.biz	**Project number:** **Project name:**	23-0807 TNP Richards Bay

Sample Information

Sample ID:	**RB-AH3**	**Matrix:**	Soil	**Date Received:**	2024/02/20
Dilutions:	BTEX/GRO = 20, TPH = No Dilution	**Storage:**	Fridge at 0-6°C	**Date Analysed:**	2024/02/20
Container:	Glass			**Date Issued:**	2024/02/26

BTEXMN and Gasoline Range Organics

PARAMETER	RESULT
MTBE	<100 µg/kg
TAME	<100 µg/kg
Benzene	<8 µg/kg
Toluene	<20 µg/kg
Ethylbenzene	<8 µg/kg
m+p-Xylene	<16 µg/kg
o-Xylene	<8 µg/kg
1,3,5-Trimethylbenzene	<8 µg/kg
1,2,4-Trimethylbenzene	<8 µg/kg
Naphthalene	<8 µg/kg
TPH GRO C7-C9	<200 µg/kg

Total Petroleum Hydrocarbon (C10-C36)

PARAMETER	RESULT
TPH C10-C14	<20 mg/kg
TPH C15-C36	<22 mg/kg
TPH C10-C36 Total	<22 mg/kg

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Authorised Signatory

www.epl.co.za 13 Sovereign Drive Route21 Corporate Park Irene South Africa Tel: +27 12 345 1004 info@epl.co.za

EPL ENVIRONMENTAL POLLUTION LABORATORY

sanas Testing Laboratory T0419

TEST REPORT 49365A

Test Description: BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons
Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client:	GCS Environment South Africa				
Address:	63 Wessel Road Rivonia 2128	**Attention:** **Tel:** **Email:**	Henri Botha (011) 803 -5726 Hendrikb@gcs-sa.biz	**Project number:** **Project name:**	23-0807 TNP Richards Bay

Sample Information

Sample ID:	**RB-AH4**	**Matrix:**	Soil	**Date Received:**	2024/02/20
Dilutions:	BTEX/GRO = 20, TPH = No Dilution	**Storage:**	Fridge at 0-6°C	**Date Analysed:**	2024/02/20
Container:	Glass			**Date Issued:**	2024/02/26

BTEXMN and Gasoline Range Organics

PARAMETER	RESULT
MTBE	<100 µg/kg
TAME	<100 µg/kg
Benzene	<8 µg/kg
Toluene	<20 µg/kg
Ethylbenzene	<8 µg/kg
m+p-Xylene	<16 µg/kg
o-Xylene	<8 µg/kg
1,3,5-Trimethylbenzene	<8 µg/kg
1,2,4-Trimethylbenzene	<8 µg/kg
Naphthalene	<8 µg/kg
TPH GRO C7-C9	<200 µg/kg

Total Petroleum Hydrocarbon (C10-C36)

PARAMETER	RESULT
TPH C10-C14	<20 mg/kg
TPH C15-C36	<22 mg/kg
TPH C10-C36 Total	<22 mg/kg

Disclaimers

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EPL ENVIRONMENTAL POLLUTION LABORATORY

sanas Testing Laboratory T0419

TEST REPORT 49365A

Test Description: BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons
Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client:	GCS Environment South Africa				
Address:	63 Wessel Road Rivonia 2128	**Attention:** **Tel:** **Email:**	Henri Botha (011) 803 -5726 Hendrikb@gcs-sa.biz	**Project number:** **Project name:**	23-0807 TNP Richards Bay

Sample Information

Sample ID:	**RB-AH7**	**Matrix:**	Soil	**Date Received:**	2024/02/20
Dilutions:	BTEX/GRO = 20, TPH = No Dilution	**Storage:**	Fridge at 0-6°C	**Date Analysed:**	2024/02/20
Container:	Glass			**Date Issued:**	2024/02/26

BTEXMN and Gasoline Range Organics

PARAMETER	RESULT
MTBE	<100 µg/kg
TAME	<100 µg/kg
Benzene	<8 µg/kg
Toluene	<20 µg/kg
Ethylbenzene	<8 µg/kg
m+p-Xylene	<16 µg/kg
o-Xylene	<8 µg/kg
1,3,5-Trimethylbenzene	<8 µg/kg
1,2,4-Trimethylbenzene	<8 µg/kg
Naphthalene	<8 µg/kg
TPH GRO C7-C9	<200 µg/kg

Total Petroleum Hydrocarbon (C10-C36)

PARAMETER	RESULT
TPH C10-C14	<20 mg/kg
TPH C15-C36	<22 mg/kg
TPH C10-C36 Total	<22 mg/kg

Disclaimers

1) The results only relate to the test items provided, in the condition as received.
2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
4) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
5) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
Authorised Signatory

Page 4 of 4

www.epl.co.za 13 Sovereign Drive Route21 Corporate Park Irene South Africa Tel: +27 12 345 1004 info@epl.co.za

APPENDIX B: DISCLAIMER AND DECELERATION OF INDEPENDENCE

The opinions expressed in this Report have been based on site /project information supplied to GCS (Pty) Ltd by Transnet National Ports Authority (TNPA) and are based on public domain data and data supplied to GCS by the client (limited to the site layout plan and project description). GCS has acted and undertaken this assessment objectively and independently.

GCS has exercised all due care in reviewing the supplied information. Whilst GCS has compared key supplied data with expected values, the accuracy of the results and conclusions are entirely reliant on the accuracy and completeness of the supplied data. GCS does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Opinions presented in this report, apply to the site conditions, and features as they existed at the time of GCS's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which GCS had no prior knowledge nor had the opportunity to evaluate.

APPENDIX C: DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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

PROJECT TITLE

Baseline Soil Surface Water and Groundwater Assessment for the Proposed TNPA 22MW Genset Development

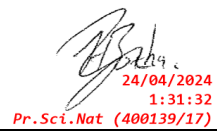
SPECIALIST INFORMATION

Specialist Company Name:	GCS SA (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	2	Percentage Procurement Recognition	
Specialist name:	Hendrik Botha			
Specialist Qualifications:	MSc Environmental Sciences (Geohydrology & Geochemistry) BSc Hons. Environmental Sciences (Hydrology) BSc. Geology and Chemistry			
Professional affiliation/registration:	PR SCI NAT 400139/17			
Physical address:	23 Roggeveld Street, Roodia, Sasolburg			
Postal address:				
Postal code:	1947	Cell:		
Telephone:	071 102 3819	Fax:		
E-mail:	hendrikb@gcs-sa.biz			

DECLARATION BY THE SPECIALIST

I, Hendrik Botha, declare that –

- I act as the independent specialist in this application.
- I will perform the work relating to the application objectively, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations, and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken concerning the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

GCS SA (Pty) Ltd

Name of Company:

4 April 2023

Date

APPENDIX D: CV OF SPECIALIST

Hendrik Botha

Technical Director

LinkedIn:

CORE SKILLS

- Project management
- Analytical and numerical groundwater modelling
- Geochemical assessments and geochemical modelling
- Hydropedology, hydrological assessments & yield assessments
- Hydrology, floodline modelling & storm water management
- Groundwater vulnerability, impact, and risk assessments
- Technical report writing
- GIS and mapping

DETAILS

Qualifications

- BSc Chemistry and Geology (Environmental Sciences) (2012)
- BSc Hons Hydrology (Environmental Sciences) (2013)
- MSc Geohydrology and Hydrology (Environmental Sciences) (2014-2016)

Membership

- Groundwater Division of GSSA
- Groundwater Association of KwaZulu Natal Member
- International Mine Water Association (IMWA)

Languages

- Afrikaans - Speak, read, write.
- English - Speak, read, write.

Projects undertaken in

- South Africa
- Nigeria
- Namibia
- Liberia
- Malawi

PROFILE

Hendrik (Henri) Botha is currently the Technical Director at GCS Water and Environment. He holds an MSc in Environmental Science in Geohydrology & Geochemistry, and a BSc Hons. Degree in Hydrology. He is registered as a SACNASP Professional Natural Scientist in the Earth Science Field. Groundwater, geochemistry and surface hydrology, as well as knowledge of water chemistry together with GIS, and analytical and numerical modelling skills, are some of his sought-after expertise. General and applied logical knowledge are his key elements in problem-solving.

Professional Affiliations:

SACNASP Professional Natural Scientist (400139/17)

Areas of Expertise:

- Project Management of water and environmental projects for mining, industrial and agriculture sectors.
- Integrated Water Investigations
- Waste classification and Impact Assessments
- Aquifer vulnerability assessments
- Geochemical sampling, data interpretation and modelling
- Groundwater impact and risk assessments
- Numerical and Conceptual Visual Modelling (Visual Modflow, ModflowFLEX, Voxler, RockWorks, Surfer and Excel)
- Hydropedology (Hydrological Soil Types) & Soils Assessments
- Floodline Modelling (HEC-RAS)
- Conceptual Stormwater Management Assessments
- Surface Water Yield Assessments
- Water and Salt Balances

Page 1 of 8 SCAN ME PROJECT RECORD

forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

TNPA Richards Bay EIA 22MW Genset

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with '*the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	TNPA Richards Bay EIA 22MW Genset
Specialist Company Name	GCS Water & Environmental consultants (pty)Ltd
Specialist Name	Hendrik Botha
Specialist Identity Number	9005235007085
Specialist Qualifications:	MSc. Environmental Science (Geohydrology & Geochemistry)
Professional affiliation/registration:	Pri.Sci.Nat (400139/17)
Physical address:	63 Wessel Road Rivonia Gauteng
Postal address:	PO Box 2597, Rivonia, 2128
Postal address	Click or tap here to enter text.
Telephone	+27 (0) 11 803 5726
Cell phone	0711023819
E-mail	hendrikb@gcs-sa.biz

2. DECLARATION BY THE SPECIALIST

I, Hendrik Botha declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

20/06/2024 9:23:58
Pr.Sci.Nat (400139/17)

Signature of the Specialist

GCS (pty)Ltd

Name of Company:

21 Jun 2024

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Click or tap here to enter text._____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

21/06/2024 10:43:50
Pr.Sci.Nat (400139/17)

Signature of the Specialist

Click or tap here to enter text.

Name of Company

Click or tap here to enter text.

Date

Click or tap here to enter text.

Signature of the Commissioner of Oaths

Click or tap to enter a date. 21/06/2024

Date

APPENDIX E5: Wetland Assessment

Anchor Environmental Consultants
8 Steenberg House
Silverwood Close
Tokai 7945, South Africa
Tel +27 21 7013420; Fax +21 21 7015280
www.anchorenvironmental.co.za
amy@anchorenvironmental.co.za

WETLAND AND AQUATIC ASSESSMENT MEMO: TRANSNET NATIONAL PORTS AUTHORITY 22MW DUAL FUEL GENERATOR PROJECT, RICHARDS BAY

Report prepared by A.G. Wright & B.M. Clark
Prepared for Gerda Bothma, GCS Water and Environmental Consultants
May 2024

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline, including the Port of Richards Bay (PoRB) as per the National Ports Act (Act No. 12 of 2005) (NPA). The proposed project includes the development of the TNPA 22MW Dual Fuel Generator and associated infrastructure as a means to generate backup electricity to ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or loadshedding (Draft Scoping Report 2024). This Projects entails the construction of the following infrastructure within the existing port areas (Figure 1, as per the Draft Scoping Report 2024):

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

GCS Environment SA (Pty) Ltd (GCS) have been appointed as the independent Environmental Assessment Practitioners (EAP) to undertake the environmental processes required to obtain approval for the proposed listed activities. GCS have in turn appointed Anchor Environmental Consultants (Pty) Ltd (hereinafter Anchor) to provide a memo regarding the requirement of a Desktop Wetland and Aquatic Assessment as well as the compilation of a Risk Matrix (as per the General Authorisation: No. 4167 2023).

Figure 1. Proposed layout for the TNPA 22MW Dual Fuel Generator Project, Richards Bay. The Estuarine Functional Zone (EFZ) of the Richards Bay estuary is shown in light blue.

All of the project infrastructure is located within the Estuarine Functional Zone (EFZ) of the Richards Bay estuary (Figure 1). This EFZ was delineated as part of the 2018 National Biodiversity Assessment (NBA). As such, an Estuarine Assessment (in this case, a Compliance Statement) is required for the proposed development under the National Environmental Management Act 107 of 1998 (as amended) (NEMA).

The National Water Act (Act 36 of 1998) defines a "water resource" as a watercourse, surface water, estuary, or aquifer. According to the Act, estuaries are not included under the definition of a "watercourse". The Revised General Authorisation in terms of Section 39 of the NWA (2016) recognises the following water uses that may be applicable to the proposed development:

(c) Impeding or diverting the flow of water in a watercourse

(i) Altering the bed, banks, course or characteristics of a watercourse

The current understanding is that a GA for these uses does not need to be applied for the proposed development, as the infrastructure will be located in an estuary, which is not a watercourse. Therefore, it is not anticipated that a desktop wetland assessment and completion of the Risk Matrix (in accordance with the General Authorisation: No. 4167 dated 08 December 2023) is required.

The Estuarine Constraint statement noted that all of the proposed infrastructure falls within highly transformed habitat, existing servitudes or other existing linear infrastructure (such as roads) (Figure 1). There is no anticipated removal of any estuarine vegetation for the proposed development, and no disturbance to functional estuarine habitat, nor changes to hydrodynamic function or water quality. There is no anticipated discharge to the marine environment. There are no irreversible changes to estuarine form or function likely to be caused by the proposed development, and the land can be returned to the current state within two years of completion of the construction phase.

WETLAND COMMENT

FOR THE TRANSNET NATIONAL PORT AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

Prepared for:

Gerda Bothma

GCS Environment SA (Pty) Ltd

Tel: 011 803 5726

Email: gerdab@gcs-sa.biz

Prepared by:

Dr. Rowena Harrison

Land Matters Environmental Consulting (Pty) Ltd.

6 Wills Close

Hilton, 3245

Tel: 078 023 0532

Email: rowena@lmenvironmental.co.za

Draft Version

May 2024

LAND MATTERS
ENVIRONMENTAL CONSULTING

Declaration of Independence by Specialist

I, Rowena Harrison**,** in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent consultant.
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding.
- Have no, and will not engage in, conflicting interests in the undertaking of the activity.
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- Will provide the competent authority with access to all information at our disposal regarding the application, whether such information is favourable to the applicant or not.
- Based on information provided to us by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.

An abridged CV of the author is provided in Appendix C as per the 'Minimum Report Content Requirements' for Specialist Reports (as per GN 320 GG 43110, dated 20 March 2020)

_____

Dr. Rowena Harrison
Soil Scientist
SACNASP Reg. No. 400715/15
Date: 16th of May 2024

Reporting Conditions

The findings, results, observations, conclusions, and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as information available at the time of compilation. The author, however, accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and by the use of the information contained in this document. No form of this report may be amended without the prior written consent of the author.

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forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Wetland Comment for the Proposed Establishment of the Transnet National Ports Authority (TNPA) 22MW Dual Fuel Generator and Associated Transmission Lines at the Port of Richards Bay, KwaZulu-Natal.

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with '*the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)*', where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Wetland Comment
Specialist Company Name	Land Matters Environmental Consulting (Pty) Ltd
Specialist Name	Rowena Harrison
Specialist Identity Number	8204210320081
Specialist Qualifications:	PhD (Soil Science)
Professional affiliation/registration:	SACNASP Pr.Sci.Nat 400715/15
Physical address:	6 Wills Close, Hilton, KwaZulu-Natal
Postal address:	6 Wills Close, Hilton
Postal address	3245
Telephone	078 023 0532
Cell phone	078 023 0532
E-mail	rowena@lmenvironmental.co.za

2. DECLARATION BY THE SPECIALIST

I, Rowena Harrison declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

Signature of the Specialist

Land Matters Environmental Consulting

Name of Company:

27 May 2024

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Rowena Harrison Click or tap here to enter text._____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

R Harrison

Signature of the Specialist

Click or tap here to enter text. Land Matters Environmental Consulting

Name of Company

Click or tap here to enter text. 27th of May 2024

Date

L MTEKA 68425286 CA

Signature of the Commissioner of Oaths

Click or tap to enter a date. 2024/05/27

Date

SOUTH AFRICAN POLICE SERVICE
COMMUNITY SERVICE CENTRE
27 MAY 2024
HILTON
KWAZULU-NATAL

1 INTRODUCTION

1.1 Project Locality and Description

Land Matters Environmental Consulting (Pty) Ltd was appointed by GCS Environment (Pty) Ltd on behalf of the Transnet National Ports Authority (TNPA) to conduct a Wetland Comment for the proposed TNPA 22MW GENSET Richards Bay project. This project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel of liquid natural gas.
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3.
- The installation of a 200m^3 tank storage of demineralised water.
- Evacuation lines to the substations.
- Fencing for the site.
- An auxiliary pit.
- A drain facility for the used diesel and sludge.
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

The proposed project is located within the existing Richards Bay Port, uMhlathuze Local Municipality, KwaZulu-Natal (Figure 1; Figure 2).

Surface water attributed to wetland systems, rivers and riparian habitats comprise an important component of natural landscapes. These systems are often characterised by high levels of biodiversity and fulfil various ecosystems functions. As a result, these systems are protected under various pieces of legislation including the National Water Act, 1998 (Act No. 36 of 1998) (NWA) and the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). This report is undertaken to provide a comment regarding the presence or absence of any wetland systems within the study site.

1.2 Scope of the Comment

The terms of reference are defined as follows:

- To determine if any wetlands occur within the study site according to the Department of Water Affairs and Forestry[1] "Practical field procedure for the identification and delineation of wetlands and riparian areas". Detailed methodology of this procedure is provided in Appendix A.

[1] Department of Water Affairs and Forestry (DWAF) is now named the Department of Water and Sanitation (DWS).

- To determine if any wetlands occur within the 500m regulated area around the proposed infrastructure as defined in GN509 of 2016 in terms of water uses as listed in Section 21c and 21i of the NWA.
- To classify any identified wetland habitats in accordance with the latest approach; 'Classification System for Wetlands and other Aquatic Ecosystems in South Africa' (Ollis et al., 2013).
- To provide a comment on the findings of the investigation into the presence of wetland systems and the acceptability of the proposed project proceeding.

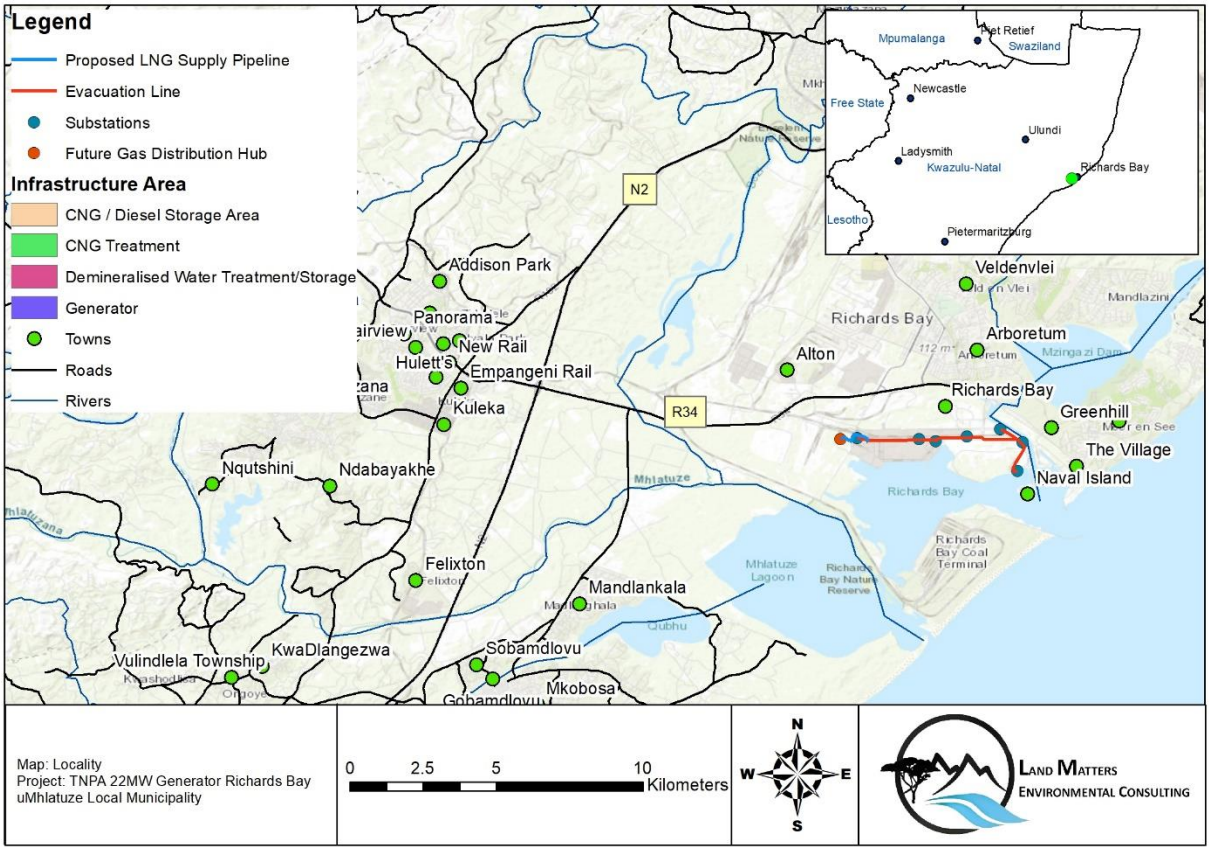


Figure 1: Locality map of the proposed project site

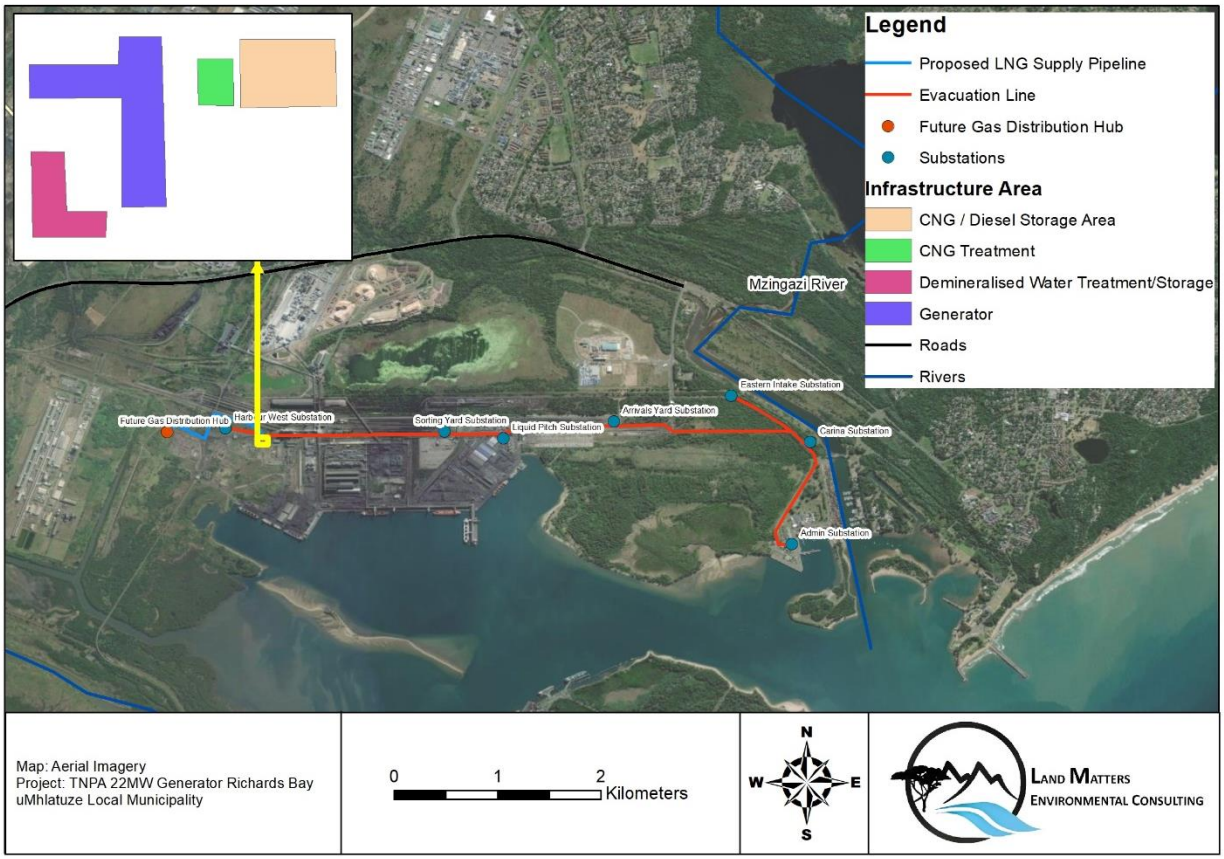


Figure 2: Aerial map of the project site showing the proposed infrastructure area and lines

1.3 Screening Tool and Legislative Requirements

The outputs of the 'National Web Based Environmental Screening Tool' site (Department of Forestry, Fisheries, and the Environment), indicated that the proposed Project site is classified as very high in terms of the aquatic biodiversity theme (Figure 3).

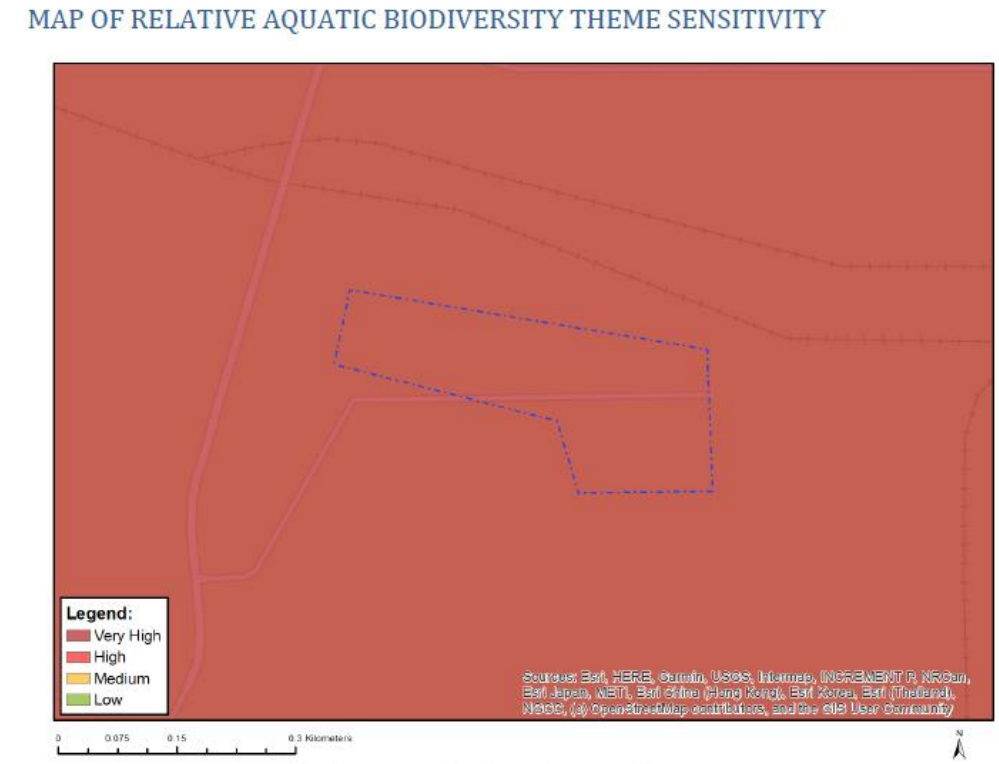
The aim of this comment was therefore to confirm or dispute the site's current environmental sensitivity classification from the wetland themed component of the aquatic biodiversity perspective.

Water resources within South Africa are furthermore governed by legislation. For this project the following legislation includes but is not limited to:

- National Water Act, 1998 (Act No. 36 of 1998) (NWA);
    - Section 21 of the NWA;
    - Government Notice (GN) 4167 as published in Government Gazette 49833 of 8 December 2023, as it related to the National Water Act, 1998 (Act No. 36 of 1998); and
    - Government Notice 704 in Government Gazette 20119.
- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
    - Environmental Impact Assessment Regulations Listing Notice 1 of 2014.
        - GNR 327 Listing Notice 1 Activity 12; and

- GNR 327 Listing Notice 1 Activity 19.

- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA);



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Figure 3: Aquatic biodiversity theme sensitivities identified (Department of Environmental Affairs, 2022)

2 BACKGROUND INFORMATION

2.1 Catchment characteristics and watercourses

The proposed project site is located within the Pongola-Mtamvuna Water Management Area (WMA) which incorporates the original Usuthu to Mhlatuze WMA, the Thukela WMA and the Mvoti to Umzimkulu WMA. Major rivers within this WMA include the Pongola, Mhlatuze, Mfolozi, Mkuze, Thukela, Mvoti, Umgeni, Umkomazi, Umzimkulu and Mtamvuna. These rivers experience significant levels of high-water demand related stress, particularly during drought seasons. Many of these surrounding communities rely on fresh water from these rivers throughout the year and supply adequate water for domestic, stock and irrigation.

More specifically, the project area is situated within the W12F quaternary catchment (Figure 4). The Mhlathuze River is the major river following through the quaternary catchment and has been diverted away from the study site. The site is located within the Estuarine Functional Zone within the Richards Bay Port.

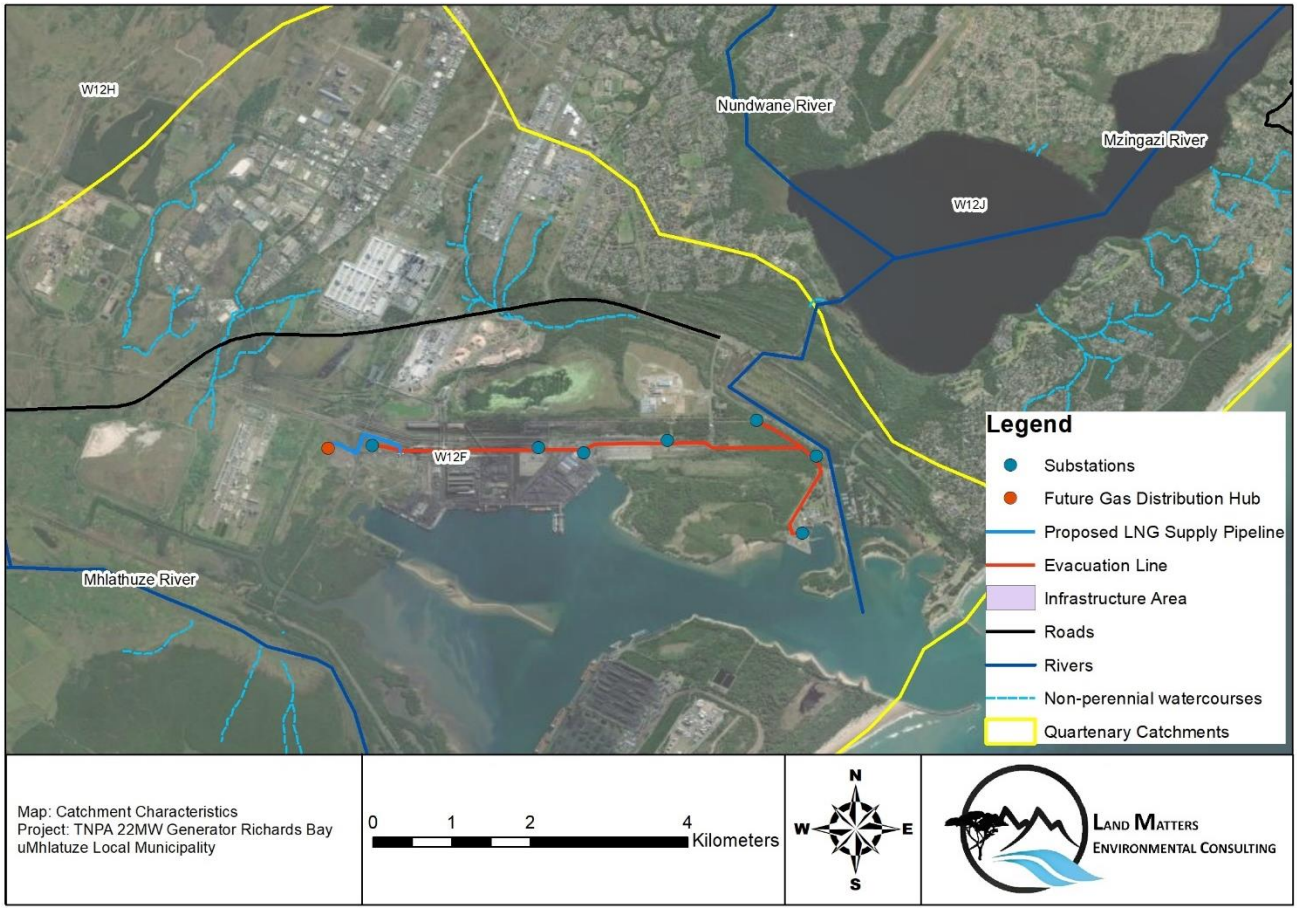


Figure 4: Hydrological setting of the project area

2.2 National Freshwater Ecosystem Priority Areas (NFEPA) and National Wetland Map 5 (NWM5)

The National Freshwater Ecosystem Priority Areas (NFEPA) project represents a multi-partner project between the Council for Scientific and Industrial Research (CSIR), South African National Biodiversity Institute (SANBI), Water Research Commission (WRC), Department of Water Affairs (DWA; now Department of Water and Sanitation, or DWS), Department of Environmental Affairs (DEA), Worldwide Fund for Nature (WWF), South African Institute of Aquatic Biodiversity (SAIAB) and South African National Parks (SANParks). More specifically, the NFEPA project aims to:

- Identify Freshwater Ecosystem Priority Areas (hereafter referred to as 'FEPAs') to meet national biodiversity goals for freshwater ecosystems; and
- Develop a basis for enabling effective implementation of measures to protect FEPAs, including free-flowing rivers.

According to the outputs of the NFEPA project, the study site (including the 500 m regulated area) is located within an area surrounded by a non-FEPA estuary. This estuary is the original Mhlathuze River mouth area, that remained after construction of the Richards Bay Port (Figure 5). The majority of the study site where the infrastructure will be located is outside of the estuarine zone as it occurs within a developed area.

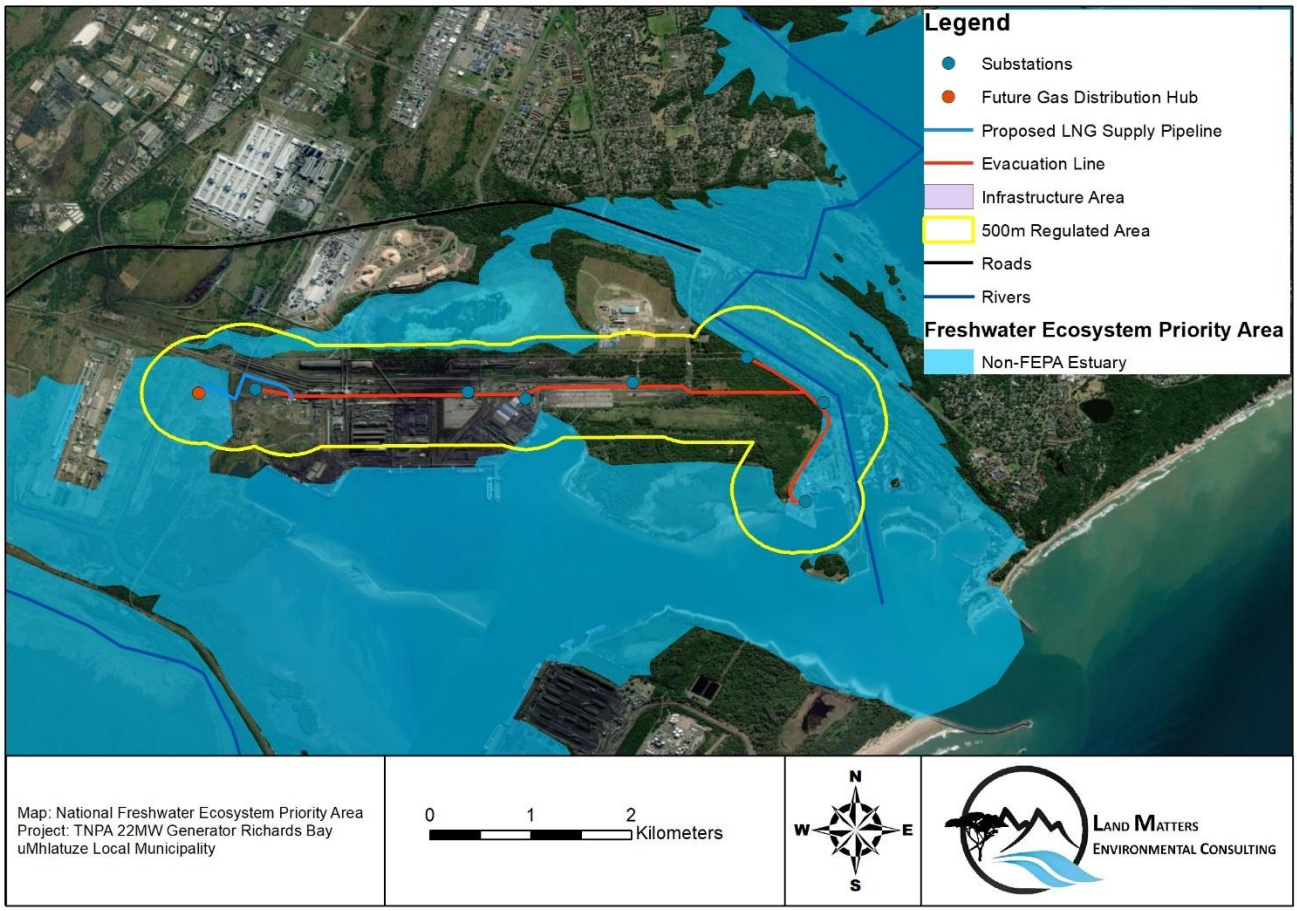


Figure 5: Outputs of the NFEPA database for the study site (2011)

As an additional database to the NFEPA database layer, the more recent National Wetland Map 5 (van Deventer et al, 2018) database was furthermore utilised to assess the project area. The National Wetland Map 5 (NWM5) forms part of the National Biodiversity Assessment (2018), within the category of the Inland Aquatic (Freshwater) Realm. This project is a multi-partner project through the CSIR and SANBI. The NWM5 has significantly improved the representation of inland wetland ecosystem types. The representation of the extent of inland wetlands has improved by 123%, whereas the incorrect representation of terrestrial ecosystems as wetlands has been reduced (Van Deventer et al, 2018).

The National Wetland Map 5 database yielded similar results to the NFEPA database, with the proposed infrastructure located in an area that is part of the Estuarine Functional Zone (Van Deveter et al., 2019) (Figure 6**Error! Reference source not found.**). As such no wetlands were classified within the study site. With the development of the Richards Bay Port in 1972, the site has however been considerably changed and is now developed for the export of coal.

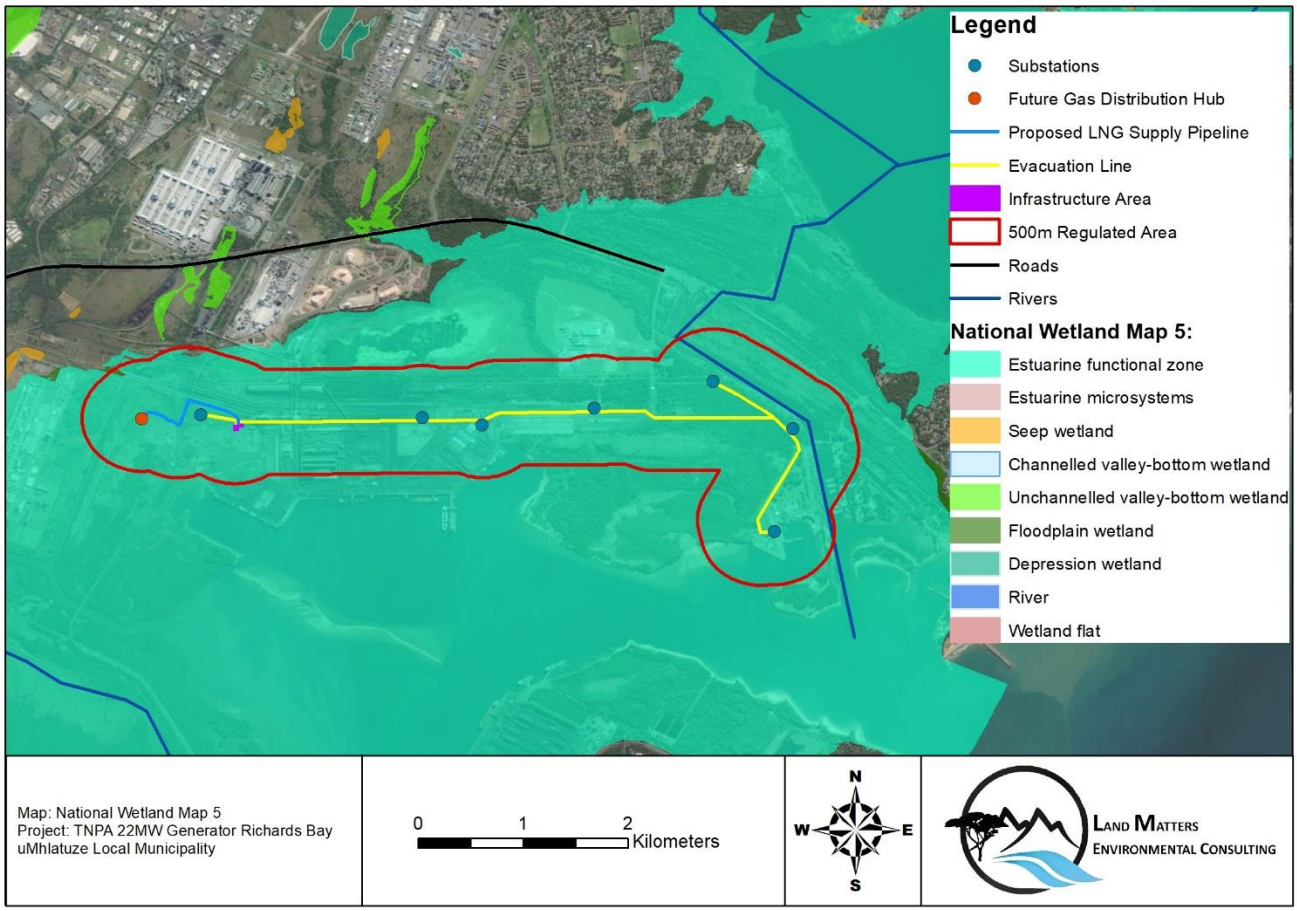


Figure 6: Wetlands in the project area as indicated by the NWM 5 (2018)

3 RESULTS

3.1 Desktop approach

An investigation into historic and current aerial imagery was first undertaken within the project site to determine if there are any wetlands present. As shown in aerial imagery from 1957 (Figure 7) the proposed infrastructure site was located within the Mhlatuze River mouth. The site is associated with a single, large, relatively undistrubed estuarine system. However in 1972, construction for the Richards Bay Port was started, with the construction of a berm, or causeway and canal system that divided the estuarine system into two zones (1) the Mhlathuze River mouth and (2) the Richards Bay Harbour and Port. The northern section has been developed into South Africa's largest shipping harbour (Richards Bay Port) whilst the southern area was designated as a nature sanctuary (Mhlathuze Estuary) (Weerts and Cyprus, 2002).

Historic aerial imagery from 1977 (Figure 8) shows the newly constructed Port and the diversion of the Mhlathuze River away from construction area. The site where the proposed infrastructure is to be constructed is now located in a developed area that is anthropogenically modified.

Figure 7: Historic aerial imagery from 1957

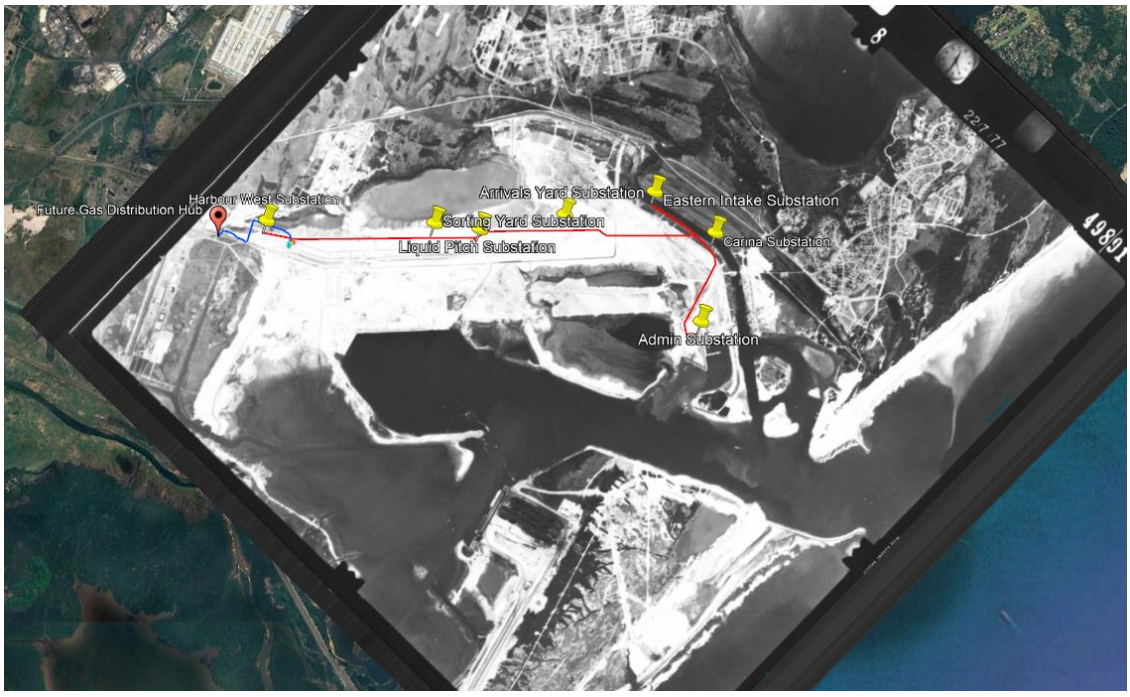


Figure 8: Historic aerial imagery from 1977

Imagery from 1983 shows the continued development of the study site (Figure 9) and thus the continued modification of the site. These impacts reduce the likelihood of any wetlands within the infrastructure site.

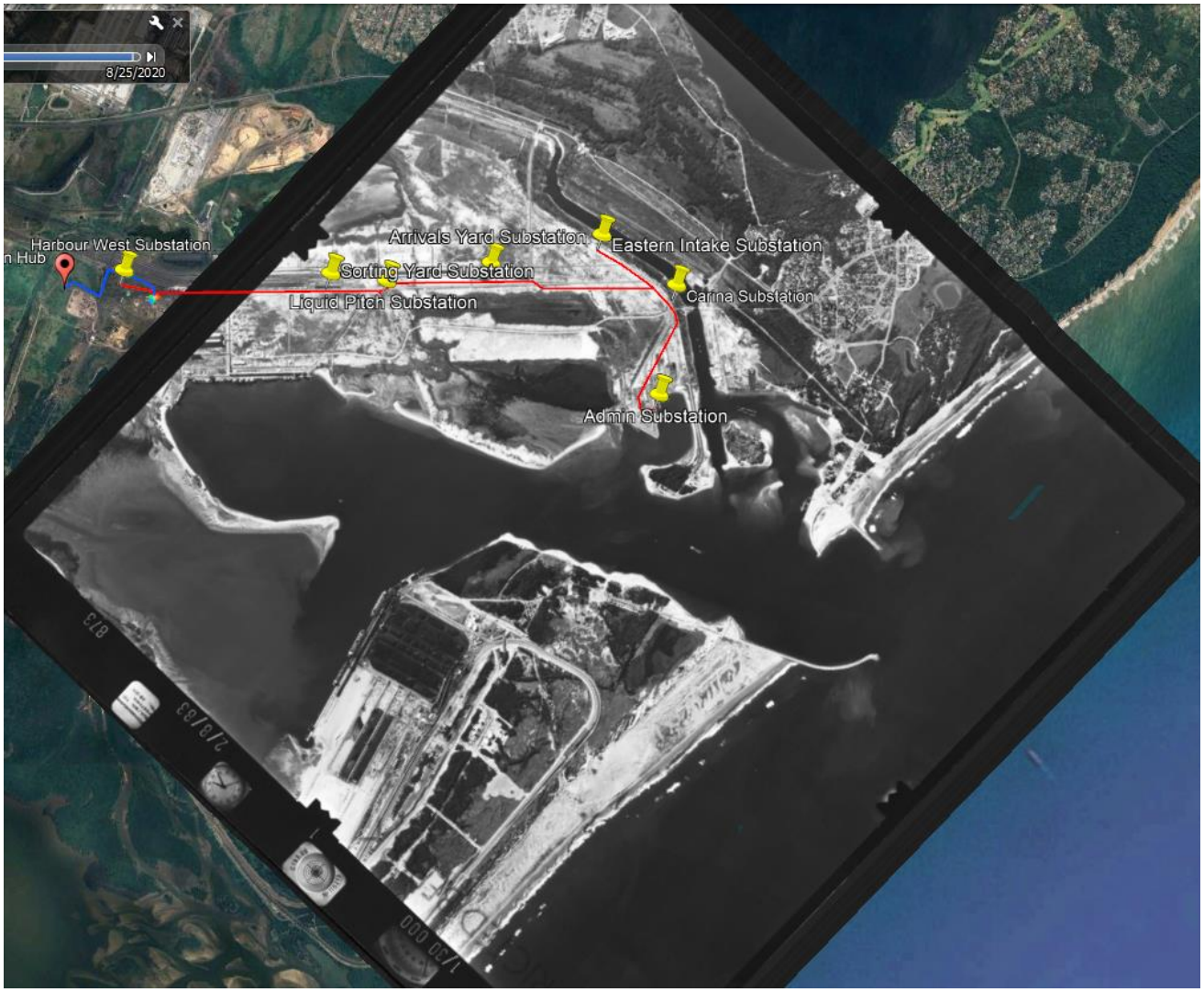


Figure 9: Historic aerial imagery from 1983 showing the Richards Bay Harbour as well as the proposed infrastructure site in an area that has already been developed

In most recent aerial imagery available (2024) (Figure 10), one can see the full development of the Port and the completely modified area in which the infrastructure is proposed to be located. Changes include topography, the presence of hardened surfaces, and the mixing, transport, and pollution of the original soil profiles within the area. No wetland areas are noted and the flow path of the Mhlathuze River has been diverted away from the Port.

Figure 10: Current aerial imagery from 2024

3.2 Field investigation

A field investigation was undertaken within the infrastructure site. This investigation recorded the soils within the site, the vegetation and topography as per the methodology described in the Department of Water Affairs and Forestry[2] "Practical field procedure for the identification and delineation of wetlands and riparian areas" (2005).

Soil augur sample points were taken throughout the study site. With the construction of the Port in the 1970s the soils have been severely changed. The soils are therefore now classified in terms of an anthropogenic classification and belong to the Anthrosols and Technosols class (as per the South African Soil Classification System, 2018). Anthrosols and Technosols are soils which have been drastically altered by human intervention such that the natural soil properties are no longer identifiable, and an anthropogenic classification is applied. Within the site, the soils are classified as Transported Technosols (Witbank Soil Form), the Chemically Polluted Technosols (Industria soil form) and the Physically Disturbed Anthrosols (Grabouw soil form). This is as a result of the intentional deposition of soil material over the original estuarine site to create the Port as well as the polluted nature of a large majority of the soils from settled coal dust and other chemicals (Figure 11, Figure 12). This soil is not associated with wetland and/or watercourse systems.

[2] Department of Water Affairs and Forestry (DWAF) is now named the Department of Water and Sanitation (DWS).

Figure 11: Soils identified in the infrastructure site including (A) the Witbank soil which includes deposited material on top of (B) the original estuarine soils

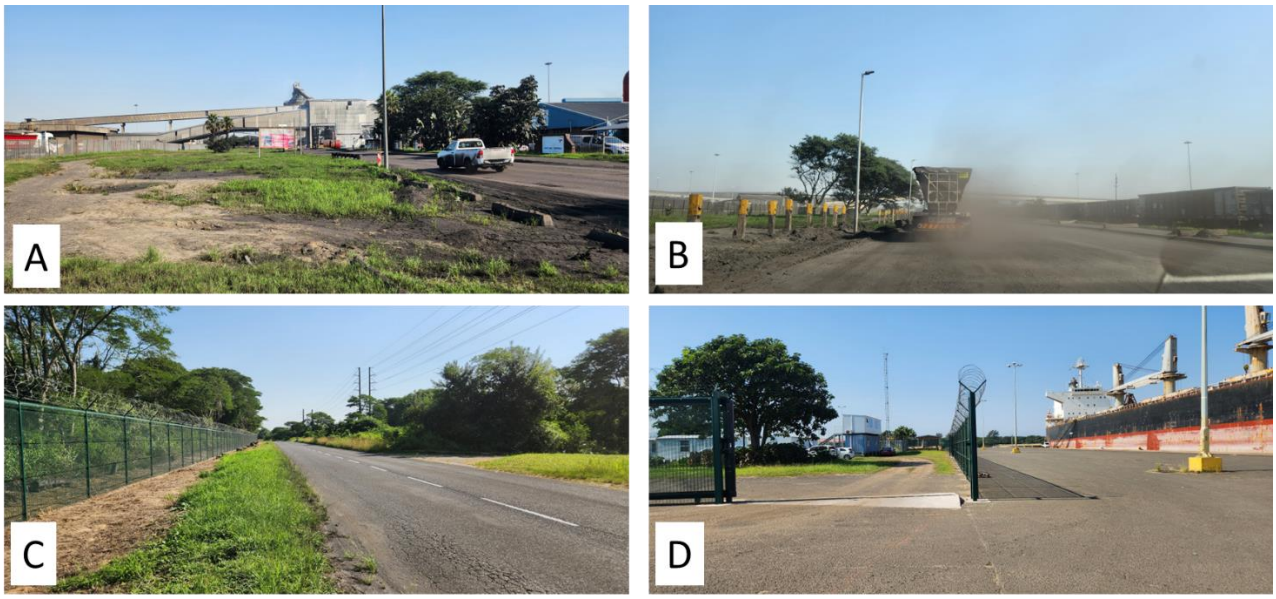


Figure 12: (A and B) Chemically polluted soils predominantly from coal dust which are situated on the roadside in which the evacuation line will be placed and (C and D) transported soils and physically disturbed soils (Witbank and Grabouw) along the road edge

During the field investigation the vegetation within the site was however noted to be completely transformed through the construction and operation of the Port area (Figure 13). The majority of the project site is now developed with portions of land under pioneer graminoid and alien invasive species including *Sporobolus* sp., *Eragrostis sp.,* and *Aristida* species.

Figure 13: Vegetation identified within the site which included (A, B and C) completely developed areas with some pioneer graminoid *species noted along the edge of roadways, and (D) pioneer* graminoid *vegetation where the infrastructure is proposed to be located*

The topography of the study site was investigated, as this is generally a good practical indicator for identifying those parts in the landscape where wetlands/watercourses are likely to occur. Generally, wetlands occur as valley bottom units, however wetlands can also occur on steep to mid slopes where groundwater or surface water discharge is taking place through seeps (DWAF, 2005). In order to classify a wetland system and/or a watercourse the localised landscape setting must be taken into consideration through ground-truthing of the proposed site after initial desktop investigations (Ollis *et al.*, 2014). The study site is located within the coastal area of the Richards Bay Port, which is characterised by flat topography as well as gentle slopes. The infrastructure is located between 4 m to 6 m above sea level on slopes between 0.05 % to 2 % and is thus in a flat area (Figure 14). The topography of the site has been changed through the development of the Port, including the construction of roads, the coal terminal, substations, and associated infrastructure.

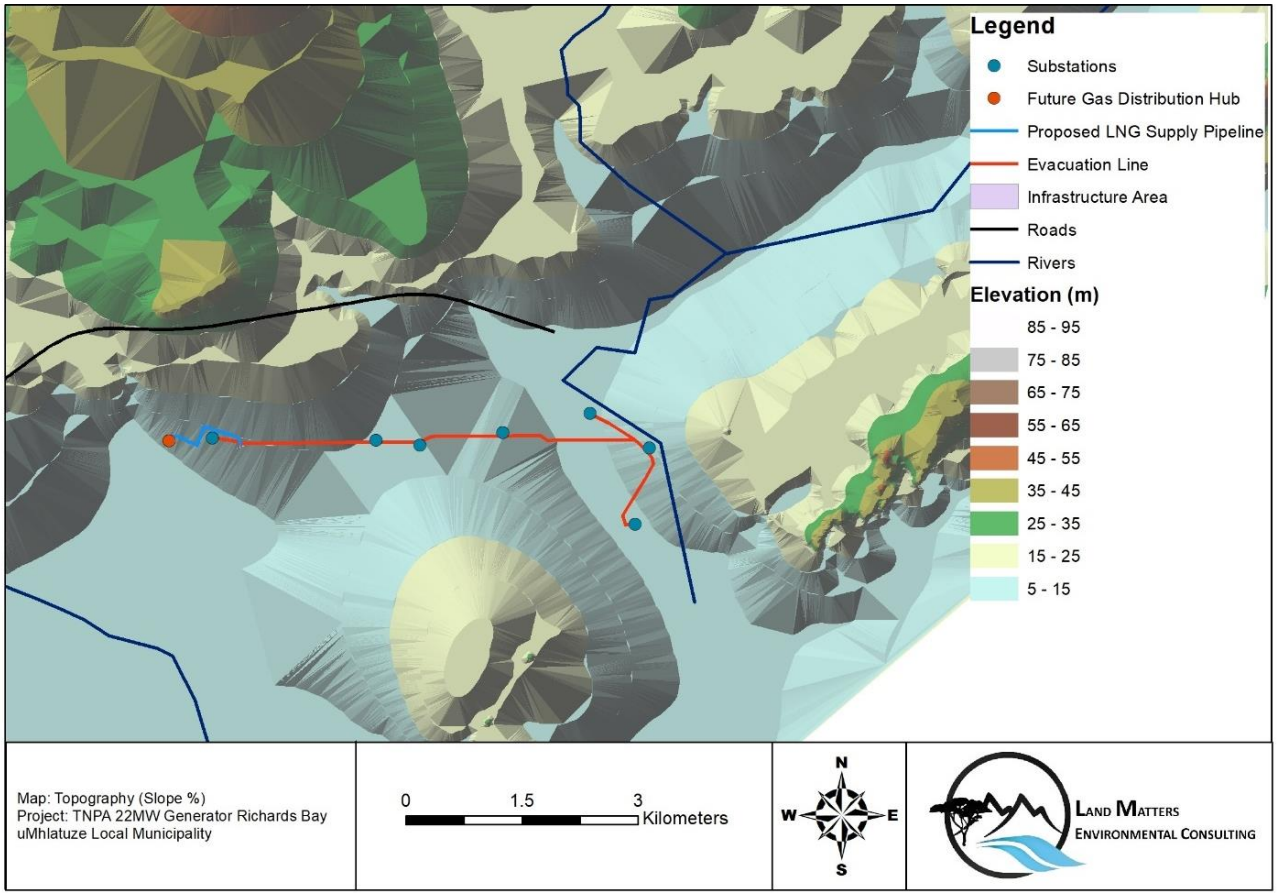


Figure 14: Topography (elevation) associated with the proposed TNPA infrastructure project site

4 WETLAND COMMENT AND CONCLUSIONS

Taking into account the findings of the desktop and field assessment, the author has identified that there are no wetlands located within the proposed infrastructure site as well as the 500 m regulated area as defined in GN509 of 2016 in terms of water uses as listed in Section 21c and 21i of the NWA. Historic and current aerial imagery show the complete transformation of the Port area in the 1970s and the diversion of the Mhlathuze River away from the Port. The development of the Port has further led to the presence of hardened surfaces, changes to the soil profiles, changes to the topography of the site and changes to the vegetation. No hydric soils or hydrophytic vegetation were furthermore identified.

Considering the above factors this Wetland Comment has reclassified the very high sensitivity classification of the site for an aquatic biodiversity (wetland) perspective to a low classification. It is therefore the author's opinion that no wetland systems will be impacted by the proposed infrastructure and the proposed project be authorised from a wetland's perspective. Best Practice Guidelines for the construction and operation of the infrastructure must be adhered to in order to minimise impacts to the receiving environment.

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6 APPENDICES

6.1 Appendix A: Methodology

Wetland Definition & Delineation Technique

For the purpose of this assessment, wetlands are considered as those ecosystems defined by the National Water Act as:

> *"land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."*

The study site was assessed with regards to the determination of the presence of wetland areas according to the procedure described in 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas – Edition 1' (DWAF, 2005). This methodology requires the delineator to give consideration to the following four indicators in order to identify wetland areas; to find the outer edge of the wetland zone; and identify the different zones of saturation within the wetland systems identified:

i. Terrain Unit Indicator: helps to identify those parts of the landscape where wetlands are more likely to occur.
ii. Soil Form Indicator: identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.
iii. Soil Wetness Indicator: identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation. Signs of wetness are characterised by a variety of aspects including marked variations in the colour of various soil components, known as mottling; a gleyed soil matrix; or the presence of Fe/Mn concretions. It should be noted that the presence of signs of wetness within a soil profile is sufficient to classify an area as a wetland area despite the lack of other indicators.
iv. Vegetation Indicator: identifies hydrophilic vegetation associated with frequently saturated soils.

In assessing whether an area is a wetland, the boundary of a wetland should be considered as the point where the above indicators are no longer present. An understanding of the hydrological processes active within the area is also considered important when undertaking a wetland assessment. Indicators should be 'combined' to determine whether an area is a wetland, to delineate the boundary of that wetland and to assess its level of functionality and health.

6.2 Appendix B: Abridged Specialist CV

Rowena Harrison

PERSONAL DETAILS

Name	Rowena Harrison
Identity Number	8204210320081
Nationality	South African
Address	6 Wills Close, Hilton, KwaZulu-Natal, 3245
Current Position	Director (Soil Scientist)
Office Location	Hilton, KwaZulu-Natal
Tel	+27 (0)78 023 0532
Email	rowena@lmenvironmental.co.za

ACADEMIC QUALIFICATIONS

2023	PhD - Soil Science (University of Free State and the University of Burgundy, France)
2015	Certificate in Wetland Rehabilitation – University of the Free State
2009	MSc (Soil Science) – University of KwaZulu-Natal
2008	Certificate course in Wetland Delineation, Legislation and Rehabilitation, University of Pretoria
2006	BSc (Environmental Science) – University of KwaZulu-Natal
2005	BSc (Applied Environmental Science) – University of KwaZulu-Natal

EMPLOYMENT RECORD

July 2021 – Present	Land Matters Environmental Consulting (Pty) Ltd – Director (Soil Scientist and Wetland Specialist)
April 2016 – June 2021	Malachite Specialist Services (Pty) Ltd – Director (Soil Scientist and Wetland Specialist)
March 2014 – March 2016	Afzelia Environmental Consultants (Pty) Ltd. – Soil Scientist and Wetland Specialist
Sept 2012 – February 2014	Strategic Environmental Focus (Pty) Ltd – Junior Wetland Specialist
February 2008 – December 2009	Afzelia Environmental Consultants cc. – Soil Scientist and Junior Environmental Assessment Practitioner

PROFESSIONAL AFFILIATIONS

- South African Council for Natural Scientific Professions – SACNASP (Pr. Sci.Nat 400715/15: Soil Science)

- International Association for Impact Assessments – IAIAsa
- South African Wetland Society
- Soil Science Society of South Africa

PUBLICATIONS

Harrison. R. (2023). Interaction entre le carbone organique dissous et l'hydropédologie dans les bassins afromontagnards (Afrique du Sud). Earth Sciences. Université Bourgogne Franche-Comté; University of the Free State (Bloemfontein, Afrique du Sud ; 1904-.).English. ffNNT : 2023UBFCK036ff. fftel-04521423.

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Harrison, R., van Tol, J. and Amiotte Suchet, P. (2022). Hydropedological characteristics of the Cathedral Peak research catchments. Hydrology. 9. 11. 189. https://doi.org/10.3390/hydrology9110189.

PROJECT EXPERIENCE

Rowena has obtained her PhD in Soil Science under joint collaboration at the University of the Free State, South Africa and the University of Burgundy, France. She is professionally affiliated to the South African Council for Natural Scientific Professions (Pr. Sci. Nat) and has 15 years consulting experience in the wetland and soil science field. She has conducted numerous wetland, hydropedology and soil assessments for a variety of development types across South Africa, Swaziland, Zimbabwe, Cameroon, and the Democratic Republic of Congo. She is a member of the International Association for Impact Assessment (IAIA), the South African Soil Science Society, as well as a founding member of the South African Wetland Society.

APPENDIX E6: Heritage and Paleontological Assessment

PHASE ONE HERITAGE IMPACT ASSESSMENT AND DESKTOP PALAEONTOLOGICAL IMPACT ASSESSMENT

FOR THE PROPOSED ESTABLISHMENT OF THE TRANSNET NATIONAL PORTS AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR AND ASSOCIATED TRANSMISSION LINES AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL

Prepared for:
GCS Environment SA (Pty) Ltd
Tel: 031 764 7130
Email: gerdab@gcs-sa.biz

Prepared by:
Land Matters Environmental Consulting
Tel: 082 408 6545
Email: phillipa@lmenvironmental.co.za

Draft Version
16 May 2024

LAND MATTERS
ENVIRONMENTAL CONSULTING

Document Title:	Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment for the Proposed Establishment of the Transnet National Ports Authority (TNPA) 22MW Dual Fuel Generator and Associated Transmission Lines at the Port of Richards Bay, KwaZulu-Natal.
Author:	Dr Phillipa Harrison – Land Matters Environmental Consulting (Pty) Ltd
Prepared For:	GCS Environment SA (Pty) Ltd
Date:	16 May 2024

GENERAL DECLARATION:

I, **Dr Phillipa Harrison**, declare that –

- I act as the independent specialist in this application in terms of regulations 12 and 13 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended, promulged under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the Applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist study relevant to this application, including knowledge of the NEMA, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the NEMA, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the Applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 49A of the NEMA.

REPORTING CONDITIONS:

- The findings, results, observations, conclusions, and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as information available at the time of compilation.
- The author accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.
- No form of this report may be amended without the prior written consent of the author.

Dr. Phillipa Harrison - BA Hons (Archaeology); PhD (Geog Sci); Reg - ASAPA
Archaeologist/Heritage Consultant
Tel: 082 408 6545
Email: phillipa@lmenvironmental.co.za

Refer to Appendix A for the CV of the Heritage Consultant

EXECUTIVE SUMMARY

Land Matters Environmental Consulting was appointed by GCS on behalf of the Applicant, Transnet National Ports Authority (TNPA), to conduct a Phase 1 Heritage Impact Assessment (HIA) and Desktop Palaeontological Impact Assessment (PIA) for the proposed establishment of a dual fuel generator and ancillary infrastructure within the Port of Richards Bay, Umhlathuze Local and King Cetshwayo District Municipality, KwaZulu-Natal.

The proposed project will include the construction of the following infrastructure within the existing port areas: a dual fuel generator for the generation of 22 megawatts (MW) of electricity which can be operated with diesel or liquid natural gas; an auxiliary pit; diesel fuel storage tanks with a combined capacity of 600m^3; a drain facility for the used diesel and sludge; a 200m^3 demineralised water storage tank; a transmission line from the generator to various substations within the Port; and a liquid natural gas pipeline (buried) which will provide a supporting fuel source for the generator.

The generator development site footprint covers an area of approximately 0.5ha, while the electricity transmission lines run for approximately 7km, and the liquid natural gas pipeline is approximately 1.1km in length.

This Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1)(a)&(c) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The project site is located within an area that has a 'moderate' palaeontological sensitivity rating according to the SAHRIS palaeo-sensitivity map. As such a Desktop PIA is also required for the proposed project. The Phase 1 HIA and Desktop PIA also form part of the Environmental Authorisation process under the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) for the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay.

The Phase 1 HIA included a desktop assessment and review of relevant current and historical aerial imagery of the study site. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the project area and immediate surrounds. In addition, the available heritage literature covering the larger study area was also consulted. The Desktop PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature, and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the project site and immediate surrounds.

According to the 27.5 32 St Lucia 1:250 000 Geological map series (Council for Geosciences), the study site is underlain by Quaternary-aged Aeolian (windblown) sands of the Sibayi Formation, Maputaland Group. Aeolian sands do not preserve vertebrate or plant fossils, and the only possible fossil finds within the Sibayi Formation sands would be Holocene-aged fossil shell fragments (Bamford, 2020). However, any such fossil fragments would be very young and difficult to distinguish from subfossil or modern marine shell fragments (Bamford, 2020). Furthermore, to date there have been no records of plant or animal fossil finds from the Sibayi Formation sands in this region of the KwaZulu-Natal coastline (Bamford, 2020). As such, no well-preserved fossils are expected to be

present on the study site. However, in the unlikely event that any excavations on the site expose fossil material, the chance find procedure in Appendix C must be implemented.

A ground survey of the study site was conducted on the 08th of May 2024 following standard archaeological survey procedures. No heritage or palaeontological resources were identified on the project site during the Phase 1 HIA and PIA, and the site does not form part of any known cultural or heritage landscape. The heritage consultant is therefore of the opinion that the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure may proceed on the project site as no heritage or paleontological features are threatened by the project. The proposed project must however adhere to the requirements of the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act which states that all operations that expose graves, fossils or heritage features must cease immediately, pending an investigation by the provincial heritage resource authority.

CROSS REFERENCE TABLE TO APPENDIX 6 OF THE EIA REGULATIONS

Minimum Report Content Requirements as per Appendix 6 of the EIA Regulations	Cross Reference in this Report
1. (1) A specialist report prepared in terms of these Regulations must contain - (a) details of (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Declaration of Independence by Specialist (pg. ii). Specialist CV in Appendix A.
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Declaration of Independence by Specialist (pg. ii).
(c) an indication of the scope of, and the purpose for which, the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 2: Scope of the Assessment. Section 5: Study Methodology. Section 10: Impact Assessment.
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 5: Study Methodology.
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 5: Study Methodology.
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 9: Assessment Results.
(g) an identification of any areas to be avoided, including buffers;	N/A
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	N/A
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3: Assumptions and Limitations.
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 9: Assessment Results. Section 10: Impact Assessment.
(k) any mitigation measures for inclusion in the EMPr;	Section 11: Recommendations and Conclusion.
(l) any conditions for inclusion in the environmental authorisation;	Section 11: Recommendations and Conclusion.
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 11: Recommendations and Conclusion.
(n) a reasoned opinion - (i) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 11: Recommendations and Conclusion.
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 5: Study Methodology.
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A

Minimum Report Content Requirements as per Appendix 6 of the EIA Regulations	**Cross Reference in this Report**
(q) any other information requested by the competent authority.	N/A
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

CONTENTS

APPENDICES

LIST OF ABBREVIATIONS

EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HIA	Heritage Impact Assessment
MW	Megawatts
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAPS	South African Police Services
TNPA	Transnet National Ports Authority

PHASE 1 HERITAGE IMPACT ASSESSMENT AND DESKTOP PALAEONTOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF THE TRANSNET NATIONAL PORTS AUTHORITY (TNPA) 22MW DUAL FUEL GENERATOR AND ASSOCIATED TRANSMISSION LINES AT THE PORT OF RICHARDS BAY, KWAZULU-NATAL.

1 INTRODUCTION AND PROJECT BACKGROUND

Land Matters Environmental Consulting was appointed by GCS on behalf of the Applicant, Transnet National Ports Authority (TNPA), to conduct a Phase 1 Heritage Impact Assessment (HIA) and Desktop Palaeontological Impact Assessment (PIA) for the proposed establishment of a dual fuel generator and ancillary infrastructure within the Port of Richards Bay, Umhlathuze Local and King Cetshwayo District Municipality, KwaZulu-Natal.

The proposed project will include the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the generation of 22 megawatts (MW) of electricity which can be operated with diesel or liquid natural gas.
- An auxiliary pit which will be constructed to manage the noise emanating from the generator to mitigate noise impacts.
- Diesel fuel storage tanks with a combined capacity of 600m^3 to store the diesel used for the generator. The tanks will be located in a bunded facility, and drains will be in in place for possible spills.
- A drain facility for the used diesel and sludge.
- A 200m^3 demineralised water storage tank. The water is used for the generator and the use of demineralised water prevents the build-up of impurities and prolongs the lifespan of the generator.
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation which will allow for power distribution from the generator to the rest of the port.
- Fencing for the generator site.
- A liquid natural gas pipeline (buried) which will provide a supporting fuel source for the generator. The pipeline will be installed from the planned future gas distribution hub and will reduce the need for diesel which is a non-renewable fuel source.

The generator development site footprint covers an area of approximately 0.5ha and will contain the generator, diesel storage area, and demineralised water storage area. The electricity transmission lines from the generator run for approximately 7km to the various substations, and the liquid natural gas pipeline is approximately 1.1km in length.

This Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1)(a)&(c) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The project site is located within an area that has a 'moderate' palaeontological sensitivity rating according to the SAHRIS palaeo-sensitivity map. As such a Desktop PIA is also required for the proposed project. The Phase 1 HIA and Desktop PIA also form part of the Environmental Authorisation process under the National

Environmental Management Act (NEMA) 1998 (Act 107 of 1998) for the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay.

2 SCOPE OF THE ASSESSMENT

The Phase 1 HIA aims to locate, identify and assess the significance of any heritage resources that may be found on the project footprint, including archaeological and palaeontological deposits/sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and basic cultural landscapes and viewscapes, as defined and protected by the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act.
As per the requirements set out in Section 41(3) of the KwaZulu-Natal Amafa and Research Institute Act, the key terms of reference for the Phase 1 HIA were as follows:

- The identification and mapping of all heritage resources in the study area.
- Undertaking an assessment of the significance of such resources in terms of the heritage assessment criteria set out in Section 6(2) and/or Section 7 of the NHRA.
- Undertaking an assessment of the impact of the proposed project on the identified heritage resources.
- An evaluation of the impact of the proposed project on such identified heritage resources relative to the sustainable social and economic benefits to be derived from the project.
- Reporting on the results of the consultation with communities affected by the proposed project and other interested parties regarding the impact of the project on heritage resources.
- The consideration of alternatives should any heritage resources potentially be adversely affected by the proposed project.
- The compilation of plans for mitigating of any adverse effects during and after the completion of the proposed project.

In addition to the above, the primary aim of the Desktop PIA was to undertake a review of all relevant palaeontological and geological literature including maps and previous palaeontological impact reposts for the general study area, to predict the potential for the occurrence of buried fossil heritage within the project footprint.

3 ASSUMPTIONS AND LIMITATIONS

It is difficult to apply pure scientific methods within a natural environment without limitations or assumptions. The following apply to this study:

- Previous clearing and levelling activities have taken place on the project site. Heritage and palaeontological resources may have been disturbed, damaged, or destroyed by these activities.
- Heritage/palaeontological resources may be present below the surface. No subsurface investigations were undertaken as part of the Phase 1 HIA and Desktop PIA.
- The findings, results, observations, conclusions, and recommendations provided in this report are based on the authors' best scientific and professional knowledge as well as available information regarding the perceived impacts on heritage/palaeontological resources.

- The study results are based on a single day field investigation. Once-off assessments such as this may potentially miss certain heritage information, thus limiting accuracy, detail, and confidence.
- Any additional information used to inform the assessment was limited to data and GIS data sets which were available for the area at the time of assessment.

4 LEGISLATIVE REQUIREMENTS

4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) 1998 (ACT 107 OF 1998)

This Phase 1 HIA has been undertaken in compliance with the requirements for specialist studies as contained in the EIA Regulations 2014 (amended 2017) under NEMA. The requirements are outlined in Appendix 6 of GNR 326 which provides the requirements for specialist reports, and section 13 of GNR 326 which provides the general requirements for Environmental Assessment Practitioners (EAPs) and specialists.

4.2 NATIONAL HERITAGE RESOURCES ACT (NHRA) 1999 (ACT 25 OF 1999)

The NHRA makes provisions for the management and protection of heritage resources on a national level in South Africa. Section 3(1-3) of the NHRA defines those heritage resources in South Africa which form part of the national estate due to their cultural significance or other special value for the present community and future generations. Such resources include places, buildings, structures, equipment, oral traditions, historical settlements, townscapes, landscapes, geological sites, archaeological and palaeontological sites, graves and burial grounds and movable objects. Section 4 of the NHRA establishes both the national and provincial systems for the management of heritage resources within the country.

Section 7(1) of the NHRA provides for a three-tier management system which operates at a national, provincial, and local level and distinguishes between three categories for the grading of places and objects which form part of the national estate, as follows:

- National (Grade I) heritage resources, which are resources that are regarded as being of national significance, and are managed at a national level by SAHRA;
- Provincial (Grade II) heritage resources, which have provincial or regional significance and are managed by provincial heritage resources authorities; and
- Local (Grade III) heritage resources which are the responsibility of local authorities.

Sections 34, 35 and 36 of the NHRA provides for the protection of heritage resources from damage, destruction or alteration, and Section 38 of the NHRA sets out the requirements for heritage resources management.

4.3 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE ACT 2018 (ACT 5 OF 2018)

The KwaZulu-Natal Amafa and Research Institute Act provides for the recognition of the establishment of the KwaZulu-Natal Amafa and Research Institute as the provincial heritage resources authority for the Province of KwaZulu-Natal, to identify, conserve, protect, manage, and administer heritage resources in the Province of KwaZulu-Natal.

Chapter 7 of the Act provides for the establishment of the Amafa and Research Forum, whose objectives include the compilation of a consolidated register of all heritage resources in the Province of KwaZulu-Natal. Chapter 8 of the Act provides for the general protection of heritage resources, specifically the general protection of structures older than 60 years, graves of victims of conflict, informal and private burial grounds, battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite, and meteorite impact sites. Section 41(1 – 10) of Chapter 8 of the Act sets out the requirements for heritage resources management specifically in terms of the undertaking of developments, and the need and requirements for impact assessment studies and report requirements.

Chapter 9 of the Act provides for the special protection of heritage resources including the designation of protected area, heritage landmark and provincial landmark status, and special protection of graves of members of the Royal Family, battlefields, public monuments and memorials, and heritage objects. Chapter 9 of the Act also makes provision for the establishment of a consolidated register of heritage sites and heritage objects in the Province of KwaZulu-Natal. Chapter 10 of the Act provides for the determination of criteria for best practice, standards, norms, and conditions for the management of heritage resources in the Province of KwaZulu-Natal. Lastly, Chapter 11 outlines the general provisions of the Act and includes allowances for the drafting of Regulations to enable the provincial heritage resources authority to regulate heritage matters in the Province of KwaZulu-Natal.

4.4 MINIMUM STANDARDS FOR HERITAGE SPECIALIST STUDIES

The South African Heritage Resources Agency (SAHRA) Minimum Standards for Heritage Specialist Studies (2007, 2016) in terms of Section 38(1) and 38(8) of the NHRA outlines the requirements for Phase 1 HIA studies, including the requirements for Phase 1 HIA Reports and provides a standardised site significance and field rating methodology.

4.5 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE REGULATIONS, 2021 (DRAFT REGULATIONS)

The draft KwaZulu-Natal Amafa and Research Institute Regulations, 2021 in terms of Section 58 of the KwaZulu-Natal Amafa and Research Institute Act, provides for the regulation of heritage matters in the KwaZulu-Natal Province. The Regulations specifically outline the requirements for permit applications and the application procedures to be followed. Section 7 of the Regulations outlines the requirements in terms of the discovery of archaeological or palaeontological material or a meteorite. Section 12 of the Regulations outlines the heritage resources management requirements in terms of undertaking developments, and procedures to be followed to ensure compliance with the requirements of the KwaZulu-Natal Amafa and Research Institute Act and NHRA.

Table 1 below outlines the legislative requirements as applicable to the Phase 1 HIA and Desktop PIA study for the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay.

Table 1: Applicable Legislative Requirements

Legislation	Relevant Section	Description
KwaZulu-Natal Amafa and Research Institute Act 2018 (Act 5 of 2018)	Section 41(1)	*"Any person who intends to undertake a development categorized as –* *(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;* *(b) the construction of a bridge or similar structure exceeding 50 m in length;* *(c) any development or other activity which will change the character of a site - (i) exceeding 5 000 m² in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations;* *(d) the re-zoning of a site exceeding 10 000 m² in extent;* *(e) any other category of development provided for in regulations, must, at the very earliest stages of initiating such a development, notify the Institute and furnish it with details regarding the location, nature and extent of the proposed development."*

5 STUDY METHODOLOGY

5.1 DESKTOP ASSESSMENT

An initial desktop assessment and review of relevant current and historical aerial imagery of the study site was undertaken at the start of the project. Historical imagery was obtained from the Department of Rural Development and Land Reform and the National Geospatial Information website (http://cdngiportal.co.za/cdngiportal/) in order to identify historical land uses associated with the study site and surrounds. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the Umhlathuze Local Municipal area and in particular Richards Bay. In addition, the available heritage literature covering the larger study area was also consulted.

The methods employed for the Desktop PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature, and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the project site and immediate surrounds.

5.2 GROUND SURVEY

A ground survey of the study site was conducted on the 08th of May 2024 which comprised a walkover and visual survey of the project site, where vegetation density and terrain allowed. The assessment was done by foot and limited to a Phase 1 visual survey. Geographic coordinates were taken using a handheld Garmin Etrek GPS unit (Datum: WGS84). All readings were taken using the GPS unit, and accuracy was to a level of 5m. Photographic documentation of the site was undertaken using a Samsung S21 Smartphone camera. Archaeological and cultural heritage site recording,

significance assignation and associated mitigation recommendations were done according to the field rating system prescribed by SAHRA (2007, 2016).

6 SITE DESCRIPTION AND LOCALITY

The project site is located within the Port of Richards Bay, to the south of Richards Bay town, within the Umhlathuze Local and King Cetshwayo District Municipality, KwaZulu-Natal. The project site falls within the main Port entrance and the Employee Care Centre in the Bayvue Precinct.

The proposed generator site is located at GPS coordinates 28°47'8.01"S and 32°1'54.14"E on the property Portion 21 of Erf 5333 Richards Bay. The generator development site footprint covers an area of approximately 0.5ha and will contain the generator, diesel storage area, and demineralised water storage area. The proposed development site comprises an undeveloped grassed area of land between existing buildings, near to the main Port entrance gate.

The proposed electricity transmission lines from the generator run for approximately 7km to the various substations within the Port. The GPS coordinates for the start point for the transmission lines are 28°47'7.43"S and 32°1'53.94"E. The western end of the transmission lines is at the Harbour West Substation at GPS coordinates 28°47'4.34"S and 32°1'43.10"E. The northeastern end of the transmission lines is at the Eastern Intake Substation at GPS coordinates 28°46'54.36"S and 32°4'20.95"E and the southeastern end of the transmission lines is at the Admin Quay Substation at GPS coordinates 28°47'40.41"S and 32°4'39.94"E. The transmission line route follows existing roads within the Port and is located on the properties Portion 21 of Erf 5333 Richards Bay, and Lot 223 Umhlatuzi No. 16230.

The proposed liquid natural gas pipeline route is approximately 1.1km in length and runs from the proposed future gas distribution hub site at GPS coordinates 28°47'5.58"S and 32°1'24.70"E to the generator site at GPS coordinates 28°47'7.45"S and 32°1'54.46"E. The pipeline route is located on the properties Portions 21 and 45 of Erf 5333 Richards Bay.

Most of the project site is located within developed areas comprising port infrastructure. The eastern and western ends of the project site are located within less developed sections of the Port, which contain some remnant vegetation.

Table 2 below provides the details of the general project area and the specifics of the project, while Figures 1 - 4 below provide locality and layout maps. The relevant site photographs are included in Appendix B.

Table 2: Details of the General Project Area and Project Specifics

Property description	Portion 21 of Erf 5333 Richards Bay Portion 45 of Erf 5333 Richards Bay Lot 223 Umhlatuzi No. 16230
Magisterial District	Umhlathuze Local Municipality and King Cetshwayo District Municipality
1: 50 000 map sheet number	2832CC
Central Coordinate of the Study Site	28°47'6.18"S and 32°2'53.85"E
Type of development	Service Infrastructure
Property zoning	Port

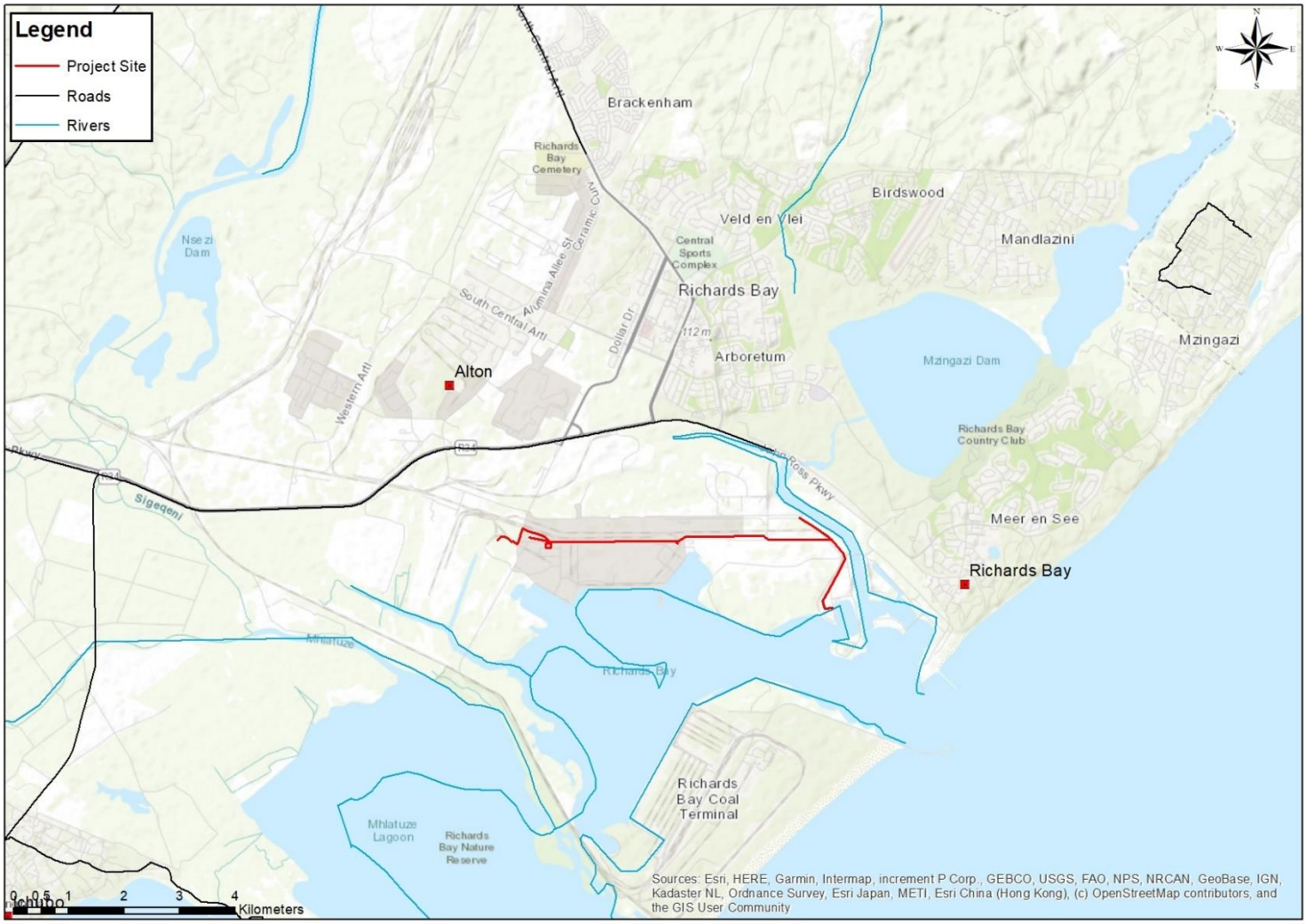


Figure 1: Topographical map of the project site at the Port of Richards Bay.

Figure 2: Locality map of the study site and surrounding area.

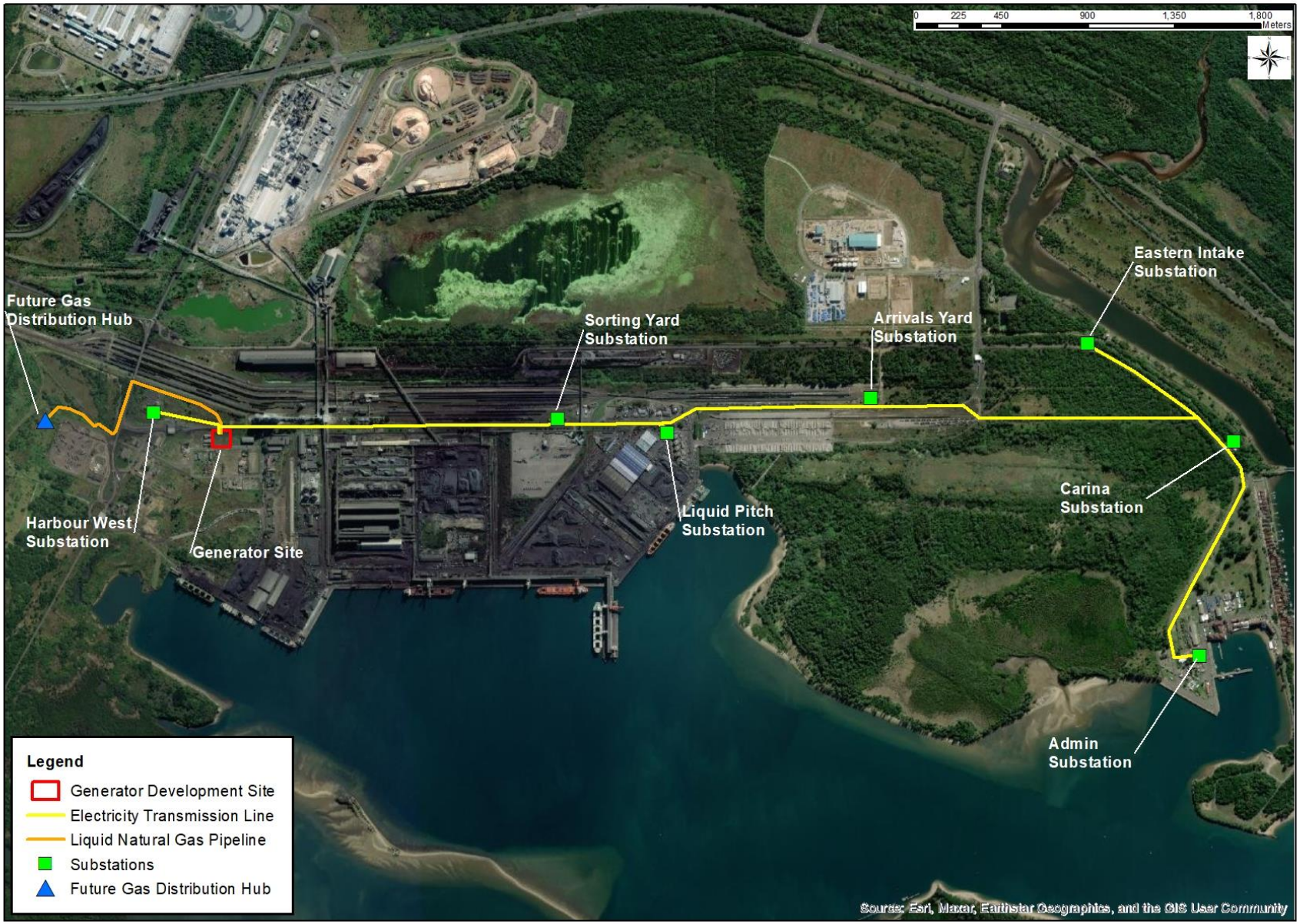


Figure 3: Layout map of the project site.

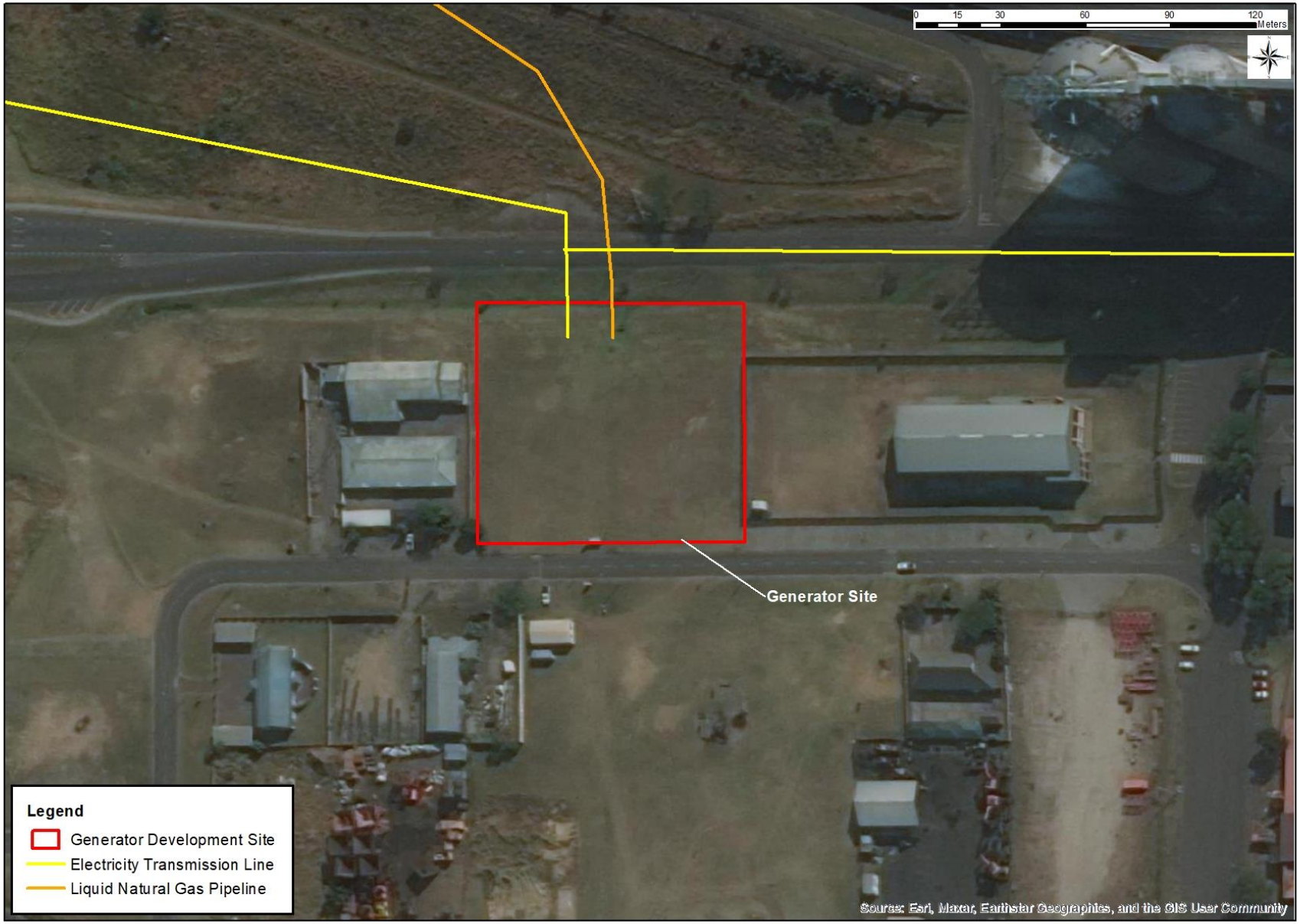


Figure 4: Layout map of the generator development site.

7 CULTURAL OVERVIEW OF THE STUDY AREA

The Richards Bay area has seen sporadic visits by archaeologists from the KwaZulu-Natal Museum and private heritage consultants working in the area over the years. A large number of archaeological and heritage sites are recorded in the KwaZulu-Natal Museum database for the larger Richards Bay area. These include Early, Middle and Late Stone Age sites, Early and Later Iron Age sites, historical period sites, and sites dating back to the 20th Century (Anderson, 2020). None of these sites however occur on or directly adjacent to the proposed development site footprint.

The Stone Age period in South Africa can be divided into three periods and comprises the Early Stone Age (approximately 2 million to 200 000 years ago), the Middle Stone Age (approximately 200 000 to 30 000 years ago), and the Later Stone Age (approximately 30 000 to 2000 years ago). The Early Stone Age is associated with early hominins such as *Homo erectus* or *Homo ergaster*, while the Middle Stone Age is associated with the first anatomically modern humans. The Later Stone Age is associated with the San and their direct ancestors. The Stone Age period ended approximately 2000 years ago when Bantu-speaking farmers from central Africa arrived in southern Africa, heralding the start of the Iron Age. The Iron Age can also be divided into three periods in South Africa, namely the Early Iron Age (dating from AD 200 to AD 900), the Middle Iron Age (dating from AD 900 to AD 1300), and the Late Iron Age (dating from AD 1300 to 1820). From 1820 onwards we see the largescale arrival of Dutch and British colonists to South Africa and the advent of the colonial and historical periods in the region.

Stone Age sites from all three periods occur within the larger study area. Most of these Stone Age sites however comprise the presence of stone flakes or individual stone tools in open air contexts, exposed by erosion. In particular, Early Stone Age tools often occur in the vicinity of permanent water resources. As these Stone Age sites comprise open air surface scatter finds which do not occur in archaeological context, they generally have limited value.

In approximately 200 AD the first Bantu-speaking groups of people crossed over the Limpopo River and move southwards into present-day South Africa. These farmer groups introduced a new way of life into areas that were occupied by Later Stone Age hunter gatherers. The distinctive features of the Iron Age are a settled village life, food production (agriculture and animal husbandry), metallurgy (the mining, smelting, and working of iron, coper, and gold), and the manufacture of pottery.

It is generally accepted that the Iron Age groups moved into southern Africa from Central and East African areas through separate streams of movement or migration events. These streams of movement are based on ceramic traditions and linguistics and include a western stream of movement during the Early Iron Age (Kalundu tradition, 650 – 1050 AD), and a later eastern stream of movement during the Later Iron Age (Urewe tradition, 1350 – 1820 AD) (van Schalkwyk, 2020). Early Iron Age farming communities generally preferred to occupy river valleys within the eastern half of southern Africa owing to the summer-rainfall climate that was conducive for growing millet and sorghum. These farmers generally established small, permanent villages on the rich alluvial or colluvial soils adjacent to rivers. In contrast, sites from the Later Iron Age periods are more commonly found on top of the escarpments that surround the river valleys where Later Iron Age communities gradually expanded into the grasslands of the KwaZulu-Natal interior (Wahl and van Schalkwyk, 2012; Wahl and van Schalkwyk, 2015). Typical artefacts associated with Iron Age sites in

the region include ceramic sherds, worked stone such as grindstones, and ironworking debris including furnace remains, slag, and bloom.

In terms of more recent history, Richards Bay is named after Frederick William Richard, who with three British ships, surveyed the South African East Coast to find suitable landing spots to supply goods to Lord Chelmsford during the Zulu War of 1879. Richard was the Commodore in command of the West African station of the Royal Navy.

Development in the area first began in 1907 when George Higgs established the first wagon track from Empangeni to Richards Bay. The first official road followed in 1932 (van der Walt, 2019). In 1965 the Minister of Transport, Ben Schoeman, announced the planned development of Richards Bay as South Africa's second largest port on the Natal Coast (van der Walt, 2019). In 1972, the construction of the harbour began, and in 1976 the harbour was defined and proclaimed and fell under the jurisdiction of the South African Railways and Harbour Administration (van der Walt, 2019).

8 GEOLOGY AND PALAEONTOLOGY

South Africa has a very rich fossil record, dating back over some 3.5 billion years. Fossil heritage is found in all provinces of South Africa. The palaeontological sensitivity of the study site as per the SAHRIS palaeo-sensitivity map is shown in Figure 5 below. The SAHRIS paleo-sensitivity map shows the study site as "moderately sensitive" in terms of fossil sensitivity.

The 27.5 32 St Lucia 1:250 000 Geological map series (Council for Geosciences) was used to identify the general geology of the study area, as shown in Figure 6 below. The study site is underlain by Quaternary-aged Aeolian (windblown) sands of the Sibayi Formation, Maputaland Group.

The geology along the coast of northern KwaZulu-Natal comprises mostly young Cenozoic-aged sediments of littoral marine, estuarine, fluvial, and Aeolian origins (Bamford, 2020). The Maputaland Group sediments extend from the north of Durban to the Mozambique coastal plain. The deposits are relatively thin onshore but are more substantial offshore where thick Cenozoic deposits have accumulated in extensional rift basins as sediment funnels at river mouths (Butler, 2017; Bamford, 2020). The onshore Cenozoic deposits overlie a broad coastal plain in southern Mozambique and northern KwaZulu-Natal which has a maximum width of approximately 60km and which narrows progressively southwards (Butler, 2017). The Maputaland Group sediments in this part of the KwaZulu-Natal coastline comprise the basal Uloa Formation deposits, which are Mid-Miocene in age (16 – 11.6 Ma), and which are overtopped by the Sibayi Formation deposits which are Holocene in age (11 – 2.3Ma) (Butler, 2017; Bamford, 2020).

The study site is located on the coastal marshland where the Mhlatuze River has broken through the dune cordon and flows into the estuary that is now the Port of Richards Bay (Bamford, 2020). The Sibayi Formation sand dunes, like most coastal dunes, comprise Aeolian (windblown) sands which are not in primary context (Bamford, 2020). Aeolian sands do not preserve vertebrate or plant fossils. It is possible that Holocene-aged fossil shell fragments may be present in the Sibayi Formation sands, however any such fossil fragments would be very young and difficult to distinguish from subfossil or modern marine shell fragments (Bamford, 2020). Furthermore, to date there have

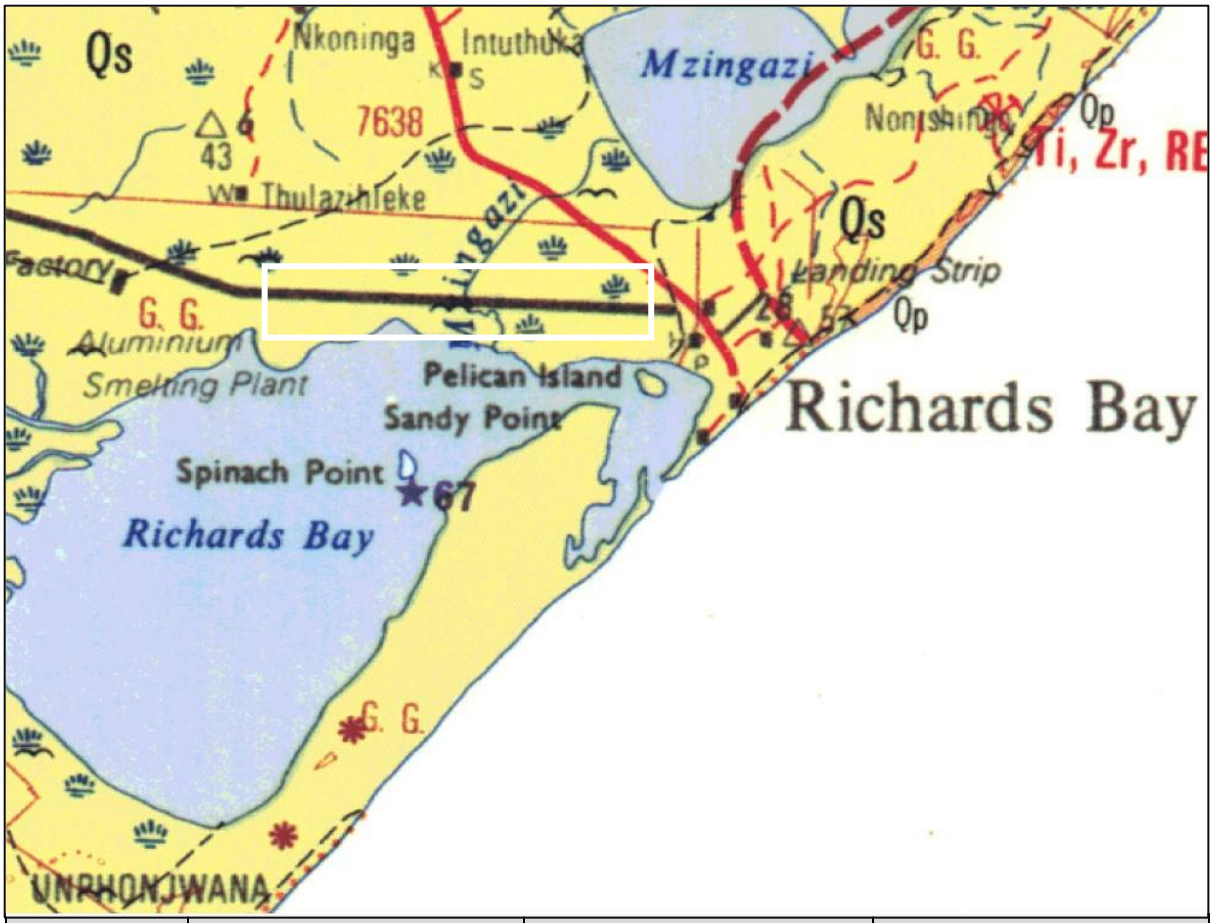
been no records of any significant fossil finds from the Sibayi Formation sands in this region of the KwaZulu-Natal coastline (Bamford, 2020).

SAHRIS Palaeo Map

1 in 250 000 geological formation layers are courtesy of the Council for GeoScience
For more information, go to How to Use the Palaeontological (fossil) Sensitivity Map

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 5: SAHRIS palaeo-sensitivity map for the study site (SAHRIS).



Symbol	Group/Formation	Lithology	Approximate Age
Qs	Quaternary, Sibayi Formation, Maputaland Group	Yellowish redistributed sand	Holocene, 11 – 2.3Ma

Figure 6: Regional geology of the study area (Council for Geosciences).

9 ASSESSMENT RESULTS

9.1 DESKTOP STUDY

An investigation into historical aerial imagery of the project site was undertaken as part of the Phase 1 HIA. Aerial imagery from 1957, 1970, and 1977 used to identify past activity on the site and assist in the identification of heritage resources.

The aerial imagery from both 1957 and 1970 (Figures 7 and 8) shows the study site as completely undeveloped, and located within the Mhlatuze River mouth, before the Richards Bay Port was constructed. The site is associated with a single, large, relatively undisturbed estuarine system. There are no built structures present on the study site in the 1957 imagery. By 1970 however, some roads and / or railway lines have been constructed in the area.

Figure 7: Historic aerial imagery of the study site from 1957 shows the area as undeveloped, and located within the Mhlatuze River mouth, before the Richards Bay Port was constructed. There are no built structures present on the study site in the 1957 imagery.

Figure 8: Historic aerial imagery of the study site from 1970 shows the site as still undeveloped and located within the natural Mhlatuze River mouth system. Roads and / or railway lines have however now been constructed in the area.

The historic imagery from 1977 (Figure 9) shows a significant change to the study area. In 1972, construction of the Richards Bay Port commenced, with the construction of a berm, or causeway and canal system that divided the estuarine system into two zones, the Mhlatuze River mouth, and the Richards Bay Harbour. The northern section was developed into the Port of Richards Bay while the southern area was designated as a nature sanctuary (Mhlatuze Estuary) (Weerts and Cyprus, 2002).

Figure 9: Historic aerial imagery of the project site from 1977 shows a significant change to the study area with the realignment of the Mhlatuze River Mouth evident, and the subsequent construction of the Port of Richards Bay well underway.

The results of the desktop assessment show no evidence of heritage resources present on the project site in the historical aerial imagery for the area. All of the built structures that are currently present on the project site are all less than 60 years old, having been built after 1972 as part of the construction of the Port of Richards Bay.

9.2 GROUND SURVEY

The ground survey focused on the identification and assessment of heritage resources directly on the project site and immediate surrounds. No development activities associated with the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure had begun on the project site at the time of the ground survey. All areas of the project site were visited and visually surveyed for the presence of archaeological, palaeontological, or heritage features. No heritage resources were identified on the study site during the ground survey, as outlined in Table 3 below.

Table 3: List of Possible Heritage Resources and Assessment Findings

Heritage Resource Type	Finding
Places, buildings, structures and equipment of cultural significance	None
Places to which oral traditions are attached or which are associated with living heritage	None
Historical settlements and townscapes	None
Landscapes and natural features	None
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	None
Graves and burial grounds	None
Public monuments and memorials	None
Sites of significance relating to the history of slavery in South Africa	None
Movable objects	None

An assessment in terms of the significance criteria outlined in Section 3(3) of the NHRA was also undertaken for the study site as part of the Phase 1 HIA and Desktop PIA, as shown in Table 4 below.

Table 4: Evaluation of Heritage Sites or Objects in terms of Section 3(3) of the NHRA

Significance criteria for heritage sites or objects in terms of Section 3(3) of the NHRA 1999 (Act 25 of 1999)	Rating
Importance in the community, or pattern of South Africa's history.	None
In possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	None
Has potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.	None
Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects.	None
Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;	None
Importance in demonstrating a high degree of creative or technical achievement at a particular period.	None
Has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	None
Has a strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.	None
Sites of significance relating to the history of slavery in South Africa.	None

9.3 SITE SIGNIFICANCE AND FIELD RATING

The field rating system (Table 5) as developed by SAHRA (2007, 2016) does not apply to the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay as no heritage or palaeontological resources were identified on the project site.

Table 5: Site Significance and Field Rating (SAHRA 2007, 2016)

Level	Description	Action
Grade I National Resource	This site is considered to be of National significance.	Nominated to be declared by SAHRA and maintained in situ.
Grade II Provincial Resource	This site is considered to be of Provincial significance.	Nominated to be declared by Provincial Heritage Authority and maintained in situ.
Grade IIIA Local Resource	This site is considered to be of a High significance locally.	The site must be retained as a heritage register site.
Grade IIIB Local Resource	This site is considered to be of a High/Medium significance locally.	The site must be mitigated, and part retained as a heritage register site.
Grade IIIC Local Resource	This site is considered to be of a Low significance locally.	The site needs to be recorded but may be granted destruction authorisation at the discretion of the relevant heritage authority.
Generally Protected A	High to medium significance	Mitigation necessary before destruction.
Generally Protected B	Medium significance	Site to be recorded before destruction.
Generally Protected C	Low significance	Site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction.

9.4 PALAEONTOLOGY

The results of the Desktop PIA show that the project site is underlain by Quaternary-aged Aeolian (windblown) sands of the Sibayi Formation, Maputaland Group. Aeolian sands do not preserve vertebrate or plant fossils, and the only possible fossil finds within the Sibayi Formation sands would be Holocene-aged fossil shell fragments (Bamford, 2020). However, any such fossil fragments would be very young and difficult to distinguish from subfossil or modern marine shell fragments (Bamford, 2020). Furthermore, to date there have been no records of plant or animal fossil finds from the Sibayi Formation sands in this region of the KwaZulu-Natal coastline (Bamford, 2020). As such, no well-preserved fossils are expected to be present on the study site. However, in the unlikely event that any excavations on the site expose fossil material, the chance find procedure in Appendix C must be implemented.

10 IMPACT ASSESSMENT

Any development or anthropogenic activity in a natural system will have an impact on the surrounding environment, usually in a negative way. The assessment criteria as outlined in Table 6 below have been used to identify, predict, and assess the significance of any potential heritage and palaeontological related impacts associated with the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay.

As no heritage resources have been identified on the project site; the area is not part of any known cultural landscape; and it is highly unlikely that fossils will be impacted by the proposed project; the proposed activity poses a minimal risk to both heritage and palaeontological resources, as shown in Table 7 below.

Table 6: Summary of Aspects used for Assessing Heritage and Palaeontological Impacts

Aspect	Rating	Description
Nature	Positive	The impact on the resource will be positive.
	Negative	The impact on the resource will be negative.
Probability (with / without mitigation)	Definitely	The impact will definitely occur even with mitigation (100%).
	Likely	It is likely that the impact will occur (60%-99%).
	Fair	There is a fair chance that the impact will occur (30% -59%).
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Reversibility (with / without mitigation)	Possible	It is possible to reverse the impact.
	Partly	It is partly possible to reverse the impact.
	Not possible	It is not possible to reverse the impact.
Extent	Site	The impact will be limited to the site.
	Local	The impact will affect the local area (within a radius of 40km).
	Provincial	The impact will affect areas beyond the site but within the boundaries of KwaZulu-Natal.
	National	The impact will affect areas beyond the Province but within the boundaries of South Africa.
Duration	Short-term	0-5 years (construction phase).
	Medium-term	5-40 years (construction and operation).
	Long-term	(>40 years).
	Permanent	Permanent damage to the resource.
Significance of Impact (with / without mitigation)	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.

Table 7: Heritage and Palaeontological Impact Assessment Results for the Proposed TNPA 22MW Dual Fuel Generator and Ancillary Infrastructure Development Project at the Port of Richards Bay

Aspect	Rating	Description
Nature	Positive	-
	Negative	Any impacts to heritage or palaeontological resources resulting from the project will be negative.
Probability (without mitigation)	Definitely	-
	Likely	-
	Fair	-
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Probability (with mitigation)	Definitely	-
	Likely	-
	Fair	-
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Reversibility (without mitigation)	Possible	-
	Partly	It is partly possible to reverse the impact.
	Not possible	-
Reversibility (with mitigation)	Possible	It is possible to reverse the impact.
	Partly	-
	Not possible	-
Extent	Site	The impact will be limited to the site.
	Local	-
	Provincial	-
	National	-
Duration	Short-term	0-5 years (construction phase).
	Medium-term	-
	Long-term	-
	Permanent	-
Significance of Impact without Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-
Significance of Impact Post-Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-

11 RECOMMENDATIONS AND CONCLUSION

The Phase 1 HIA and Desktop PIA for the proposed establishment of the TNPA 22MW dual fuel generator and ancillary infrastructure at the Port of Richards Bay identified no heritage sites or resources on the project site. The area also does not form part of any known cultural landscape. It is also highly unlikely that fossils will be negatively impacted by the proposed development, as outlined in Section 8 of this report. The heritage consultant is therefore of the opinion that the proposed development may proceed on the project site as no heritage or paleontological features are threatened by the project.

It must be noted that while the utmost care was taken to identify all heritage resources present on the project site during the Phase 1 HIA and Desktop PIA, there is always a possibility that unidentified heritage resources, and in particular graves, may be present below the surface or in areas of dense vegetation. The Environmental Control Officer (ECO) appointed for the project must ensure that the appointed contractor, and construction staff are made aware that should any graves, or other heritage features be discovered during vegetation clearing or excavations, all activity within the vicinity of the discovery must cease immediately, and the ECO must be contacted. The ECO must

in turn notify the heritage consultant, so that an investigation and evaluation of the finds can be made, and the chance find procedure in Appendix C must be implemented. Should any human remains be unearthed by construction activities, the South African Police Services (SAPS) and the heritage consultant must be contacted immediately.

It is highly unlikely that fossils are present within the development footprint due to the geological conditions present at the study site and surrounding area. In the very unlikely event that fossil material is exposed, the chance find procedure in Appendix C must be implemented.

Lastly, the proposed project must adhere to the requirements of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, and Draft Regulations, which requires that a person that discovers any archaeological or palaeontological material or a meteorite must immediately cease all operations or activity within a 25m radius of the discovery and must notify the KwaZulu-Natal Amafa and Research Institute. In addition, no structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. Under no circumstances may any heritage or palaeontological material be destroyed or removed from site unless under direction of the KwaZulu-Natal Amafa and Research Institute and appointed heritage consultant.

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http://cdngiportal.co.za/cdngiportal/

APPENDICES

APPENDIX A: SHORT CV OF THE HERITAGE CONSULTANT

CURRICULUM VITAE

Dr. Phillipa Harrison – Heritage Consultant / Archaeologist
Land Matters Environmental Consulting (Pty) Ltd

CONTACT DETAILS

Telephone	082 408 6545
E-mail	phillipa@lmenvironmental.co.za

QUALIFICATIONS

- 2015 – 2021: Bachelor of Arts Honours (Archaeology), University of South Africa (UNISA)
- 2003 – 2006: Doctor of Philosophy (PhD), University of KwaZulu-Natal
- 2001 – 2002: Master of Arts (MA), University of KwaZulu-Natal
- 2000: Bachelor of Arts Honours (Geography), University of KwaZulu-Natal
- 1997 – 1999: Bachelor of Arts (Geology, Geography, English), University of KwaZulu-Natal

PROFESSIONAL REGISTRATIONS

Association of Southern African Professional Archaeologists (ASAPA) (No. ASAPA545)

AREAS OF EXPERTISE

- Heritage Impact Assessment and Palaeontological Impact Assessment Studies;
- EIA and Basic Assessment Processes;
- Environmental Management Programmes;
- Water Use License Applications; and
- Waste Management License Applications.

WORK EXPERIENCE

Dr Phillipa Harrison holds a Bachelor of Arts Honours Degree in Archaeology from the University of South Africa (UNISA) and a Doctor of Philosophy in Geography from the University of KwaZulu-Natal. She is professionally affiliated to the Association of Southern African Professional Archaeologists (ASAPA) and has eleven years consulting experience in the Environmental Assessment field with experience in conducting Heritage Impact Assessments and Palaeontological Impact Assessments, as well as Basic Assessment and Scoping and EIA processes, compiling Environmental Management Programmes, and undertaking Water Use and Waste Management License Applications.

EXAMPLES OF RELEVANT PROJECT EXPERIENCE

PROJECT	DATE
Validation of the Heritage Assessment Report for the Proposed Installation of a Hydropower Unit at the Mpofana Outfall for the Mooi-Mgeni Transfer Scheme, near Nottingham Road, KwaZulu-Natal Midlands.	May 2024
Phase 1 Heritage Impact Assessment: for the Proposed Replacement of the Bulk Water Pipeline from Tshelimnyama 3 Reservoir to KwaNdengezi Reservoir, Mariannhill Area, eThekwini Municipality, KZN.	May 2024
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Establishment of a Filling Station on Erf 1148 Greytown, in the Umvoti Local and Umzinyathi District Municipality, KZN.	April 2024
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Expansion of the Mount Ayliff Landfill Site in the Umzimvubu Local Municipality, Eastern Cape Province.	April 2024
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Charlestown Bulk Water Supply Project in Charlestown, Newcastle Local Municipality, KZN.	April 2024
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Mixed-Use Development on Portions 4, 5, 6, 7, 8, and 9 of the Farm Lot B O No. 7764 in the Mahehle Area near Creighton, Ubuhlebezwe Local Municipality, KZN.	March 2024
Phase 1 Heritage Impact Assessment: for the Proposed Establishment of the Bengwenyama Underground mining project in the Steelpoort Area of the Fetakgomo Tubatse and Makhuduthamaga Local Municipalities, Limpopo Province.	March 2024
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Shakaville Extension Housing Development on Rem and Portion 2 of Erf 3595 Stanger, and Erf 5426 Stanger, in KwaDukuza, KwaDukuza Local Municipality, KZN.	January 2024
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Magudu Game Lodge on Portions 13 and 14 of the Farm Bosveld No. 745 near Pongola, uPhongolo Local Municipality, KZN.	January 2024
Phase 1 Heritage Impact Assessment: for a Proposed Deviation of a Portion of the Ariadne Eros 400kV Powerline in the Mbonje Area, Umzumbe Local Municipality, KZN.	December 2023
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Establishment of a 40 – 50 MW Solar Photovoltaic Power Plant in the Camperdown Area of the Mkhambathini Local Municipality, KZN.	December 2023
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Greenlands Light Industrial Development on Portion 570 of the Farm Lot 56 No. 931 in Ballito, KwaDukuza Local Municipality, KZN.	November 2023
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Ngwelezane Mall Development in the Ngwelezana A Area of Empangeni, Umhlathuze Local Municipality, KZN.	November 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Mondi Hectom Staff Village and Water Pipeline near Fairbreeze, uMlalazi Local Municipality, KZN.	November 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Greenlands Business Park on Portion 506 of the Farm Lot 56 No. 931 in Ballito, KwaDukuza Local Municipality, KZN.	October 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Cultivation on Watermead Farm in the Underberg Area of the Dr Nkosazana Dlamini-Zuma Local Municipality, KZN.	October 2023
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Wetland Rehabilitation Offset for the Dube Tradeport Tradezone 2 Development near the King Shaka International Airport, eThekwini Municipality, KZN.	October 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Establishment of an Unauthorised Irrigation Dam on Emmadale Farm located near Winterton, Okhahlamba Local Municipality, KZN.	September 2023
Phase 1 Heritage Impact Assessment: for a Proposed Sub-Acute Hospital on Erf 15292 Ladysmith, Alfred Duma Local Municipality, KZN.	September 2023
Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment: for the Proposed Establishment of a Building for Residential Use on Portion 44 of the Farm Mount Verde No. 18081 in Hilton, Umngeni Local Municipality, KZN.	August 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Oxford Freshmarket Development on Portion 2453 of Umlazi Location No. 4676 in Amanzimtoti, eThekwini Municipality, KZN.	August 2023
Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment: for the Proposed Upgrade of the Water Supply System Between Emmaus and Cathedral Peak in the Okhahlamba Local Municipality, KZN.	August 2023

APPENDIX B: SITE PHOTOGRAPHS

Plate 1: Photograph showing the proposed generator development site.

Plate 2: Photograph showing the proposed transmission line route on the central portion of the project site.

Plate 3: Photograph showing the proposed transmission line route which follows existing roads within the Port.

Plate 4: Photograph showing the proposed transmission line route within the less developed eastern portion of the project site.

Plate 5: Photograph showing the southeastern end of the transmission line route within the vicinity of the Admin Quay Substation.

Plate 6: Photograph showing the liquid natural gas pipeline route within the less developed western portion of the project site.

APPENDIX C: CHANCE FIND PROCEDURES FOR HERITAGE AND PALAEONTOLOGICAL RESOURCES

1. INTRODUCTION

The following procedures must be considered in the event that previously unknown heritage resources, including fossils, archaeological resources, burial grounds or graves, are exposed or found during the life of the project. The procedures below are based on the National Heritage Resources Act, 1999 Regulations (Reg No. 6820, GNR 548) and the KwaZulu-Natal Amafa and Research Institute Draft Regulations, 2021.

A heritage practitioner should be appointed to develop a heritage induction program and conduct training for the ECO, as well as team leaders, in the identification of heritage resources and artefacts and palaeontological resources. An appropriately qualified heritage consultant should be identified to be called upon if any possible heritage or palaeontological resources or artefacts are identified.

2. GENERAL HERITAGE AND PALAEONTOLOGICAL RESOURCE FIND PROCEDURE

The term 'heritage resource' here includes burial grounds and graves, structures older than 60 years, archaeology, palaeontology, meteors, and public monuments. If any sign of the above are uncovered during excavation of the site, the following protocol must be observed:

- All work in the vicinity of the find must immediately cease, within a radius of at least 25 meters of the site or discovery, and further disturbance of the heritage or palaeontological resource must be avoided.
- The ECO and project manager/developer must be notified of the discovery.
- The ECO must arrange for a suitably qualified specialist (heritage or palaeontological specialist) to investigate the resource, either via communicating with the specialist via telephone or email or based on a site visit.
- The ECO and specialist must advise on the appropriate mitigation measures to be implemented.
- Should the specialist conclude that the find is a heritage or palaeontological resource protected in terms of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The report must include – the names of the person reporting; the object discovered; the time and date of such discovery; the location of such discovery; and the municipal area within which the discovery was made.
- The KwaZulu-Natal Amafa and Research Institute may require that a full Heritage or Palaeontological Impact Assessment be conducted and may require rescue excavations to take place.

3. SPECIFIC BURIAL GROUND AND GRAVE FIND PROCEDURE

In the event that human remains are accidently exposed, the project manager and/or ECO must immediately be notified of the discovery in order to take the required further steps:

- All work in the vicinity of the find must immediately cease, within a radius of at least 25 meters of the burial site, and further disturbance of the site must be avoided.
- The local SAPS must be notified on behalf of the Applicant.
- A suitably qualified specialist must be arranged to inspect the exposed burial and determine in consultation with the SAPS:

a) The temporal context of the remains, i.e.:
   - forensic
   - authentic burial grave (informal or older than 60 years); or
   - archaeological (older than 100 years).

b) If any additional graves or burial sites exist in the vicinity of the find.

- Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The KwaZulu-Natal Amafa and Research Institute may require that interested parties be identified and that consultation and / or grave relocation take place.

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment for the Proposed Establishment of the Transnet National Ports Authority (TNPA) 22MW Dual Fuel Generator and Associated Transmission Lines at the Port of Richards Bay, KwaZulu-Natal..

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with '*the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment
Specialist Company Name	Land Matters Environmental Consulting (Pty) Ltd
Specialist Name	Phillipa Harrison
Specialist Identity Number	7808020012083
Specialist Qualifications:	BA Hons (Archaeology); PhD (Geog Sci)
Professional affiliation/registration:	ASAPA (ASAPA-545)
Physical address:	6 Wills Close, Hilton, KwaZulu-Natal
Postal address:	6 Wills Close, Hilton
Postal address	3245
Telephone	082 408 6545
Cell phone	082 408 6545
E-mail	phillipa@lmenvironmental.co.za

2. DECLARATION BY THE SPECIALIST

I, Phillipa Harrison declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

Signature of the Specialist

Land Matters Environmental Consulting

Name of Company:

27 May 2024

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Phillipa Harrison, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

Click or tap here to enter text. Land Matters Environmental Consulting

Name of Company

Click or tap here to enter text. 27 May 2024

Date

C MFEKA 68428286 081

Signature of the Commissioner of Oaths

Click or tap to enter a date. 2024.05.27

Date

SOUTH AFRICAN POLICE SERVICE
COMMUNITY SERVICE CENTRE
27 MAY 2024
HILTON
KWAZULU-NATAL

APPENDIX E7: Site Verification Report

63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

PRELIMINARY SITE SENSITIVITY VERIFICATION FOR THE PROPOSED ESTABLISHMENT OF A 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWA-ZULU NATAL PROVINCE

Version - Final

April 2024

GCS Project Number: 23-0807

Client Reference: TNPA/2023/06/0023/33545/RFP

GCS (Pty) Ltd. **Reg No:** 2004/000765/07 Est. 1987
Offices: **Johannesburg** (Head Office) | Durban | Gaborone | Lusaka | Maseru | Windhoek | Ostrava
Directors: AC Johnstone (CEO) | W Sherriff

PRELIMINARY SITE SENSITIVITY VERIFICATION FOR THE PROPOSED ESTABLISHMENT OF A 22MW DUAL FUEL GENERATOR AT THE PORT OF RICHARDS BAY, KWA-ZULU NATAL PROVINCE

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	Name	**Signature**	**Date**
Author	Rona Schröder		23 April 2024
Environmental Manager	Gerda Bothma		23 April 2024

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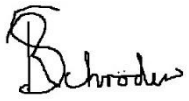
Specialist declaration

I, Rona Schröder, in my capacity as a specialist consultant, hereby declare that I:

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act (Act No. 107 of 1998);
- As a registered member of the South African Council for Natural Scientific Professions and the Environmental Assessment Practitioners Association of South Africa (EAPASA), I will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability; and
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field.



Rona Schröder (Pr.Sci.Nat)(EAPASA) Date: 22 April 2024

SACNASP reg. no. 120605
EAPASA Reg. No. 2020/1149

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1 INTRODUCTION

GCS Environment South Africa (Pty) Ltd (GCS) has been appointed by Transnet National Port Authority (TNPA) to conduct a Site Sensitivity Verification Screening Assessment as part of the application for environmental authorisation for the proposed establishment of a 22MW Dual Fuel Generator at the Port of Richards Bay in the Kwa-Zulu Natal Province.

The assessment will focus on the environmental features associated with the site and how these relate to possible legislated authorisation processes in accordance with the National Environmental related legislation.

2 BACKGROUND

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay (PoRB) is one of the country's largest ports in size, with total land and water surfaces of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for ensuring that the ports are economic hubs for the country while ensuring that they also comply with the South African Laws and Regulations which are governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The PoRB is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. Approximately half of the PoRB has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity.

This Project entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and

- LNG pipeline from the Gas hub to the Generator site.

The study site is approximately 0.51ha in size and is located along Newmark Road within the Port of Richards Bay on the farm Richards Bay 14217 GV Portion 0. The site is located close to the TNPA administration offices and surrounded by other buildings utilised by contractors on site.

The extent of the study site is provided in Figure 2-2 with the corner point coordinates provided in Table 2-1.

Table 2-1: Corner point coordinates of the study site

Label	Latitude	Longitude
A	28°47'7.47"S	32° 1'52.90"E
B	28°47'7.43"S	32° 1'56.00"E
C	28°47'9.33"S	32° 1'56.10"E
D	28°47'9.46"S	32° 1'53.02"E

Associated linear infrastructure alignments are provided in Figures 2-3 and 2-4.

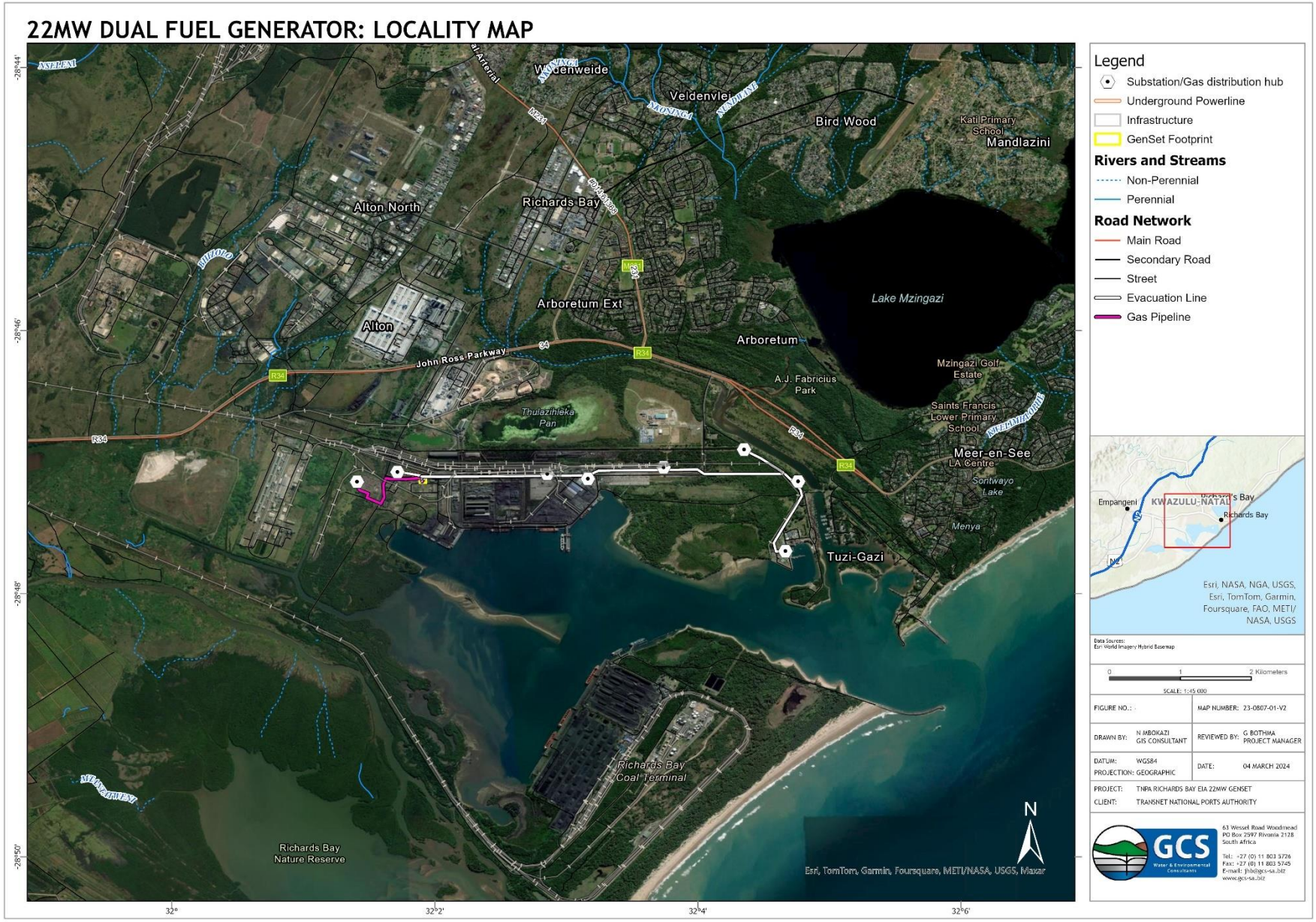


Figure 2-1: Location of the TNPA Generator Project for the Port of Richard Bay (generator site shown in yellow).

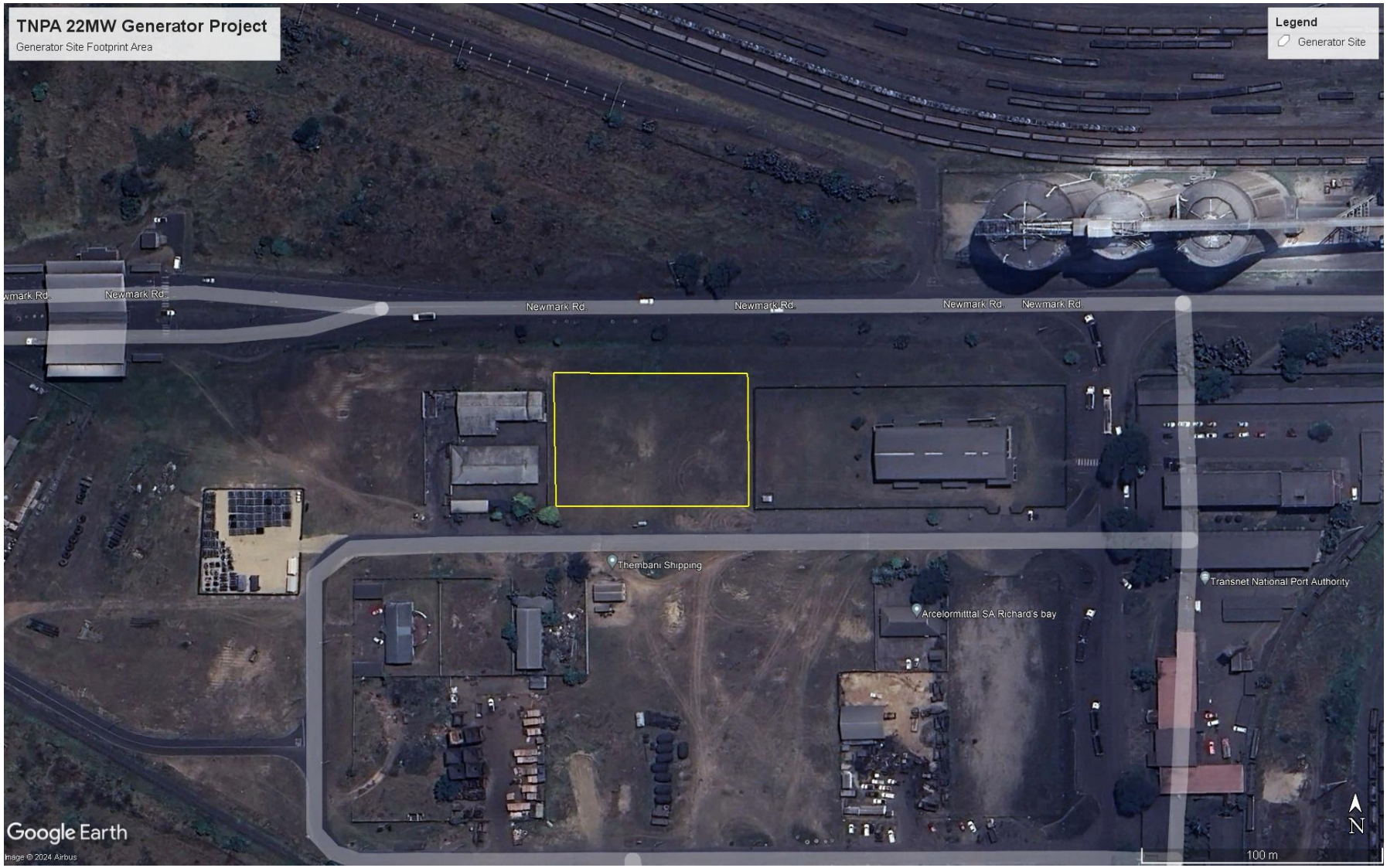


Figure 2-2: Footprint Area of the TNPA Genset Project where the generator infrastructure will be located. (shown in yellow)

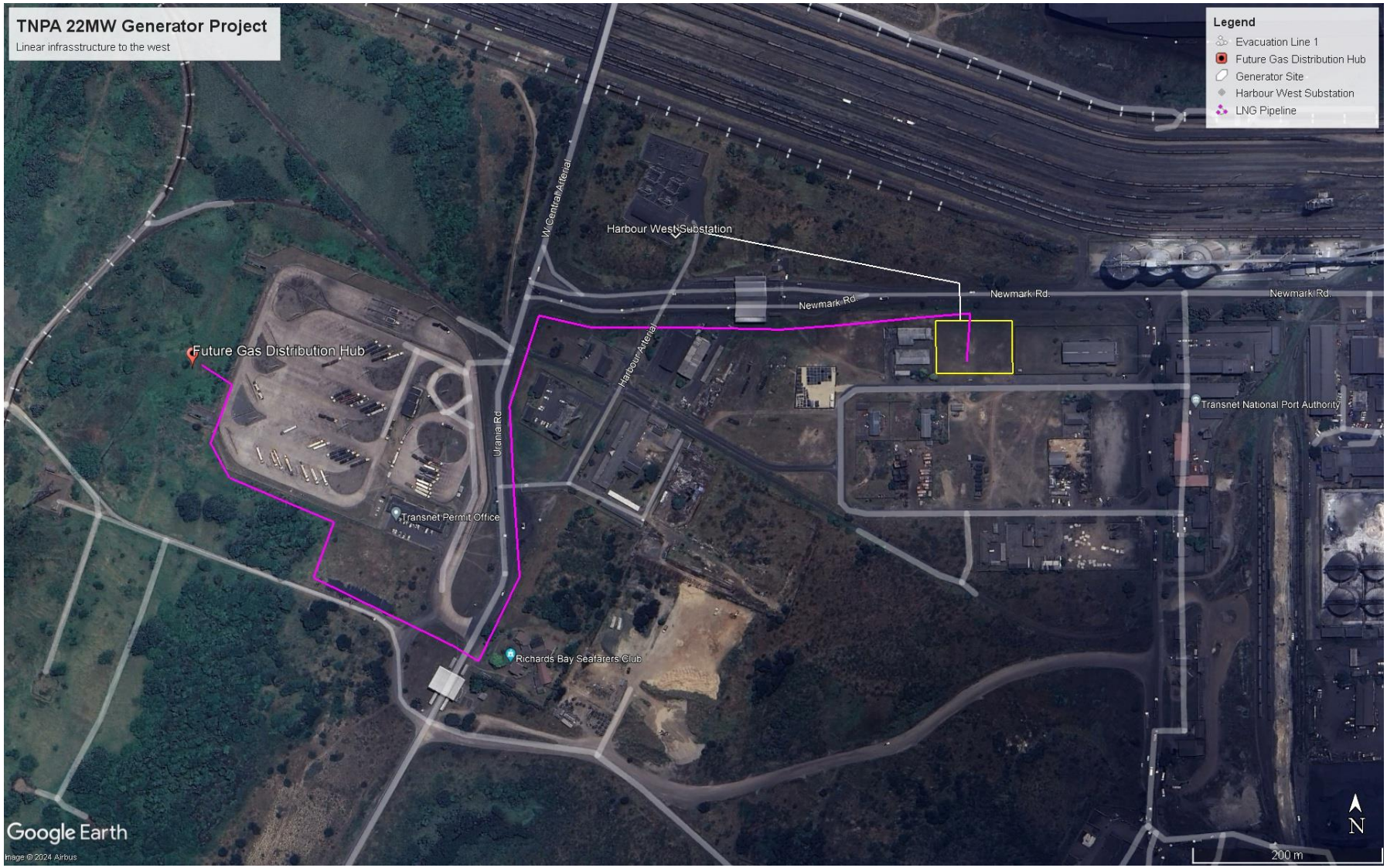


Figure 2-3: Proposed linear infrastructure alignment to the west of the generator site

Figure 2-4: Proposed linear infrastructure alignment to the east of the generator site

3 SCOPE OF WORK

The Site Verification Assessment will make provision for the identification of any possible areas of environmental sensitivities within the property boundaries. The Screening Report as generated from the DFEE Screening Tool will be used to guide the possible sensitivities in the site area, and a verification of the existing site conditions and sensitivities was investigated.

In addition to the above, the assessment will make provision for an evaluation of the applicable South African environmental legislation and regulations. This will be done to determine the required authorisation(s) that will be required to enable the establishment of a power generation facility on the study site. The Legislation that will be considered in the assessment are as follows:

- National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended;
- National Water Act (Act No. 36 of 1998), with a focus on Section 21 of the Act;
- National Environmental Management: Biodiversity Act (Act No. 10 of 2004); and
- National Environmental Management: Protected Areas Act (Act No. 57 of 2003).

The outcome of this legal assessment will provide a clear Permitting and Authorisation Framework for the project as well as an indicative programme and associated cost estimates.

4 METHODOLOGY

The findings of the assessment are based on a Desktop Assessment of available GIS databases to identify any possible environmentally sensitive features within the site or within the immediate vicinity of the site. These features were then used to plan the site visit to verify these areas and to identify any additional features that might require consideration.

The site visit was conducted on 15 February 2024 by Rona Schröder and Gerda Bothma of GCS Environment SA (Pty) Ltd.

5 ASSUMPTIONS AND KNOWLEDGE GAPS

The site is located within the existing footprint area of the Richards Bay Port and the vegetation has been altered and cultivated throughout the years. There are grass species present that are an indication of wet soils, which is possibly due to the shallow water table but will be confirmed by the wetland specialist.

It is assumed that the generator complex will not surpass the proposed site extent.

The proposed pipeline and the powerline will be traversing the more sensitive areas. Specialists have been appointed to determine the possible impacts on the surrounding environment and determine the sensitivity.

It is assumed that the visual and aviation impacts would be low considering the silo's situated in close proximity to the generator area is more than double the height of the generator complex would be. See Figure 5-1 for the location and visual aspect next to the proposed generator site.

Figure 5-1: Current silo's situated opposite to the proposed generator complex site.

6 DESKTOP FINDINGS

The desktop assessment considered the following databases:

- Information contained in the Department of Forestry Fisheries and Environment Online Screening Tool Report;
- Biodiversity databases available on the SANBI Website;
- 1 in 50 000 topographical map sheet for the area;
- Recent aerial imagery for the site; and
- Previous specialist studies conducted for the Port of Richards Bay Area.

6.1 Department of Forestry Fisheries and Environment (DFFE) Online Screening Tool

The site sensitivities identified in the DFFE Online Screening Tool are provided in Table 6-1.

Table 6-1: Site sensitivities identified in the DFFE Online Screening Tool

Theme	Very high sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture theme	X			
Animal species theme		X		
Aquatic biodiversity theme	X			
Archaeological and cultural heritage theme				X
Civil aviation theme		X		
Defence theme				X
Palaeontology theme			X	
Plant species theme				X
Terrestrial biodiversity theme	X			

6.1.1 Specialist Studies

The findings of the DFFE Online Screening Tool provide and indication of the specialist studies that may need completion during an Application for Environmental Authorisation process. The following studies were identified in the DFFE Screening Report.

1. Agricultural Impact Assessment
2. Landscape/Visual Impact Assessment
3. Archaeological and Cultural Heritage Impact Assessment
4. Palaeontology Impact Assessment
5. Terrestrial Biodiversity Impact Assessment
6. Aquatic Biodiversity Impact Assessment
7. Marine Impact Assessment
8. Avian Impact Assessment
9. Defense Assessment
10. Noise Impact Assessment
11. Traffic Impact Assessment
12. Geotechnical Assessment
13. Socio-Economic Assessment
14. Ambient Air Quality Impact Assessment
15. Plant Species Assessment
16. Animal Species Assessment

Table 6-2 below provides a summary of the identified themes and the specialist studies to be completed in support of each theme and Table 6-3 provides a summary of the identified specialist studies and how they will be addressed in the application process.

Table 6-2: Screening Report Themes and Specialist Studies

Themes	Sensitivity	Specialist Study to be undertaken/Motivation for excluding Theme
Agriculture Theme	Very High	Soil, Land-use and Agricultural Assessment.
Animal Species Theme	High	Terrestrial Biodiversity Assessment.
Aquatic Biodiversity Theme	Very High	Estuarine and Wetland studies will address this theme.
Archaeological and Cultural Heritage Theme	Low	Phase 1 Heritage and Paleontological Impact Assessment.
Civil Aviation Theme	High	The 22MW Generator is located within the existing Port of Richards Bay footprint where the height of the generator would not exceed the surrounding building height. There will be no additional overhead powerlines constructed. The pipelines will be buried. Therefore this project would not affect any aviation activities.
Defence Theme	Low	The 22MW Generator is located within the existing Port of Richards Bay footprint. The pipelines will be buried. Therefore this project would not affect any defence related activities.
Paleontology Theme	Medium	Phase 1 Heritage and Paleontological Impact Assessment.
Plant Species Theme	Low	Terrestrial Biodiversity Assessment.
Terrestrial Biodiversity Theme	Very High	Terrestrial Biodiversity Assessment.

Table 6-3: Screening Report Specialist Studies and how they will be addressed.

Specialist Studies Identified by DFFE Screening Tool	Way Forward
Agricultural Impact Assessment	Soil, Land-use and Agricultural Assessment.
Landscape/Visual Impact Assessment	No study is required as the visual impact of the generator complex would not have an additional visual impact from the existing developments.
Archaeological and Cultural Heritage Impact Assessment	Cultural Heritage & Palaeontological Assessment
Palaeontology Impact Assessment	
Terrestrial Biodiversity Impact Assessment	Terrestrial Biodiversity Assessment
Aquatic Biodiversity Impact Assessment	Estuarine Assessment
Marine Impact Assessment	Estuarine Assessment
Avian Impact Assessment	Terrestrial Biodiversity Assessment
Defense Assessment	No study is required. The generator complex is located within an existing fenced area with no additional impacts that would affect the defence aspect.

Noise Impact Assessment	Due to the existing ambient noise from the Port Activities and the distance in relation to the closest receptors, it has been determined by a noise specialist that a noise impact assessment would not be required.
Traffic Impact Assessment	The PoRB already handles large volumes of traffic through their existing traffic management plans and operations on-site. The additional traffic that will be added during the construction of the Generator and the operations will not affect the existing high traffic at the port. Compared to the hundreds of vehicles entering the port daily the additional traffic for the generator is negligible and a Traffic Impact Assessment would not be required.
Geotechnical Assessment	TNPA documentation to be provided.
Socio-Economic Assessment	No study is required. The generator complex is located within the existing PoRB footprint and its purpose is to augment the power supply to the PoRB, with minimal potential socio-economic impact expected.
Ambient Air Quality Impact Assessment	Air Quality Impact Assessment
Plant Species Assessment	Terrestrial Biodiversity Assessment
Animal Species Assessment	Terrestrial Biodiversity Assessment

In summary, the following studies will be completed to assess the possible impacts of the project and address the proposed specialist studies as per the screening report recommendations:

- Terrestrial Biodiversity Assessment.
- Estuarine Assessment.
- Wetland Assessment.
- Soil, Land-Use- & Agricultural Impact Assessment.
- Surface- & Groundwater Baseline Investigation.
- Air Quality Assessment.
- Heritage & Palaeontological Assessment.

6.2 South African National Biodiversity Institute Biodiversity Databases

The following biodiversity related databases applicable to the study site from the South African National Biodiversity Institute (SANBI) BGIS website were interrogated.

6.2.1 National Wetlands Map 4 (NFEPA Wetlands Map)

This database provides an indication of possible wetlands on a specific site. There are no estuary wetlands identified on the site, but they are in close proximity to the site. To be further investigated by appropriate specialist.

6.2.2 National Threatened Ecosystems

The Kwambonambi Hygrophilous Grasslands threatened ecosystem which is under the KZN 9 code is located over the entire area. An ecological assessment will be done to determine the sensitivity of the site location.

6.2.3 National Protected Areas Database

No national protected areas overlap with the study site. The nearest such area is the Richards Bay Nature Reserve approximately 1km to the south-west of the study site.

6.2.4 Kwa-Zulu Natal CBA Irreplaceable Ecosystems (2016)

According to the map the generator complex is situated in a Critical Biodiversity Area (CBA) which is irreplaceable. An ecological, estuary and wetland specialist will determine the sensitivity of the site-specific status.

6.3 Dated Aerial Imagery for the Study Site

The below sequence of dated aerial imagery was sourced from Google Earth. The images range from circa 2004 to 2024 and serve to indicate the levels of disturbance to the study site over the past 20 years. The area focused on was the generator site itself as the linear infrastructure is mostly aligned with existing infrastructure routes as indicated in the figure below (orange lines):

In Figure 6-2, taken on 04/06/2004 of the area and surrounding landscape it is visible that the site is already part of the port footprint area. The roads on either side of the site were already constructed, as well as the buildings adjacent to the site towards the west. As seen in Figure 6-2 the building towards the east of the site was already constructed in 2011.

It is visible from the aerial image taken in 2017 in Figure 6-3 that the site has remained clear for several years and the surrounding infrastructure has increased as the port facilities expanded over the years within the port footprint area. From the image in Figure 6-4 taken in 2022 to the site visit done on the 15th of February 2024, it is clear that the site has remained undeveloped land, although it is cultivated grass which is cut from time to time within the port footprint area.

Figure 6-1: Google Earth image dated 04/06/2004.

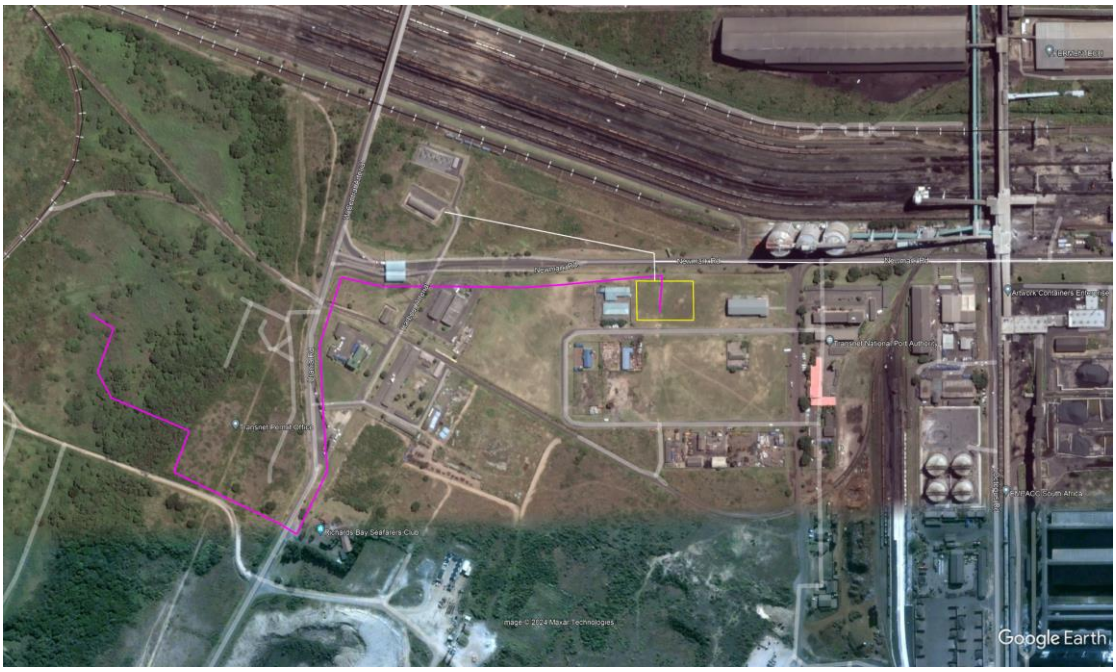


Figure 6-2: Google Earth image dated 29/03/2011.

Figure 6-3: Google Earth image dated 01/19/2017.

Figure 6-4: Google Earth image dated 21/11/2022.

7 ENVIRONMENTAL BASELINE

The section below deals with the baseline conditions on the assessment site and makes provision for a site assessment conducted on the 15th of February 2024. The time of the site assessment is during the summertime. The seasonality of the site visit does not compromise the findings of the assessment.

7.1 Topography and Drainage

The topography of the site is flat with no distinct natural topographical features. No drainage features were identified within the boundaries of the study site. Runoff from the site reports to the existing stormwater trenches constructed as part of the Storm Water Management Plant for the Port of Richards Bay.

7.2 Soils

The soils on the study site are largely consisting of sandy alluvial soils. The soil type and characteristics will be determined during the soils assessment specialist study.

7.3 Aquatic features

There are no natural drainage features (watercourses) within the study site. There are wetlands situated outside of the Port area and within 500m. The status of the wetlands will be determined by the Wetland Assessment which will be completed as a specialist study for the Application for Environmental Authorisation as well as an Estuary Assessment.

7.4 Vegetation

The vegetation on the study site is classified as Maputaland Coastal Belt vegetation type by the National Vegetation Map (2012) managed by the South African National Biodiversity Institute (SANBI).

The study site is considered to be secondary vegetation as a result of current and historical disturbances in this area. The pipeline and powerline structures for the LNG will traverse primary vegetation in certain sections. Most of the lines will be buried within the existing road reserves where possible. The disturbance to the site is due to the footprint area of the Port of Richards Bay being cleared with the development of the port and site falling within the existing footprint area. Figure 7-1 provides a map of the vegetation types in the surrounding area and the site. Figure 7-2 to Figure 7-3 illustrates the disturbances on and around the site.

Figure 7-1: Vegetation Type Map of the Area

Figure 7-2: Current vegetation on the site area where the proposed generator complex will be constructed.

Figure 7-3: The site is enclosed by fences from the adjacent buildings.

The area where the generator would be located is considered as secondary vegetation which consists of some indigenous grasses and some smaller plants which are cut from time to time to ensure the area is not overgrown and clear for security purposes. The sedge grass present on the site is indicative of the shallow groundwater table in the Richards Bay Port and the stormwater trench situated next to the site.

Around the Port of Richards Bay, the vegetation types range from subtropical lagoons to forests and freshwater wetlands.

Even though large parts of the vegetation on the study site are considered to be secondary in nature, it still meets the definition of "indigenous vegetation" as per the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

7.5 Land use

The site has been used as an open space area within the Port of Richards Bay. The site is zoned and approved as part of the port as the site is nestled between the existing buildings which are rented to contractors or used for storage and offices at the port.

8 LEGISLATIVE REVIEW

8.1 National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended

The legislative review is based on the consideration of the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

These regulations make provision for lists of activities that have been identified to potentially result in environmental degradation and as such require assessment and authorisation before they can be undertaken.

The Listed Activities occur in three separate lists, referred to as Listing Notice 1 (Government Notice R327), Listing Notice 2 (Government Notice R325) and Listing Notice 3 (Government Notice R324). Each of these Listed Activities in the individual Listing Notices has specific Application for Environmental Authorisation procedures.

The following are key definitions contained in the regulations that are pertinent to the project:

- **"development"** means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint;
- **"development footprint"** means any evidence of physical alteration as a result of the undertaking of any activity;
- **"indigenous vegetation"** refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years;
- **"industrial complex"** means an area used or zoned for industrial purposes, including bulk storage, manufacturing, processing or packaging purposes;
- **"linear activit[ies]y"** means an activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, power lines, fences, runways, aircraft landing strips, firebreaks and telecommunication lines;
- **"NEMBA"** means the National Environmental Management: Biodiversity Act (Act No. 10 of 2004);

- **"NEMPAA"** means the National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
- **"urban areas"** means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas;
- **"watercourse"** means – (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, pan, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act (Act No. 28 of 1998); and a reference to a watercourse includes, where relevant, its bed and banks;
- **"wetland"** means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered in shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

In addition, the following definitions in terms of the National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) are pertinent to the project:

The tables below provide an assessment of the potential Listed Activities that may be enacted by the construction and operation of the generator complex.

Table 8-1: NEMA: Environmental Impact Assessment Regulations: Listing Notice 2 (GNR R325) (2014 as amended)

ACTIVITY	2
Description	
The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.	
Discussion	
The installation of the 22MW energy output generator and associated infrastructure. This is more than the minimum limited stated	
Outcome	**ENVIRONMENTAL AUTHORISATION REQUIRED**

ACTIVITY	4
Description	
The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres	
Discussion	
The installation of fuel tanks with a storage capacity of 600m^3 this activity will require and environmental authorisation prior to construction.	
Outcome	**ENVIRONMENTAL AUTHORISATION REQUIRED**

ACTIVITY	6
Description	
The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent	
Discussion	

The 22MW generator will require an Atmospheric Emissions Licence (AEL) under the National Environmental Management: Air Quality Act 39 of 2004 for the emissions from the generator.	
Outcome	**AIR EMISSIONS LICENCE REQUIRED**

Table 8-2: NEMA: Environmental Impact Assessment Regulations: Listing Notice 3 (GN R324) (2014 as amended)

ACTIVITY	**10**
Description	
The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres (d) in KZN, (vi) within 500m of an estuarine functional zone; (ix) within a CBA.	
Discussion	
The installation of fuel tanks with a storage capacity of 600m^3.	
Outcome	**ENVIRONMENTAL AUTHORISATION REQUIRED**

ACTIVITY	**12**
Description	
The clearance of an area of 300 square metres or more of indigenous vegetation….; (d) in KZN, within …(v) CBA	
Discussion	
The construction of the LNG pipeline which fall within the CBA.	
Outcome	**ENVIRONMENTAL AUTHORISATION REQUIRED**

8.2 National Water Act (Act No. 36 of 1998)

Section 21 of the National Water Act (Act No. 36 of 1998) makes provision for the Water Uses that require a Water Use License or General Authorisation in terms of the Act. The following definitions provided in the Act as well as the associated regulations are applicable to the project.

- **"diverting"** means to, in any manner, cause the instream flow of water to be rerouted temporarily or permanently;
- **"impeding"** means to, in any manner, hinder or obstruct the instream flow of water temporarily or permanently, but excludes the damming of flow so as to cause storage of water;
- **"regulated area of a watercourse"** for Section 21 (c) or (i) of the Act water uses in terms of this Notice means: (a) the outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; (b) in the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or (c) a 500m radius from the delineated boundary (extent) of any wetland or pan.
- **"riparian habitat"** included the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterized by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas;
- **"watercourse"** means (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse and a reference to a watercourse includes, where relevant, its bed and banks;
- **"water resource"** includes a watercourse, surface water, estuary, or aquifer;
- **"wetland"** means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil;

The table below provides the possible Section 21 Water Uses that may require an authorisation.

Table 8-3: Possible Section 21 Water Use Authorisation required

Section 21 Water Use	Description	Applicability	Water Use Authorisation (Y/N)
(a)	Taking water from a water resource	It is assumed that the demineralised water will be generated from abstracting water from a borehole on site.	YES
(b)	Storing water	The water stored on site will be within surface storage tank similar to JoJo tanks which does not require a Section 21(b) water use authorisation.	NO
(c)	Impeding or diverting the flow of water in a watercourse	The presence of a watercourse is assumed on the study site (to be confirmed by the Wetland & Estuarine Assessment). It is therefore assumed that a portion of the generator complex footprint will be located within the "regulated area of a watercourse". As such there will be a need for a Water Use Authorisation for this water use.	YES
(d)	Engaging in a stream flow reduction activity contemplated in Section 36 of the Act	The proposed activity will not require any stream flow reduction activities to be undertaken as part of its construction or operation. As, there will be no need for a Water Use Authorisation for this water use.	NO
(e)	Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1)	The proposed activity will not require any controlled activities to be undertaken as part of its construction or operation. As, there will be no need for a Water Use Authorisation for this water use.	NO
(f)	Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit	It is understood that no waste or water containing waste will be discharged into any water resource. Based on this assumption, it is understood that there will be no need for a Water Use Authorisation for this water use.	NO
(g)	Disposing of waste in a manner which may detrimentally impact on a water resource	It is possible that a water use licence might be required for the fuel storage sump, which will be confirmed during the pre-application meeting with the Department of Water and Sanitation.	YES

Section 21 Water Use	Description	Applicability	Water Use Authorisation (Y/N)
(h)	Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process	Neither the construction or the operation of the proposed generator complex will require the discharge of water containing waste that has been heated in an industrial or power generation process.	NO
(i)	Altering the bed, banks, course or characteristics of a watercourse	The presence of a watercourse is assumed on the study site (to be confirmed by the Wetland & Estuarine Assessment). It is therefore assumed that a portion of the generator complex footprint will be located within the "regulated area of a watercourse". As such there will be a need for a Water Use Authorisation for this water use.	YES
(j)	Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people	During construction of the proposed activity dewatering of underground water from the active construction site may be required as a result of the high water table in the area. As such there will be a need for a temporary Water Use Authorisation for this water use.	YES
(k)	Using water for recreational purposes	No water associated with the proposed activity will be used for recreational purposes. As, there will be no need for a Water Use Authorisation for this water use.	NO

8.3 National Forest Act (Act No. 84 of 1998.

The purposes of this Act are to-

a) promote the sustainable management and development of forests for the benefit of all;

b) create the conditions necessary to restructure forestry in State forests;

c) provide special measures for the protection of certain forests and trees;

d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes;

e) promote community forestry;

f) promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

The following definitions provided in the Act as well as the associated regulations are appliable to the project.

- **"forest includes"** – (a) a natural forest, a woodland and a plantation; (b) the forest produce in it; and (c) the ecosystems which it makes up;
- **"natural forest"** means a group of indigenous trees – (a) whose crowns are largely contiguous; or (b) which have been declared by he Minister to be a natural forest under section 7(2);
- "protected tree" means a tree declared to be protected, or belonging to a group of trees, woodland or species declared to be protected, under section 12(1) or 14(2);
- "tree" includes any tree seedling, sapling, transplant or coppice shoot of any age and any root, branch or other part of it;

When clearance of any trees is required during the pipeline or powerline installation, any protected species will require a permit before removal. Any removal of these trees will require a permit from the Department of Forestry, Fisheries and Environment before the removal can be initiated.

9 CONCLUSION

The purpose of this assessment was to determine the potential legislative authorisations required for the proposed 22MW Generator Facility based on the current understanding of the extent and possible design of the facility as well as the site-specific features that are associated with the project as identified on-site and through the DFFE Screening Tool. The findings are as follows:

- The Generator Facility site is located within the Port of Richards Bay footprint area and has already been altered. The pipeline and powerlines associated with the facility will traverse the more sensitive areas, although the linear activities will have a smaller footprint area. Care should be taken when working within the sensitive areas.
- Environmental Authorisations will be required for several Listed Activities in accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.
- A Water Use Authorisation may be required for Section 21 (a), (c), (i) and (j) water uses as the facility is located within the "regulated area of a watercourse" as defined in the National Water Act (Act No. 36 of 1998). As such, it will be necessary to engage an appropriate specialist to conduct the necessary assessment(s) to present to the Department of Water and Sanitation as a motivation for an authorisation.
- The removal of specific tree species will require permitting in accordance with the National Forests Act (Act No. 84 of 1998) before these trees can be removed.
- Due to the fact that the 22MW generator complex would be situated within the existing disturbed footprint area of the Port of Richards Bay, the impact on the natural vegetation and undisturbed areas is minimal.

APPENDIX A

SPECIALIST CURRICULUM VITAE

Rona Schröder

Senior Environmental Assessment Practitioner

CORE SKILLS

- Project Management
- Environmental Impact Assessment
- Water Use Licencing
- Mining Environmental Compliance
- Environmental Compliance Auditing
- Environmental Strategic Action Plans

DETAILS

Qualifications

- B.Sc. (Hons) Environmental Analysis and Management - University of Pretoria (2011)
- B.Sc. Geology and Management - University of the Free State (2012)
- SHEilds (NEBOSH) International General Certificate in Occupational Health and Safety (2018)
- Certificate in Project Management for Strategic Advantage, University of Stellenbosch Business School (2017)

Professional Registrations

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1149)
- Pr.Sci.Nat (120605), South African Council for Natural Scientific Professionals)
- International Association for Impact Assessors of South Africa (IAIASA)

Languages

- English
- Afrikaans

Countries Worked In

- South Africa
-

PROFILE

Rona has over 10 years's experience within the environmental management, water and mining field and is aimed at delivering the required environmental services for each client.

Rona has experience in the environmental fields as an Environmental Assessment Practitioner as well as having worked in the mining field on-site ensuring environmental compliance for several mining and processing sites.

She has dealt with projects in the mining, municipal, farming, electricity generation, telecommunications and water industries. She has been involved with environmental projects from site screening and feasibility, environmental application, writing of Environmental Management Programes (EMPr), writing of technical reports all the through to Stakeholder Engagement Processes and completing of projects up to issuing authorization permits and licenses.

- Proposal Writing and project management
- Stakeholder Management and Engagement
- Government institution and authority liaison
- Water Use Licence Applications
- Environmental Impact Assessment / Basic Assessments
- Environmental Compliance Officer
- Public Participation Processes
- Environmental Compliance Auditing
- Mining Environmental Projects and Licensing
- Environmental Screening and Site Evaluations
- Environmental Training

Previous Experience

Period	Employer	Position	Role/ Responsibility
2021 - 2023	Ikwezi Mining & Zinoju Coal & Zarbon Coal	Group Environment Manager	**I started as Group Environment Officer for Ikwezi Mining and Zarbon Coal and was promoted to Group Environment Manager for Ikwezi Mining, Zarbon Coal and Zinoju Coal. Here is a brief description of my responsibilities at Ikwezi Mining and Buffalo Coal.** • **Responsible for obtaining all relevant environmental authorizations and licenses for the current mining and plant operations as well as new projects;** • **Managing environmental compliance for opencast and underground mining operations as well as washing plants;** • **Departmental and community liaising on all environmental aspects;** • **Project planning, project management and process management for applications and specialist studies;** • **Developing and reviewing SOPs and COPs for environmental aspects;** • **Environmental Auditing, compliance tracking and reporting;** • **Environmental awareness program development and implementation;** • **Environmental monitoring and reporting;** • **Action plans development and implementation;** • **Guidance and implementation of Environmental Legislation;**
2019 - 2021	ACE Environmental Solutions	Head of Department: Environmental	• **Project Management; Proposal Writing for new projects; Company Marketing; Document Quality Assurance;** • **Environmental Authorizations, Water Use License Applications and Waste Management License Applications;** • **Client and Government Department Liaisons;** • **Environmental Compliance Auditing;** • **Managing of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts;** • **Managing Stakeholder Engagement Processes for authorizations and licensing**

			applications; • Development and implementation of Environmental Management Plans (EMP); • Developing Protocols for environmental processes
2013 - 2019	Alta van Dyk Environmental Consultants	Environmental Consultant	• Project Management of multi-disciplinary teams; • Please note that our standard 2023 terms and conditions were sent out in December of 2022. • Environmental Compliance Auditing of Authorizations (ECO), Authorizations and Environmental Management Programmes (EMP); • Project Management for Environmental Processes under the National Environmental Management Act (NEMA), Mineral and Petroleum Resources Development Act (MPRDA) and National Water Act (NWA); • Environmental Authorization, Water Use License and Waste Management License Applications; • Proposal Writing for new projects; • Identification and assessments of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts; • Report Writing and reviewing; Client and Government Department Liaisons; • Stakeholder Engagement Processes for authorizations and licensing applications; • Development and implementation of Environmental Management Plans (EMP); • Developing License Auditing Protocols for conducting environmental legal compliance audits, • Experience as a Data Controller for a large international company with several operations as part of their due diligence process and management system actions;
2013	**Prime Africa Consultants**	**Risk Assessment Matrix Developer**	• Developing a Multi Criteria Risk Assessment Matrix for site selection during Environmental Impact Assessments.

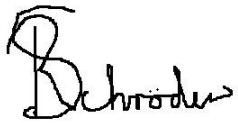
Project Experience

Year	Client	Project Description	Role/Responsibility
2013-2015	Pandora Platinum Mine	Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner
2014	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2014-2019	Lonmin Plc	Marikana Operations Water Use Licence Audit	Environmental Practitioner
2015	Lonmin Plc	Precious Metal Refinery Water Use Licence Application	Environmental Practitioner
2015-2016	Lonmin Plc	Marikana Operations Water Use Licence Application	Environmental Practitioner
2016	Keaton Energy	Vanggatfontein Colliery Wash Plant Extension Authorisation	Environmental Practitioner
2016-2018	Keaton Energy	Vanggatfontein Colliery External Water Use Licence Audits	Environmental Practitioner
2016	Nqutu Local Municipality	Rural Electrification Project Ndodekhling-Shayiwe Small Scall Hydropower Plant	Environmental Practitioner
2016	Mhlontlo Local Municipality	Rural Electrification Project Kwa-Madiba Small Scale Hydropower Plant	Environmental Practitioner
2016	Anglo Thermal Coal	Licence and Permitting Database Development – For all Coal Operations	Data Controller
2016	Anglo Platinum	Licence and Permitting Database Development – For all Platinum Operations	Data Controller
2019	Ekurhuleni Metropolitan Municipality	Mooifontein Cemetery Extension Water Use Licence Application	Environmental Practitioner
2019	Blue Valley Golf Estate	Environmental Management Programme	Environmental Practitioner
2017	Nkomati Anthracite	Water Use Licence Audit Report	Environmental Practitioner
2017	Nkomati Anthracite	Basic Assessment Report	Environmental Practitioner
2017-2019	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2018	Glencore	Chrome Plant Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner

2018-2019	Lonmin Plc	Precious Metal Refinery Water Use Licence Audit	Environmental Practitioner
2018-2019	Lonmin Plc	Marikana Operations Water Use Licence Application Amendment	Environmental Practitioner
2020-2021	Atlas Towers	Telecommunications Mast Basic Assessments	Project Manager and Environmental Practitioner
2021-2023	Ikwezi Mining	Opencast Mining and Coal Washing Plant Compliance	Group Environmental Manager
2022-2023	Buffalo Coal	Underground Mining and Coal Washing Plant Compliance	Group Environmental Manager

DECLARATION

I, Rona Schröder, hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 15/01/2024

UNIVERSITY OF THE **FREE STATE**
UNIVERSITEIT VAN DIE **VRYSTAAT**
YUNIVESITHI YA **FREISTATA**

THIS IS TO CERTIFY THAT THE DEGREE HIERMEE WORD VERKLAAR DAT DIE GRAAD

Baccalaureus Scientiae

HAS BEEN CONFERRED UPON
TOEGEKEN IS AAN

SCHRÖDER, Rona Wilma

IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY. AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEëL VAN DIE UNIVERSITEIT HIERONDER.

ENDORSEMENT: GEOLOGY AND MANAGEMENT
ENDOSSEMENT: GEOLOGIE EN BESTUUR

VICE- CHANCELLOR / VISEKANSELIER

DEAN / DEKAAN

REGISTRAR / REGISTRATEUR

BLOEMFONTEIN
2012-03-28
2007009976

28055749

Universiteit van Pretoria

Die Raad en die Senaat verklaar hiermee dat die graad

Baccalaureus Scientiae Honores

in

Omgewingsanalise en -bestuur

met al die regte en voorregte daaraan verbonde by geleentheid van 'n kongregasie van die Universiteit toegeken is aan

Rona Wilma Schroder

kragtens die Wet op Hoër Onderwys, 1997 en die Statuut van die Universiteit

Namens die Raad en die Senaat

C. de la Rey

Visekanselier en Rektor

Namens die Fakulteit
Natuur- en Landbouwetenskappe

Dekaan

Registrateur

2013-04-17

nebosh

Management of international health and safety

A unit of the:
NEBOSH International General Certificate in Occupational Health and Safety
NEBOSH International Certificate in Construction Health and Safety
NEBOSH International Certificate in Fire Safety and Risk Management

Rona Wilma Schroder

achieved this unit on

12 November 2018

William Nixon
Chair

Ian Taylor
Chief Executive

Master log certificate No: IGC1/00447107/1026644
SQA Ref: UE48 04

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Hiermee word gesertifiseer dat
It is hereby certified that

Rona Wilma Schroder

die volgende kursus suksesvol voltooi het
successfully completed the following course

PROJECT MANAGEMENT FOR STRATEGIC ADVANTAGE (ONLINE)

Number of Short Course Credits : 8

Vir die periode
Over the period

24/01/2017 - 10/03/2017

Prof Piet Naude
Director/Direkteur USB

Frik Landman
Chief Executive Officer
Hoof-Uitvoerende Beampte

USB Executive Development
University of Stellenbosch Business School

4497/55470

EAPASA
Unit 19 Oxford Office Park
3 Bauhinia Street
Highveld Techno Park
Centurion
0157
Tel. (+27) 12 880 2154

Email: registrar@eapasa.org / Website: www.eapasa.org

Environmental Assessment Practitioners Association of South Africa
Advancing environmental assessment practice in South Africa

Miss Rona Schroder
384 Fountains Avenue
Lyttelton
Pretoria
0157

Sent by email to: blommetjie@ymail.com

Dear Miss Schroder

Registered Environmental Assessment Practitioner: Number 2020/1149
Rona Wilma Schroder : South African ID 8901300067080

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Rona Wilma Schroder is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

https://registration.eapasa.org/registered-practitioners

Your registration is effective for a period of five years from 31 August 2020, and expires on 31 August 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

RC Hill

Dr Richard Hill
Registrar
Date: 31 August 2020

Board Members: Ms Snowy Makhudu (Chairperson), Mr Khangwelo Desmond Musetsho (Vice-Chairperson),
Mr Ntsako Baloyi, Mr Zama Dlamini, Mr Siyabonga Gqalangile, Ms Jacqui Hex,Mr Phumudzo Nethwadzi, Mr Danie Neumann.
Registrar: Dr Richard Hill
NPO Reg. No. 122-986

Gerda Bothma

GCS Group Environmental Manager

CORE SKILLS

- Project Management
- Technical & Impact Assessment Guidance
- Environmental Assessment
- Water Use Licencing
- Waste Management Licencing
- Environmental & Waste Auditing and Compliance Monitoring

DETAILS

Qualifications

- B.Sc. Microbiology (Honours) University of Pretoria 1996
- B.Sc. Biological Sciences University of Pretoria 1994

Memberships/ Professional Affiliations

- International Association for Impact Assessors of South Africa (IAIA)
- Institute of Waste Management of South Africa (IWMSA)
- SACNASP (No.117348) (South African Council for Natural Scientific Professionals)

Languages

- Afrikaans
- English

Countries worked in:

South Africa, Zambia, Namibia

PROFILE

Gerda has over 25 years' experience within the environmental and waste management field and strives to deliver custom environmental services to clients.

Gerda began her career in the environmental field within the government sector, managing environmental aspects and impacts as well as reviewing environmental assessments with the view of authorizing or declining authorization of the developments.

After six years within the government sector she joined a consulting engineering firm where she was ultimately responsible for the Management of the Environmental Sub-Division. Gerda has experience in project and client management, financial management and the compilation and costing of project proposals and tenders. She has been involved in several engineering projects as the Environmental Assessment Practitioner as well as the Environmental Control Officer during construction working closely with the Occupational Health and Safety Officer. Gerda has also been involved in projects where waste licensing as well as water use licensing processes formed an integral part of the services offered. Environmental auditing and compliance monitoring of waste disposal sites also forms part of her experience gained. She also has experience in dealing with projects which involve NEC3 Contracts, the Equator Principles and World Bank IFC Principles.

Gerda has specialist skills in the following areas:

- Project proposals, planning, costing and timing
- Project and Client Management
- Authority Liaison
- Basic Assessments & Scoping/EIA Processes
- Amendment of EA's & EMP's
- S24G Applications
- Facilitation of Public Participation Processes & Stakeholder Engagement
- IWULA & IWWMP Applications
- Environmental Control Officer (ECO) duties
- Environmental Compliance Auditing (IFC Performance Standards & Equator Principles)
- Mentorship & Guidance

Work Experience

Period	Employer	Position	Role/ Responsibility
2019 to Current	GCS Water and Environment (Pty) Ltd	Environmental Manager	Management of the environmental unit since 2019 up to January 2024 and then the GCS Group Environmental Division since February 2024. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2018 to 2019	Terramanzi Group (Pty) Ltd	Senior Environmental Consultant	Management of the environmental unit within the Terramanzi Group. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2014 to 2017	GIBB (Pty) Ltd	Senior Environmental Scientist	Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2011 to 2013	WorleyParsons RSA	Senior Environmental Scientist & Durban Department Head Environment	Management of the environmental unit in the Durban Office. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2003 to 2011	KV3 Engineers	Senior Environmental Scientist	Management of applications for exemption from compliance with the EIA Regulations, undertaking of basic environmental assessment applications, as well as full environmental impact assessment applications.
2000 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Assistant Director: Waste Management Division	Project management and environmental management pertaining to all developments within a designated area in Gauteng Province. Review of EIAs, formulation of comments and or authorisations within designated area in Gauteng Province. Liaison with waste contractors, industries and others. Management of legal interventions required in terms of environmental legislation within a designated area. Supporting environmental officers at all levels in terms of technical and environmental guidance, input into strategic decisions, resolving complex and potentially challenging issues.
1999 to 2000	Gauteng Department of Agriculture, Conservation & Environment	Senior Environmental Officer: Waste Management Division	
1997 to 1999	Gauteng Department of Agriculture, Conservation & Environment	Environmental Officer: Waste Management Division	
1996	Spartan Private School	Teacher: Natural Science & Biology	Teacher in Biology and Natural Science for Grades 7 to 12.

Year	Client	Project Description	Role/ Responsibility
Strategic and Environmental Guidance Projects			
1999 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of a Health Care Risk Waste Management Strategy for Gauteng.	Part of Development Team
2001 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of Minimum Domestic Waste Collection Standards for Gauteng Province.	Part of Development Team
2002	Gauteng Department of Agriculture, Conservation & Environment	Development of new EIA guidelines and regulations for the Gauteng Province.	Part of Development Team
2005	Gauteng Department of Agriculture, Conservation & Environment	GDACE Green Procurement Project: Development of the GDACE Green Procurement Policy, Gauteng	Project Manager & Reviewer
2008	GAUTRAIN Project Engineers (i.e. KV3 Engineers)	Environmental Assistance for the Gautrain Project: Environmental Evaluation of various documentation and engineering designs in terms of their environmental compliance.	Project Manager & Reviewer
2009	Department of Environmental Affairs	Alignment of MIG Project Process with EIA Process: Evaluation of the EIA process as well as the MIG process in order to produce a process alignment guideline to the municipalities to streamline the two processes.	Part of Development Team
2021	CoalTech	Development of "A Manual for the Authorisation of Pitlakes as a Closure Option for South African Coal Mines"	Part of Development Team
Environmental Feasibility and Screening			
2008	Nu Way-property Developments	Management of Environmental Screening and Due Diligence Assessment for several proposed Nu Way-property Developments, Gauteng.	Project Manager
2008	Department of Water Affairs	Mokolo Croc WAP Environmental Feasibility and Screening, Limpopo.	Project Manager & Senior Environmental Assessment Practitioner (EAP)
2016	Kwadukuza Municipality	Environmental Feasibility for Civil Engineering Project Foxhill Road Alignment and Construction, Tongaat, Kwa-Zulu-Natal.	Environmental Project Leader
2016	King Sabata Dalindyebo Local Municipality (C/O OR Tambo District Municipality)	Environmental Screening Investigation of six proposed development corridors for the Mthatha Bulk Water Infrastructure Presidential Intervention – Phase 2: Secondary Bulk Infrastructure project.	Environmental Project Leader
2019 to 2020	Phumaf Holdings (Pty) Ltd	Environmental Screening for various sites within Ekhurhuleni Municipality as part of the Gauteng Rapid Land Release Programme (GRLRP) project for the Provincial Department of Human Settlements	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Environmental Opinions & Appeals			
2019 to 2020	Tendele Coal	Environmental Review Report for the Somkhele Anthracite Mine (MR 10041) High Court Case Number 82865.	Project Manager & Senior EAP
2022	CNG Holdings	Environmental Opinion regarding the Environmental Legislative Requirements for the proposed Compressed Natural Gas Motherstation in Avoca, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Tendele Coal	Environmental support to the Somkhele Anthracite Mine for the IWULA Appeals Process.	Project Manager & Senior EAP
Development Environmental Assessments			
2003 to 2005	ABSA DevCO	Environmental Impact Assessment for a change of land-use from agricultural to Residential and Town Development of the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Senior EAP
2005 to 2010	Air Traffic Navigation Services (ATNS)	The project entails the upgrading of existing, and the provision of new air navigation sites (27 in total) throughout South Africa. Civil and electrical infrastructure to the sites needed to be upgraded to accommodate the equipment. Various Environmental Impact Assessments for various individual projects in various provinces within South Africa.	Project Manager & Senior EAP
2006 to 2009	Amathole District Municipality	Elliotdale Rural Sustainable Human Settlement Pilot Project Environmental Impact Assessment. Responsible for the environmental assessment process which was based on a strategic approach for the Elliotdale Rural Housing Project, Elliotdale, Eastern Cape.	Project Manager & Senior EAP
2007	Elkem Ferroveld	Environmental Basic Assessment for the upgrading and expansion of the Ferroveld Plant in Ferrometals, Emahlaheni, Mpumalanga.	Project Manager & Senior EAP
2008	ABSA DevCO	Environmental Impact Assessment for a change in land use from agricultural to Residential and Town development of Montana X40, Pretoria, Gauteng.	Project Manager & Senior EAP
2012	Transnet Capital Projects	Environmental Basic Assessment and technical environmental investigations for the proposed expansion of the existing tug jetty and construction of a new tug jetty for Transnet Capital Projects in the Port of Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	Dube TradePort	Environmental Impact Assessment for the proposed construction of the Dube TradePort TradeZone 2 in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2017	Dube TradePort	Environmental Impact Assessment for the proposed Support Precinct 2 Development in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities at the Areena Resort, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities on Hillsdrift Farm, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2018 to 2019	Watchman Properties (Pty) Ltd	Environmental Basic Assessment for the proposed Vendome Residential Development on Portion 1 of Farm 1766 and Portion 2 of Farm 1766, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2018 to 2019	Keysha Investments 213 (Pty) Ltd	Environmental Basic Assessment for the proposed River Farm Estate Development and associated infrastructure on remainder of farm Rivierplaas No. 1486, Erf 111 and Erf 197, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Paarl Vallei Developments (Pty) Ltd	Environmental Basic Assessment for the proposed Paarl Valleij Retirement Village Development, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Val de Vie Investments (Pty) Ltd	Parallel Substantive Amendment Application process for the authorised Pearl Valley II & Levendal Residential Developments, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2019 to 2021	Phumaf Holdings (Pty) Ltd	Environmental Services for: • Full Environmental Impact Assessment for the proposed Unitas Park Ext 16 Mixed Use Development; • Basic Environmental Impact Assessment for the proposed Evaton West F Mixed Use Development; and • Basic Environmental Impact Assessment for the proposed Evaton West I Mixed Use Development.	Project Manager & Senior EAP
Renewable Energy Environmental Assessments			
2011	Farmsecure Carbon	Environmental Basic Assessment and Water Use License Application process for a proposed Biogas Waste to Energy project for a pig farm, Mooiriver, KwaZulu-Natal.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Doornfontein Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 230 MW Doornfontein Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 118, Doornfontein, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Kruispad Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Kruispad Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 120, Kruispad, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	Brandvalley Wind Farm (Pty) Ltd	Part 2 Amendment Application for the authorised 140 MW Brandvalley Wind Energy Facility (WEF) located within the Karoo Hoogland, Witzenberg and Laingsburg Local Municipalities in the Northern and Western Cape Provinces.	Project Manager & Senior EAP
2018 to 2019	Copperton Wind Farm (Pty) Ltd	Non-Substantive Amendment Application to update the information of the Holder of the Environmental Authorisation & an EMPr Amendment Process to update the Airstrip Alignment and to provide an updated "outcomes based" EMPr for the Copperton Wind Energy Facility near Copperton in the Northern Cape.	Project Manager & Senior EAP
2018 to 2019	WKN Windcurrent SA (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Haga Haga Wind Energy Facility (WEF) & Environmental Basic Assessment for the associated Haga Haga Overhead Powerline (OHPL) in Haga Haga, Great Kei Local Municipality, Eastern Cape.	Project Manager & Senior EAP
2021 to 2022	Cennergi Holdings	Environmental Impact Assessment and Water Use License Application (GA) process for the proposed 100MW Lephalale Solar Plant located mainly on the Farm Appelvlakte 448 within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Mining Environmental Assessments			
2007	Chris Hani Municipality	Environmental Assessment and DME Licence Application on behalf of Chris Hani Municipality. Responsible for exemption application from Mining Permit and Environmental Management Programmes for 17 borrow pits in Middelburg, Eastern Cape.	Project Manager & Senior EAP
2010	Samancor Chrome Limited	The Lwala Greenfields Mine and Smelter EIA and EMP. Responsible for the Environmental impact assessment and technical investigations for the waste management issues for the proposed development of a new chrome smelter project in the Steelpoort area, Limpopo.	Project Manager & Senior EAP
2011	Xtrata Alloys	Xtrata Alloys Western Mines PSV application for authorization in terms of the MPRDA. Responsible for the undertaking of the EIA and compilation of the amended EMPr and technical environmental investigations for the proposed development of an open cast mine in Rustenburg, North West.	Project Manager & Senior EAP
2019 to 2021	Harmony Gold	Environmental Assessment process to obtain environmental authorisation for the proposed expansion of the existing Kareerand Tailings Storage Facility, Dr Kenneth Kaunda District Municipality, North-West Province.	Project Manager & Senior EAP
2019 to 2021	Zululand Anthracite Colliery	Environmental Basic Assessment for the proposed New Mngeni Adit & Associated Infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Sibanye-Stillwater	Part 2 Amendment Application for the approved Burnstone Gold Mine EA/EMPr located near Balfour within the Dipalaseng Local Municipality, Mpumalanga.	Project Manager & Senior EAP
2021 to 2022	Exxaro Resources	Section 34 EMPr Amendment Application for the approved Grootegeluk Mine EMPr located near Lephalale within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP
2021 to 2022	Booysendal Northam Platinum	Part 2 Amendment Applications for the Booysendal Mine located near Lydenburg, across both Mpumalanga and Limpopo provices: • Booysendal North Mine: New Emergency Escape Portal and two new Ventilation Shafts and associated Infrastructure; and • Booysendal South Mine: New Ventilation Shafts and associated infrastructure.	Project Manager & Senior EAP
2022 to 2023	Booysendal Northam Platinum	Integrated Environmental Authorisation Application for the Booysendal South Phase III Expansion, Lydenburg, Mpumalanga: • Booysendal South Tailings Storage Facility Expansion; • Booysendal South Run of Mine Stockyard Stockpile Expansion; and • Booysendal South New Merensky Plant.	Project Manager & Senior EAP
2022 to 2023	Kangra Coal	Integrated Environmental Authorisation Application for the establishment of a Co-Disposal Discard Facility and Wastewater Treatment Plant at the Maquasa East Operations, Piet Retief, Mpumalanga.	Project Manager & Senior EAP
2023	Kangra Coal	Integrated Environmental Authorisation Application for the Umgala/Knights Hill Mining Application, Utrecht, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Waste Management Environmental Assessments			
2003	Assmang Chrome Machadodorp	Environmental Impact Assessment for the permitting of the H:H Hazardous Waste Disposal Facility at Assmang Chrome, Machadodorp.	Senior EAP
2004	Emfuleni Local Municipality	Environmental Impact Assessment for the closure of the Zuurfontein Landfill site for the Emfuleni Local Municipality, Sedibeng, Gauteng	Senior EAP
2004	Ekurhuleni Municipality	Environmental Impact Assessment for the closure of the Sebenza Landfill Site for the Ekurhuleni Municipality, Gauteng.	Senior EAP
2004	Tzaneen Local Municipality	Application for authorisation and EIA for the permitting of an existing solid waste disposal site for the Tzaneen Local Municipality, Mpumalanga.	Senior EAP
2006	Samancor Chrome Middelburg	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Middelburg, Mpumalanga.	Senior EAP
2006	Samancor Chrome Ferrometals	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Ferrometals Witbank, Mpumalanga.	Senior EAP
2007	Steve Tshwete Municipality	Environmental Impact Assessments for four Solid waste Transfer Stations for the Steve Tshwete Municipality, Mpumalanga.	Senior EAP
2008	Assmang Chrome Machadodorp	Environmental Impact Assessment for the expansion of the existing Slag Waste Disposal Facility at Assmang Chrome. Responsible for the EIA application for authorization for the proposed expansion project in Machadodorp, Mpumalanga.	Project Manager & Senior EAP:
2010	ArcelorMittal	ArcelorMittal BOF Slag Disposal site licensing of new site and closure of old site, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP:
2010	Lekwa Municipality	Waste Management License Application for authorization and the conducting of an EIA and technical environmental investigation for the proposed development of two landfill sites for the Lekwa Municipality, Mpumalanga.	Project Manager & Senior EAP:
2015 to 2017	Umgungundlovu Municipality	Advanced Solid Waste Management Project for Umgundgundlovu Municipality for proposed Materials Recovery Facilities located in various Local Municipalities, Umgungundlovu Municipality, KwaZulu-Natal.	Project Manager & Senior EAP:
2019 to 2022	Buffalo Coal	Magdalena Colliery Waste Management License Application, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP:
Water and Wastewater Environmental Assessments			
2004	Msukaligwa Municipality	Environmental Impact Assessment for the installation of a water reticulation system at Nganga for the Msukaligwa Municipality, Mpumalanga.	Senior EAP
2006 to 2010	eThekwini Municipality: Water and Sanitation	Proposed upgrading of the WWTW capacity in the Northern Areas of the eThekwini Municipality. Responsible for EIA application for authorization, technical environmental investigations, and waste management license application for the proposed expansion of the WWT capacity in Northern eThekwini, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2008	Johannesburg Water	Environmental Management Services for Johannesburg Water: Environmental Impact Assessment (Exemption) for various individual projects related to the upgrading of the Bryanston Water Mains, Gauteng.	Project Manager & Senior EAP
2014 to 2017	eThekwini Municipality: Water and Sanitation	Environmental Basic Assessment and Water Use License Application for the Northern Aqueduct Water Augmentation Project (Phase 5), Durban, KwaZulu-Natal.	Project Manager & Senior EAP
Electrical and Linear Environmental Assessments			
2005	Magallies Water	Application for (exemption) authorisation on behalf of Magallies Water for the installation of the Rising Main from the Roodeplaat Waterworks to the Wallmannsthal Reservoir, in Wallmannsthall, Gauteng.	Senior EAP
2010	Moloto Rail Corridor Development	EIA for the Moloto Rail Corridor Development. Responsible for the EIA application for authorization and technical environmental investigations for the proposed Moloto Rail Corridor Development, Moloto, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Honingklip 88kV & ESKOM Randjiesfontein 88kV overhead line and Sub-Stations, Johannesburg, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Ubertas Strategic Servitude Sub-Station, Johannesburg, Gauteng	Project Manager & Senior EAP
2014 to 2017	Msunduzi Municipality	Environmental Impact Assessment for the proposed Msunduzi IRPTN project, Pietermaritzburg, KwaZulu-Natal	Project Manager & Senior EAP
Environmental and Waste Management Compliance Monitoring and Auditing			
2005 to 2009	Sedibeng District Municipality	Auditing of Zuurfontein and Boitshepi Landfill sites for the Sedibeng District Municipality, Gauteng.	Part of Audit Team
2006 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Amberfield Development on the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Environmental Control Officer (ECO)
2007 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Zambezi Estate Development, Montana, Gauteng.	Project Manager & ECO
2008 to 2009	Steve Tshwete Municipality	Auditing of Middelburg Landfill Site for the Steve Tshwete Municipality, Mpumalanga.	Part of Audit Team
2008 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Cedar Creek Development, Fourways, Gauteng.	Project Manager & ECO
2017 to 2018	Dube TradePort	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of TradeZone 2, Dube TradePort, La Mercy, KwaZulu-Natal.	Project Manager & ECO
2017	Richards Bay Minerals	Environmental Legal Compliance Audit to determine the level of compliance of Richards Bay	Project Manager &

Year	Client	Project Description	Role/ Responsibility
		Minerals' to their various mining, water and waste licenses and environmental authorisations and permits, Richards Bay, KwaZulu-Natal.	Environmental Auditor
2017 to 2018	eThekwini Municipality	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of the Northern Aqueduct Phase 5, Durban, KwaZulu-Natal.	Project Manager & ECO
2019	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Samancor Eastern Chrome Mines	Annual Performance Assessment Audits for the following mines in Limpopo: • Doornbosch, Steelpoort and Montrose Mines; • Quartz Mine; • Lwala Mine; • Lannex Mine; • Spitskop Mine; and • Tweefontein Mine.	Project Manager & Technical Review
2020	ESKOM	ESKOM Biennial PCB Phase-out Compliance Audit, various sites within South Africa.	Project Manager & Lead Auditor
2020	ESKOM	Majuba Power Station Legal Compliance Audit, Volksrust, Mpumalanga.	Project Manager & Lead Auditor
2021	Zululand Anthracite Colliery	Annual IWUL Audit for 2020, Mandlakazi Traditional Authority, KwaZulu-Natal	Project Manager & Technical Review
2021	ESKOM	Kendal Power Station Legal Compliance Audit, eMalahleni Local Municipality, Mpumalanga.	Project Manager & Lead Auditor
2021	Coalition Trading	External Compliance Audit for the Humberdale Landfill Site, in terms of the Waste Management Permit, KwaZulu-Natal	Project Manager & Auditor
2021	Tronox KZN Sands (Pty) Ltd	NEM: WA Norms and Standards External Waste Compliance Audit for the Tronox Central Processing Complex located in Empangeni, KwaZulu-Natal	Project Manager & Lead Auditor
Integrated Water Use License Applications			
2010	FOSKOR	Integrated Water Use License Application for a new storage dam for FOSKOR, Richards Bay, KwaZulu-Natal.	Part of Project Team
2014 to 2015	SANRAL	Integrated Water Use License Applications as required for the proposed SANRAL N2 Road upgrade from Mthunzini to Empangeni, KwaZulu-Natal.	Project Manager & Senior EAP
2014	eThekwini Municipality: Roads	Integrated Water Use License Application for the proposed Realignment of Inanda Arterial Road, Durban, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2015 to 2017	SMEC (Umzimkulu Municipality)	Integrated Water Use License Application for the proposed Licensing of the existing Umzimkhulu Waste Water Treatment Works, Umzimkhulu, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	eThekwini Municipality: Roads	Water Use License Application for the proposed eThekwini BRT Route C1A, Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2020	Zululand Anthracite Colliery	Integrated Water Use License Application for the new Mngeni Adit and associated infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2021	South32 SA Coal Holdings	Integrated Water Use License Application for the Roy Point Mine, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Amendment Application for the Magdalena Colliery, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Application for the Coalfields Processing Plant, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
Management and Master Plans			
2005	Livingstone Municipality	Development of the Livingstone Integrated Development Plan, Zambia.	Part of the Project Team
2008	Steve Tshwete Municipality	Development of an Integrated Waste Management Plan for the Steve Tshwete Municipality, Mpumalanga.	Part of the Project Team
2008	Kungwini Local Municipality	Development of an EMP (Framework) for Kungwini Local Municipality, Mpumalanga.	Part of the Project Team
2010	KZN Department of Public Works – Southern Region	Compilation of an Environmental Management Plan for the Fort Napier sewage upgrading project, Pietermaritzburg, Kwa-Zulu Natal.	Project Manager & Senior EAP

DECLARATION

I, ___Gerda Bothma_____ hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 21/02/2024

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae

with specialization in
Biological Sciences

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of
Science
(Sgd) N Sauer
Dean

(Sgd) CR de Beer
Registrar

Date of Conferment
8 December 1994

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores

with specialization in
Microbiology

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of Biological
and Agriculrural Sciences
(Sgd) J van Zyl
Dean

(Sgd) JA Boon
Registrar

Date of Conferment
27 March 1996

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Gerda Bothma

Registration Number: 117348

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **15 November 2017** Expires **31 March 2024**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX F: ENVIRONMENTAL IMPACT ASSESSMENT TABLES

ACTIVITY(S)	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		Duration	Extent	Irreplaceable Loss	Severity	CONSEQUENCE	Probability	SIGNIFICANCE	+/-	RISK RATING (C x S)		Duration	Extent	Irreplaceable Loss	Severity	CONSEQUENCE	Probability	SIGNIFICANCE	+/-	RISK RATING (C x S)
CONSTRUCTION PHASE: PREFERRED ALTERNATIVE																				
Air Quality & Climate																				
Dust from construction activities	Dust fallout	2	1	0	1	3	2	6	-	L	Strict enforcement of speed limits on all site roads Routine water spraying of site roads and denuded/disturbed areas (more frequent spraying may be necessary during dry, windy conditions) Removal of vegetation only if necessary Revegetation or paving of disturbed areas once construction activities are complete.	2	1	0	1	3	1	3	-	L
Soil-Water Impacts																				
Disturbing vadose zone during soil excavations/construction activities.	Net Result of Earthworks and Construction	3	2	1	2	12	2	24	-	L	Only excavated areas apply to the project area. Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils. Cover excavated soils with a temporary liner to prevent contamination. Retain as much indigenous vegetation as possible. Exposed soils are to be protected using a suitable covering or revegetating.	3	2	1	1	6	1	6		L
Poor quality seepage from machinery used to excavate soils. Oil, grease, and fuel leaks could lead to hydrocarbon contamination of the vadose zone - which could percolate into the shallow aquifer.	Net Result of Earthworks and Construction	3	2	1	2	12	2	24	-	L	Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination during construction (monthly)	3	2	1	1	6	1	6		L
Soils, Land Capability and Land Use																				
Movement of machinery, land preparation and excavations and other construction activities.	Soil Compaction and Erosion	1	1	0	1	2	2	4	-	L	Any recommendations provided by a storm water management plan must be adhered too. Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created. All stockpiles created from the construction activities must be protected from erosion, stored on flat areas, where runoff will be minimised. Stockpiles must also only be stored for the minimum amount of time necessary. Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures. Vehicles are to be maintained in good working order so as to reduce the probability of leakage of fuels and lubricants. A dedicated store with adequate concrete flooring or bermed area must be used to accommodate chemicals such as fuel, oil, paint etc.Concrete is to be mixed on mixing trays only, not on exposed soil. Concrete and tar must be mixed only in areas which have been specially demarcated for this purpose. After all the concrete / tar mixing is complete all waste concrete / tar must be removed from the batching area and disposed of at an approved dumpsite. An Environmental Management Plan must be implemented to ensure that all waste and pollutants are handled, stored, and disposed of correctly.	1	1	0	1	2	1	2	-	L
Movement of machinery, land preparation and excavations and other construction activities.	Soil Pollution Potential	1	2	0	2	6	2	12	-	L		1	1	0	1	2	1	2	-	L
Terrestrial Biodiversity Impacts																				

Potential increase in alien vegetation	The occurrence of alien invasive vegetation on the project site is relatively low, however, any disturbance of the current vegetation will create and opportunity for alien species to settle on the site. If these alien species settle on the study site, the site might become an area from which these species can proliferate into the surrounding	2	2	0	2	8	2	16	-	L	The current alien invasive species management implemented within the Port of Richards BAy will be sufficient for the control of alien plants that may settle on the project site during construction. As such, the site must be included in the Port of Richards Bay alien species management schedule.	2	1	0	1	3	1	3	-	L
Contamination of the area by petrochemical spillages	The presence of plant and equipment on the construction site that make use of petrochemical substances to operation pose a risk of contamination of soils on the project site which could result in the contamination of the ground- and surface water on the site.	3	2	0	2	10	2	20	-	L	The following management and mitigation measures must be included into the Environmental Management Programme for the project: All plant and equipment that make use of petrochemical substances must be checked for leakages on a daily basis before operations commence. All plant and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed. If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. All refuelling of plant and equipment must be conducted over a drip-tray. If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction footprint that has been cleared. If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.	1	1	0	1	2	1	2	-	L
Contamination of the area by construction waste	The construction activities will generate an amount of construction waste on the site.	1	1	0	2	4	2	8	-	L	The following waste management activities must be provided for in the Environmental Management Programme for the project: Skips must be made available on-site into which all construction waste can be discarded. All construction waste must be cleared from the site on a daily basis and placed in these skips. The capacity of these skips must be monitored on a daily basis to ensure that a replacement skip can be arranged on the same day as the filled skips are removed. The disposal of the content of these skips must be done at a municipal landfill site. No dumping of construction waste on open areas on the property will be allowed. No burial of construction waste within the project site or in the surrounding areas will be	1	1	0	1	2	1	2	-	L
Contamination of the area by domestic waste.	The presence of a labour force associated with the construction will generate an amount of domestic waste (food wrapping, plastic bottles, etc.) on the site.	1	1	0	2	4	2	8	-	L	The following waste management activities must be provided for in the Environmental Management Programme for the project: A designated eating area must be established within the construction site. Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the labour. The capacity of these domestic waste bins must be monitored on a daily basis to ensure that they are emptied timeously. The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.	1	1	0	1	2	1	2	-	L
Contamination of the area as a result of leaking portable toilet facilities.	Portable toilet facilities will be present of the property to service the labour associated with the construction. These toilets will pose a risk of leakages and spillages which may impact on the groundwater quality on the site.	2	2	0	3	12	2	24	-	L	The following management and mitigation measures must be included into the Environmental Management Programme Report for the project: Only portable chemical toilets with a sealed reservoir will be allowed on site. The capacity of the reservoirs in the portable chemical toilets must be monitored on a daily basis to ensure that they can be serviced timeously. All removal of the collected sewage waste from the portable chemical toilets must be conducted by a registered service provider for disposal at a municipal wastewater treatment facility.	2	1	0	2	6	1	6	-	L
Socio-Economic Impacts																				
Construction of the Generator and associated infrastructure	Job creation	1	1	0	2	4	1	4	+	L	Procurement process to be followed to include local workforce to get employment during construction.	1	1	0	2	4	4	16	-	L

Visual Impacts																				
Construction Machinery and Vehicles on site	Visual impact on surrounding Receptors	1	2	0	2	6	1	6	-	L	Do not let vehicles run when not is use.	1	2	0	2	6	1	6	-	L
Dust from construction activities	Creating visual impact for passing traffic.	1	2	0	2	6	1	6	-	L	Spray areas with water when the climate is dry and dust starts to emanate from the site.	1	2	0	2	6	1	6	-	L
Noise Impacts																				
Construction and Machinery		1	2	0	2	6	1	6		L	Ensure that construction vehicles are serviced regularly. Machinery should not be running when not in use. Construction to take place within operating hours.	1	2	0	2	6	1	6	-	L
Movement of construction Vehicles		1	2	0	2	6	1	6		L		1	2	0	2	6	1	6	-	L
Cultural Heritage & Paleontological Impacts																				
Excavations and Construction	Heritage and Palaeontological Impact	1	1	1	2	6	1	6	-	L	Should any human remains be unearthed by construction activities, the South African Police Services (SAPS) and the heritage consultant must be contacted immediately. The Environmental Control Officer (ECO) appointed for the project must ensure that the appointed contractor, and construction staff are made aware that should any graves, or other heritage features be discovered during vegetation clearing or excavations, all activity within the vicinity of the discovery must cease immediately, and the ECO must be	1	1	1	2	6	1	6	-	L

ACTIVITY(S)	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		Duration	Extent	Irreplaceable Loss	Severity	CONSEQUENCE	Probability	SIGNIFICANCE	+/-	RISK RATING (C x S)		Duration	Extent	Irreplaceable Loss	Severity	CONSEQUENCE	Probability	SIGNIFICANCE	+/-	RISK RATING (C x S)
OPERATIONAL PHASE: PREFERRED ALTERNATIVE																				
Air Quality & Climate																				
Operational Phase: TNPA Power Generation Project in isolation	SO_2 Pollutants	3	2	1	1	6	2	12	-	L	Further emission reduction interventions are deemed to be necessary, specifically for SO_2 for the Richards Bay CCPP – Emergency 2 simulation using diesel, considering the high impact on air quality. No further control or mitigation is necessary for NO_2, PM_{10} and CO as proposed measures will be adequate to control these emissions.	3	2	1	1	6	2	12	-	L
	NO_2 Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	PM_{10} Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	CO Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
Operational Phase: TNPA Power Generation Project with existing sources (cumulative)	SO_2 Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	NO_2 Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	PM_{10} Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	CO Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
Operational Phase: TNPA Power Generation Project with other gas-to-power projects (cumulative)	SO_2 Pollutants	3	2	1	2	12	2	24	-	L		3	2	1	2	12	2	24	-	L
	NO_2 Pollutants	3	2	1	2	12	2	24	-	L		3	2	1	2	12	2	24	-	L
	PM_{10} Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
	CO Pollutants	3	2	1	1	6	2	12	-	L		3	2	1	1	6	2	12	-	L
Soil-Water Impact																				
Poor quality seepage from vehicles undertaking maintenance at the site	Maintenance	3	2	1	2	12	2	24	-	L	Have fuel and oil cleanup kits available to clean spillages if they occur. Ensure maintenance vehicles are fully operational before undertaking work. Visual soil assessments for signs of contamination during construction (monthly) Park residential vehicles in designated areas and ensure that there are oil traps installed in the stormwater system.	3	2	1	1	6	1	6	-	L
Poor quality seepage from the generator, fuel storage tank and stormwater discharge onto soils over the life cycle of the operational phase.	Site occupancy	3	2	1	2	12	2	24	-	L	Have fuel and oil cleanup kits available to clean spillages if they occur. Visual soil assessments for signs of contamination during the operational phase (monthly) Regular inspections of the generator and fuel storage tank areas. If any pollution is observed action should be taken according to site cleanup protocols.	3	2	1	1	6	1	6	-	L
Soils, Land Capability and Land Use																				
Operation of the generator.	Continued Soil Compaction and Erosion	5	1	0	2	12	1	12	-	L	▪ Any recommendations provided by a storm water management plan must be adhered too. ▪ Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures. ▪ Vehicles are to be maintained in good working order so as to reduce the probability of leakage of fuels and lubricants. ▪ A dedicated store with adequate concrete flooring or bermed area must be used to accommodate chemicals such as fuel, oil, paint etc. ▪ An Environmental Management Plan must be implemented to ensure that all waste and pollutants are handled, stored, and disposed of correctly.	5	1	0	1	6	1	6	-	L
Operation of the generator.	Continued Soil Pollution Potential	5	2	0	2	14	2	28	-	M		5	1	0	1	6	2	12	-	L
Terrestrial Biodiversity Impacts																				

Spreading of alien invasive vegetation	The occurrence of alien invasive vegetation on the study site is relatively low, however, any disturbance of the current vegetation will create and opportunity for alien species to settle on the study site. If these alien species settle on the study site, the site might become an area from which these species can proliferate into the surrounding	2	2	0	2	8	2	16	-	L	The current alien invasive species management implemented within the Port of Richards Bay will be sufficient for the control of alien plants that may settle on the project site during construction. As such, the site must be included in the larger alien species management schedule for the Port of Richards Bay.	2	1	0	1	3	1	3	-	L
Contamination by domestic waste generated by the operations	Domestic waste will be generated by the employees associated with the facility.	1	1	0	2	4	2	8	-	L	The following waste management activities must be provided for in the Environmental Management Programme for the project: A designated eating area must be established within the project site. Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the employees. The capacity of these domestic waste bins must be monitored on a daily basis to ensure that they are emptied timeously. The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.	1	1	0	1	2	1	2	-	L
Contamination by leaking petrochemical substances.	The design of the facility makes provision for the genset to run on heavy fuels (and LNG). It is unclear where the heavy fuels will be stored or what the reticulation infrastructure will be, however, the risk of spillage of these heavy fuels pose a risk to the contamination of the project site.	2	2	0	3	12	2	24	-	L	Provision must be made in the operational management plan for the facility to do regular inspection of all the reticulation lines used for heavy fuels. The goal of the inspection is to identify any possible leakages as soon as possible. If any leakages are detected, the operations must be stopped and the leak in the reticulation must be addressed. If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.	2	2	0	3	12	1	12	-	L
Socio-Economic Impacts																				
Operation of the generator during power outages	Continuous operations	5	2	0	1	7	1	7	+	L		5	2	0	1	7	1	7	+	L
Continuous importing and Exporting from the port.	Economic Benefit	5	5	0	1	10	1	10	+	L		5	5	0	1	10	1	10	+	L
Visual Impacts																				
Emissions from the generator	Visible emissions disturbing surrounding areas.	5	2	0	1	7	2	14	-	L	Make use of available technology to ensure emissions are reduced. Do visual inspection when irregular emissions occur.	5	2	0	1	7	1	7	-	L
Noise Impacts																				
Operating Generator	Noise	5	2	0	2	14	2	28	-	M	Make use of available technology and protection to reduce the noise from eh generator.	5	2	0	1	7	1	7	-	L

APPENDIX G: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

63 Wessel Road, Rivonia, 2128 PO Box 2597, Rivonia, 2128 South Africa
Tel: +27 (0) 11 803 5726 **Fax:** +27 (0) 11 803 5745 **Web:** www.gcs-sa.biz

Environmental Management Programme (EMPr)

TNPA Richards Bay EIA GENSET 22 MW, Kwa-Zulu Natal Province

Version: Draft for Public Participation

June 2024

Transnet National Ports Authority

GCS Project Number: 23-0807
Client Reference: TNPA/2023/06/0023/33545/RFP
DFFE Reference: 14/12/16/3/3/2/2525



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Non-Executive Director: B Wilson-Jones

Environmental Management Programme (EMPr)

Transnet National Port Authority (TNPA) 22MW Dual Fuel Generator at the Port of Richards Bay, Kwa-Zulu Natal Province

June 2024

DOCUMENT ISSUE STATUS

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Title	Environmental Management Programme Report (EMPr): TNPA Richards Bay EIA GENSET 22 MW, Kwa-Zulu Province		
	Name	**Signature**	**Date**
Author	Denisha Ponnusamy		07 June 2024
Environmental Assessment Practitioner (EAP)	Rona Schröder		07 June 2024
Environmental Unit Manager	Gerda Bothma		07 June 2024

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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CLO	Community Liaison Officer
DEIAR	Draft Environmental Impact Assessment Report
DFFE	Department of Forestry, Fisheries and Environment
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAR	Environmental Audit Report
EC	Environmental Coordinator
ECA	Environmental Conservation Act (73 of 1989)
EIA	Environmental Impact Assessment
EIA Regulations	EIA Regulations (2014), as amended
EMPr	Environmental Management Programme
EO	Environmental Officer
ERAP	Emergency Response Action Plan
FEIR	Final Environmental Impact Assessment Report
FPA	Fire Protection Agency
FSR	Final Scoping Report
GCS	GCS Environment South Africa (GENSA) (Pty) Ltd
GN	Government Notice
GPS	Global Positioning System
HCS	Hazardous Chemical Substance
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act (Act 15 of 1973)
LNG	Liquid Natural Gas
MSDS	Material Safety Data Sheets
MW	Megawatt
NCR	Noise Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992)
NEM:AQA	National Environmental Management: Air Quality Act (Act 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEM:WA	National Environmental Management: Waste Act (Act 59 of 2008)
NEMA	National Environmental Management Act (Act No. 107 of 1998)

NWA	National Water Act (Act 36 of 1998)
NRTA	National Road Traffic Act (93 of 1996)
OHPL	Overhead Powerline
The Protocols	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA (GN R320 of 20 March 2020 and GN 1150 of on 30 October 2020)
PM	Project Manager
PoRB	Port of Richards Bay
PPE	Personal Protective Equipment
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAPS	South African Police Service
SARTSM	South African Road Traffic Signs Manual
SG	Surveyor-General
SLP	Social and Labour Plan
SS	Site Supervisor
SWMP	Stormwater management plan
ToPS	Threatened or Protected species
TNPA	Transnet National Ports Authority
WUL	Water Use License

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1 INTRODUCTION

1.1 Introduction to the Proposed TNPA 22 MW Generator Project

The Transnet National Ports Authority (TNPA) is a division of Transnet SOC Ltd and manages all eight of the Transnet commercial Ports on the South African coastline. The Port of Richards Bay (PoRB) is one of the country's largest ports in size, with total land and water surfaces of 2 174 hectares and 1 443 hectares, respectively. TNPA is responsible for ensuring that the ports are economic hubs for the country while ensuring that it also complies with the South African Laws and Regulations which is governed by the National Ports Act (Act No. 12 of 2005) (NPA) which directs the TNPA to facilitate the provision of water, lighting, power, sewerage, and telecommunications within the ports. The PoRB is still developing and constantly upgrading to ensure that the port provides the best possible service and attracts business activities for importing and exporting. Approximately half of the PoRB has been developed. Mining activities and commodities are currently the largest contributor to the imports and exports at the port, with coal being the largest exported commodity.

This project is needed to generate backup electricity which will ensure continuous operations at the port during power outages and prevent revenue and operational time loss due to power outages or loadshedding.

This Projects entails the construction of the following infrastructure within the existing port areas:

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m^3;
- The installation of a 200m^3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;

An underground transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and

- LNG pipeline from the Gas hub to the Generator site.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the NEMA Environmental Impact Assessment (EIA) Regulations (2014, as amended), a full Scoping and Environmental Impact Report (S&EIR) Process is required for the construction of

the Genset 22MW Generation Plant, fuel storage areas, the connecting powerline and the connecting LNG pipeline Project. GCS Environment South Africa (Pty) Ltd (GCS SA) was appointed to undertake the environmental assessment process to determine the biophysical, social and economic impacts associated with undertaking the proposed activities.

1.0 Project Location

The proposed project is located in the Port of Richards Bay within the City of uMhlathuze (CoM) Local Municipality and King Cetshwayo District Municipality (KCDM)KwaZulu Natal some 160 km north-east of Durban and 465 km south of Maputo. The project site location falls within the main Port entrance and the Employee Care Centre in the Bayvue Precinct and the property information can be found in Table 1-1 (refer to Figure 1-1 for the Locality Map).

Table 1-1: Property Information.

PROPERTY	EXTENT	TITLE DEED	REGISTERED OWNER
Erf 397 of Township Richards Bay	800.0000DUM	T3484/972	Government of the Republic of South Africa

The Global Positioning System (GPS) coordinates of the proposed 22MW Generator are provided in the table below.

Table 1-2: GPS Coordinates for the Project.

	Latitude	Longitude
Site Centre point	28°47'8.42"S	32° 1'54.45"E
Site Corner points	28°47'7.47"S 28°47'7.43"S 28°47'9.33"S 28°47'9.46"S	32° 1'52.90"E 32° 1'56.00"E 32° 1'56.10"E 32° 1'53.02"E
Power Line Start	28°47'7.45"S	32° 1'53.97"E
Power Line Middle	28°47'5.66"S	32° 1'50.70"E
Power Line End	28°47'4.35"S	32° 1'43.05"E
LNG Line Start	28°47'8.88"S	32° 1'54.18"E
LNG Line Middle	28°47'7.32"S	32° 1'37.66"E
LNG Line End	28°47'8.96"S	32° 1'24.56"E

Figure 1-2 indicates the locality of the proposed 22MW Generator and associated infrastructure within the Port of Richards Bay.

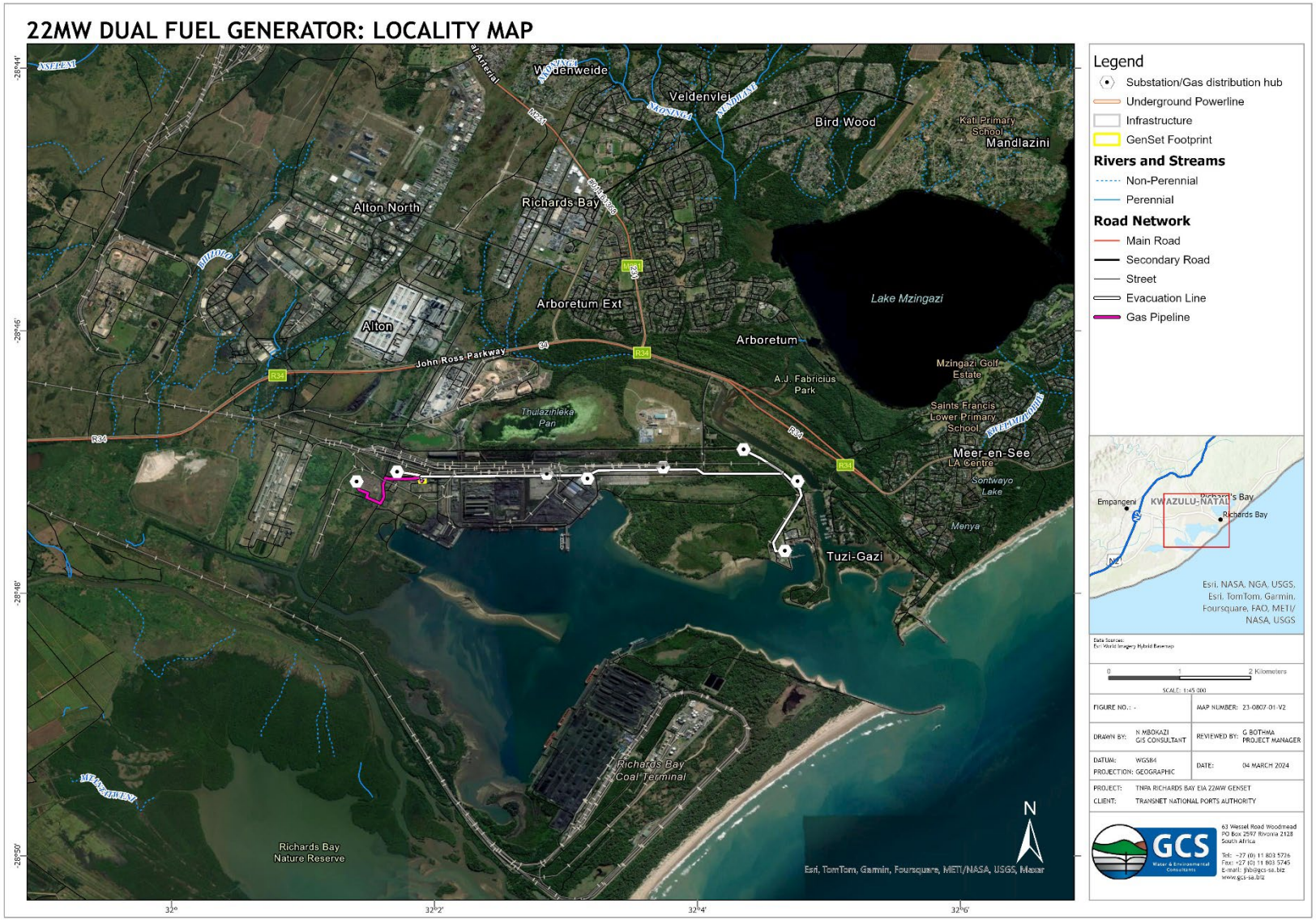


Figure 1-1: Regional Locality of the proposed generator site, LNG pipeline, powerline and the distribution network to the existing substations.

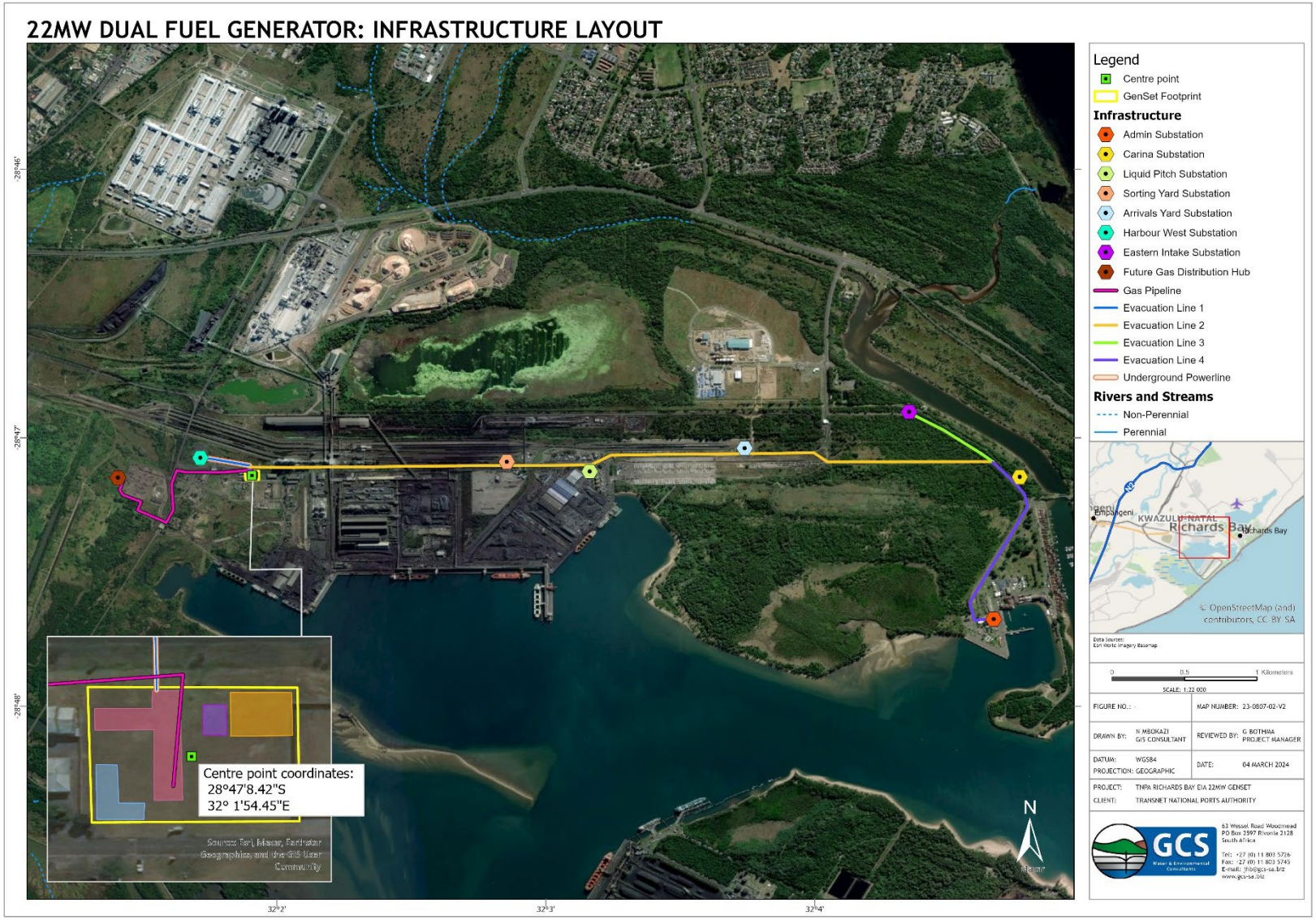


Figure 1-2: Site layout and distribution network.

Based on the nature of the project and the results of the Department of Forestry, Fisheries and the Environment (DFFE) online screening tool and the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, when applying for EA (GN R320 of 20 March 2020 and GN 1150 of Government Gazette No. 43855 on 30 October 2020 (the Protocols), the following specialist studies were commissioned:

- Terrestrial Biodiversity Assessment;
- Wetland and Aquatic Assessment;
- Soil and Agricultural Potential Assessment;
- Air Quality Assessment;
- Hydrological and Geohydrological Assessment; and
- Heritage and Paleontological Impact Assessment.

1.1 Purpose of the EMPr

Section 19 of the EIA Regulations 2014 requires that the Applicant submit an EMPr to the Competent Authority (CA). This EMPr will form part of the EA for the various projects to be undertaken, once approved.

The EMPr is an important environmental management tool, developed in line with best practices under NEMA and other environmental legislation, and informed by the EAP's professional experience as well as any relevant specialist information. The EMPr provides management guidance for activities undertaken at the development sites. If correctly followed, the EMPr ensures that any adverse environmental impacts which could result from the development are adequately managed and mitigated.

The EMPr outlines all environmental management and monitoring actions required throughout the project lifecycle. The EMPr is legally binding and any person who contravenes the provisions herein is liable for imprisonment or a fine. This document should be viewed as "live" and thus, should be updated as and when necessary. The purpose of this document is therefore to guide environmental management throughout the various lifecycle phases of the proposed development.

The objectives of the EMPr are as follows:

- Ensure compliance with the relevant environmental legislation and conditions of the EA;
- Ensure that development activities are appropriately managed;
- Verify environmental performance through information on impacts as they occur;
- Respond to changes or unforeseen events;
- Provide feedback on the continual improvement in environmental performance;
- To outline functions and responsibilities of responsible persons;

- Be used as a foundation for the specific environmental management instructions contained in Construction contract documents, where compliance will be a contractual obligation for contractor(s);

It is understood that all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of the EA and provisions of the EMPr. It is important to note that the contractual obligations must include the recording of any complaints on the project in the environmental register. Further, it is incumbent on the Environmental Coordinator (EC) to keep an accurate audit trail showing compliance with the EMPr during the construction phase.

This EMPr will remain a dynamic document throughout the life of the project. Once the EA has been issued by the CA, the EMPr must be updated to include the specific conditions in the EA, as well as any required monitoring or reporting requirements of DFFE.

1.2 Content of the EMPr

According to Appendix 4 of the EIA Regulations 2014, the EMPr for a project must include certain information. Table 1-3 describes how this report meets those requirements.

Table 1-3: Contents of this EMPr

REQUIREMENT	SECTION IN THIS REPORT
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 1.3 and Appendix A
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.7
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 1-7

A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i) Planning and design; (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;	Section 5
A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated above will be achieved, and must, where applicable, include actions to— (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practices; (iii) Comply with any applicable provisions of the Act regarding the closure, where applicable; and	Section 5
The method of monitoring the implementation of the impact management actions;	Section 5
The frequency of monitoring the implementation of the impact management actions;	Section 5
An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5
The time periods within which the impact management actions must be implemented;	Section 5
The mechanism for monitoring compliance with the impact management actions;	Section 5
A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 5
An environmental awareness plan describing the manner in which— (i) The applicant intends to inform his or her employees of any environmental risk which June result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 4.15 Section 5
Any specific information that is required by the competent authority.	NA

1.3 Details of the EAP

GCS Environment SA (Pty) Ltd (GCS) has been appointed as the independent EAP by Transnet SOC Ltd to undertake this Environmental Impact Application on behalf of the Applicant. The details of the EAP who prepared this report can be found in Table 1-4 and details of the Representatives in Table 1-5. The EAP's CV's and registrations are attached as **Appendix A.**

Table 1-4: Details of the EAP

ITEM	DETAILS
Company Name	GCS Environment SA (Pty) Ltd
Company Representative	Gerda Bothma
EAP	Rona Schröder EAPASA (Reg. 2020/1149) SACNASP (Pri.Sci.Nat. 120605)
Telephone No.	+27 (0)11 803 5726
Facsimile No.	+27 (0)11 803 5745
E-mail Address	gerdab@gcs-sa.biz / ronas@gcs-sa.biz
Postal Address	PO Box 2597, Rivonia, 2128

Table 1-5: Details of the EAP Representative

COMPANY REPRESENTATIVE	QUALIFICATIONS	YEARS' EXPERIENCE
Rona Schröder	• BSc Hons Environmental Analysis and Management • Pr. Sci. Nat (120605) • EAPASA (Reg. 2020/1149)	10+
Gerda Bothma	• BSc Hons (Microbiology) • Pr. Sci. Nat • EAPASA	25+

GCS has no conflict of interest related to the contents of this Report. GCS has no personal financial interests in the property and/or activity being assessed in this report. GCS has no personal or financial connections to the relevant property owner, Applicant, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this Report. GCS declares that the opinions expressed in this Report are independent and a true reflection of their professional expertise. As such, GCS meets the requirements of an independent EAP, as per the EIA Regulations 2014.

1.4 Details of the Applicant

The applicant is Transnet National Ports Authority (hereafter referred to as "TNPA"). TNPA is a subsidiary of Transnet SOC Limited which is responsible for the operations of the eight National Ports located in South Africa. The relevant contact details for the applicant are provided below.

Table 1-6: Details of the Applicant

ITEM	DETAILS
Company Name	Transnet National Ports Authority (TNPA)
Company Representative	Nosicelo Biyana
Contact Person	Nosicelo Biyana
Telephone No.	067 367 0110
Facsimile No.	N/A
E-mail Address	Nosicelo.Biyana@transnet.net
Postal Address	TNPA Administration Building Port of Richards Bay, Alton, Richards Bay

1.5 Authorisations Related to the Proposed projects

The following is a summary of the authorisations that will be required and will be applied for by TNPA in respect of the 22MW Generator Project. Please note other, non-related authorisations have not been included in this list.

1. Environmental Authorisation under the National Environmental Management Act, 1998 (Act 107 of 1998); and
2. General Authorisation under the National Water Act, 1998 (Act 36 of 1998)

1.6 Applicable legislation, policy and best practice guidelines

The EMPr has been developed using knowledge of relevant national, provincial and local legislation and policy as well as best practice guidelines. The Applicant is bound to comply with the legislation and policy provisions throughout the life cycle of the project. Table 1-5 lists the relevant legislation and guidelines applicable to the development.

The environment is considered to be composed of biophysical, ecological, economic and social components. Construction is a disruptive activity, and all due consideration must be given to the environment, including the social environment during the execution of the project to minimize negative impacts on affected parties. Minimisation of areas disturbed by construction activities (i.e. the footprint of the development area) should reduce many of the construction-related environmental impacts of the project and reduce rehabilitation requirements and costs. All relevant standards relating to international, national, provincial and local legislation, as applicable, should be adhered to. This includes requirements relating to waste generation and emissions, waste disposal practices, noise regulations, road traffic ordinances, etc. Every effort should be made to minimize, reclaim, and/or recycle waste materials.

Table 1-7: Applicable legislation, policy and best practice guidelines

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
The Constitution of the Republic of South Africa (Act 108 of 1996)	The Constitution is the supreme governing all other legislation. Environmental legislation is shaped by the Bill of Rights set out in the Constitution. The Constitution sets out the rights for every citizen of South Africa and aims to address past social injustices. With respect to the environment, Section 24 of the constitution states that: "*Everyone has the right:* *a) To an environment that is not harmful to their health or well-being;* *b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:* *i. Prevent pollution and ecological degradation;* *ii. Promote conservation; and* iii. *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".* In fulfilment of its constitutional mandate to take reasonable legislative measures that gives effect to section 24 of the Constitution, the government has promulgated several environmental laws. These laws provide a legal framework that embodies internationally recognised legal principles. The principal act governing activities that affect the environment is NEMA.	The Constitution itself has no permitting requirements. However, the manner in which the environmental right is applied implies that environmental impacts associated with developments should be considered separately and cumulatively. Furthermore, section 24 includes the notion that justifiable economic and social development should be promoted, through using natural resources and ecologically sustainable development. TNPA must ensure that significant environmental impacts are avoided; and where impacts cannot altogether avoided, they must be minimised and mitigated throughout the lifecycle of the TNPA 22MW Generator Project.
Environmental Conservation Act (73 of 1989) (ECA), as amended	The ECA has now largely been replaced by the NEMA but certain provisions remain in force. Section 21 of the ECA relates to the control of activities that June have a detrimental effect on the environment, which required written authorization issued by the relevant authority prior to NEMA coming into force. The national Noise Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCR) were promulgated in terms of Section 25 of the ECA, relating to noise, vibration and shock. The NCRs were revised under GN155 of 10 January 1992 to make it obligatory for all authorities to apply the regulations. In accordance with the ECA, two procedures exist for assessing and controlling noise, respectively:	The proposed development is likely to increase ambient noise levels during the construction (temporary) and operational phases. Noise impacts are closely related to construction activities and heavy traffic volumes. The EMPr includes mitigation measures relating to the mitigation of noise impacts. No Impact Assessment was needed for this project.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	• South African National Standard (SANS) 10328:2008 'Methods for environmental noise impact assessments'; • SANS 10103:2004 'The measurement and rating of environmental noise with respect to annoyance and speech communication'; and • Other SANS.	
National Environmental Management Act (Act 107 of 1998) (NEMA), as amended	NEMA is the framework law giving effect to the constitutional environmental right and for regulatory tools in respect of environmental impacts. Section 24 of NEMA regulates EAs. Section 28(1) includes a statutory duty of care, providing that *"Every person who causes, has caused or June cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment"*. In terms of sections 24(2) and 24D of NEMA, the then Minister of Environmental Affairs promulgated certain activities that June not commence without an EA. Activities promulgated in terms of GN983 and GN9835 require a basic assessment process, while activities promulgated in terms of GN984 require that a full scoping and EIA process be conducted. GNs 983, 984 and 985 are promulgated under NEMA in GG 38282 of 4 December 2014 (as amended). Section 24C(2A) of NEMA indicates that where listed activities are directly related to the extraction and primary processing of a mineral or petroleum resource the Minister of Mineral Resources and Energy is the competent authority or officials at the DMRE to whom he has delegated his authority, being the Regional Managers.	Applicable listed activities identified in terms of the EIA Regulations 2014 are: • LN 2; Activity 2: For the installation of the 22MW energy output generator for electricity generation. • LN 2; Activity 4: For the installation of fuel tanks with a storage capacity of 600m^3 which will be the fuel used for the generator. • LN 3; Activity 10: For the installation of fuel tanks with a storage capacity of 600m^3 used for the generator within a CBA area. • LN 3; Activity 12: For the construction of the LNG pipeline supply to the generator which will exceed 2km and the clearance for the linear activity will result in over 300m^2 of vegetation removal. As such, an EIA process must be followed to obtain the necessary EA in terms of the NEMA.
EIA Regulations, 2014	Chapter 6 of the 2014 EIA Regulations provides for the requirements for public participation, which must be carried out as part of the EA application process. In terms of Regulations 21 and 23, the outcome of the PPP must be reported in the FSR and EIAR submitted to the CA. The PPP, "*must give all potential or registered interested and affected parties, including the competent authority a period of at least 30 days to submit comments on each of the EMPR, scoping report and environmental impact assessment report, and where applicable the closure plan,*	Public participation will be undertaken in accordance with chapter 6 of the EIA Regulations, 2014.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times" (Regulation 40 (1)). The PPP must also: • provide access to all information that reasonably has or June have the potential to influence any decision regarding an application; • involve consultation with the CA, every state department that administers a law relating to the environment relevant to the application, all relevant organs of state, and all I&APs; and • provide opportunity for I&APs to comment on reports and plans prior to submission of an application but must be provided with an opportunity to comment on such reports once an application has been submitted to the CA. The process must include: • notification of the application to all I&APs, as stipulated in Regulation 41; • registration of all I&APs, as required in Regulations 42 and 43; and • a record of comments and responses and records of meetings of and with I&APs, as outlined in Regulation 44.	
National Environmental Management: Waste Act (Act 59 of 2008) (NEM:WA), as amended	Regulates inter alia the duty of care, management, transport and disposal of waste. Section 16(1) of the NEM:WA provides that: *"A holder of waste must, within the holder's power, take all reasonable measures to –* *a) avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;* *b) reduce, re-use, recycle and recover waste;* *c) where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;* *d) manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through the noise, odour or visual impacts;*	The TNPA 22MW Generator Project will not require a Waste Management Licence under Category C storage of waste at a facility that has the capacity to store in excess of 80 m3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste, but will have to comply with the norm and standards.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	e) prevent any employee or any person under his or her supervision from contravening this Act; and *f) prevent the waste from being used for an unauthorised purpose."* The NEM:WA also provides for a licensing regime specific to waste management activities. The 2013 Regulations specify waste management activities which requires a waste management license (GNR 926), waste classification & management requirements (GNR 634) and waste disposal requirements for various types of wastes (GNR 635 & 636).	
National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM: AQA), as amended	NEM:AQA was promulgated to ensure the protection and regulation of air quality and provide measures that will prevent pollution and sustainability. Under NEM:AQA, the Minister of Environmental Affairs, Forestry and Fisheries must identify substances in ambient air which present a threat to health, wellbeing or the environment and establish national standards for ambient air quality, including the permissible quantity or concentration of each substance in ambient air. The National Dust Control Regulations, published in GN 827 of GG 36974 on 1 November 2013, provide that an acceptable dust fallout rate for a non-residential area is considered more than 600 mg/m2/day but less than 1200 mg/m2/day (30-day average), with maximum allowable two exceedances per year, provided these exceedances do not take place in consecutive months. Where the dust fallout rate is exceeded, a dust fallout monitoring programme must be developed, as prescribed in terms of the Regulations, and include: • the establishment of a network of dust monitoring points, using method ASTM D1739:1970 (or an equivalent standard), sufficient in number to: establish the contribution to dust fallout in residential and non-residential areas near the premises; monitor identified or likely sensitive receptor locations; and establish the baseline dust fall for the district; and • a schedule for submitting to the air quality officer dust fallout monitoring reports annually or at more frequent intervals, if requested by the air quality officer.	Because the fuel storage is below 1 000m^3 an AEL will not be required. An AEL for the generator is also not required because it is below 50 MW.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	Greenhouse gases have been declared priority pollutants under the Declaration of Greenhouse Gases as Priority Air Pollutants, published in GN 710 of GG 40996 on 21 July 2017	
National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM: BA)	In line with the Convention on Biological Diversity, NEM:BA aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. NEM:BA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and identification of biodiversity hotspots and bioregions, which June then be given legal recognition. It imposes obligations on landowners (state or private) regarding alien invasive species. NEM:BA requires that provision be made by a site developer to remove any aliens which have been introduced to the site or are present on the site. The NEM:BA also provides for listing of threatened or protected ecosystems in one of four categories: critically endangered, endangered, vulnerable or protected. Threatened ecosystems are listed to reduce the rate of ecosystem and species extinction, by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value. Section 53 of NEM:BA provides that: *"(1) The Minister June, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process.* *(2) A threatening process identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act and a listed ecosystem must be regarded as an area identified for the purpose of that section."* No notices have been published yet under this section. Picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species is a restricted activity under NEM:BA. A permit is required for a restricted activity involving a listed threatened or protected ("TOPS") species without a permit. Chapter 7 of the NEM:BA regulates the process for application of a permit under NEM:BA. The following notices have been published in terms of section 56(1) of NEM:BA: • National List of Ecosystems that are Threatened and in need of protection (TOPS List), published under GN1002 in GG34809 on 9	The TNPA 22MW Generator Project is located within a CBA. However, the generator infrastructure area is within an already disturbed area and care will be taken when vegetation is removed for the pipelines. TNPA must control and eradicate AIS in line with the NEMBA Alien and Invasive Species Regulations.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	December 2012, which contains the National List of Ecosystems that are threatened and in need of protection. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems and preserving witness sites of exceptionally high conservation value. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction; • The National List of Threatened Terrestrial Ecosystems published in GG 34809, GN1002) on 9 December 2011 remains in legal force. The data contained in National Biodiversity Assessment 2018 represents an update of the assessment of threat status for terrestrial ecosystems, but the National List of Threatened Terrestrial Ecosystems has not yet been revised. • Lists of Critically Endangered, Endangered, Vulnerable and Protected Species, published under GN151 in GG 29567 of 23 February 2007; and • Threatened and Protected Species Regulations, published under GN152 in GG 29657of 23 February 2007. Chapter 5 of NEM:BA pertains to alien and invasive plants ("AIP") and provides that a person may not carry out a restricted activity involving a specimen of an AIP without a permit issued in terms of Chapter 7 of NEM:BA. Such permit can only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out. Applicable, and exempted AIP are contained within the Alien and Invasive Species List 2020, GNR 1003 of GG No. 43726. The NEM: BA Alien and Invasive Species Regulations (Government Notice 1020, dated 25 September 2020) categorises the different types of alien and invasive plant and animal species and how they should be managed: • Category 1a Listed Invasive Species – species that must be combatted or eradicated; • Category 1b Listed Invasive Species – species that must be controlled; • Category 2 Listed Invasive Species – species that require a permit and must not be allowed to spread outside of the designated area; and • Category 3 Listed Invasive Species – species which are subject to exemptions, but where such a species occurs in riparian areas, must, for	

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	these regulations, be considered to be a Category 1b Listed Invasive Species and managed according to regulation 3.	
Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA)	In terms of CARA, landowners are legally responsible for the control of weeds and AIPs. CARA makes provision for three categories of AIPs: • Category 1a: must immediately be removed and destroyed; • Category 1b: need to be immediately removed and contained; • Category 2: requires a permit to retain the species on site and it must be ensured that they do not spread. All category 2 plants in riparian zones need to be removed; and • Category 3: require a permit to retain these species. All category 3 plants in the riparian zone need to be removed. CARA also regulates the conservation of soil and states that degradation of the agricultural potential is illegal. It furthermore requires the protection of land against soil erosion and the prevention of water logging and associated salinization. Permissions / permits are required under CARA for the 'cultivation' of 'virgin soil'; cultivation and/or draining vlei(s), marshes or water sponges; and cultivation of an area within a watercourse's flood area.	Measures to mitigate potential impacts on agricultural resources, such as soil erosion, alien invasion and protection of vegetation and water resources are included in the EMPr. TNPA will comply with CARA in relation to AIP control and soil conservation. No permit under CARA is required for the TNPA 22MW Generator Project.
National Water Act (Act 36 of 1998) (NWA)	The NWA is the primary legislation controlling and managing the use of water resources and pollution thereof. It provides for fundamental reformation of legislation relating to water resource use. The NWA's preamble recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that water resources quality protection is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The NWA's purpose is stated in section 2 and enforced by the DWS. Section 2 of the NWA relates to the following: • Promoting the efficient, sustainable and beneficial use of water in the public interest; • Facilitating social and economic development; • Protecting aquatic and associated ecosystems and their biological diversity; • Reducing and preventing pollution and degradation of water resources; and	The TNPA 22MW Generator Project will include sections 21 (c), (i) and (j) water uses. A General Authorisation application will be submitted to the DWS to authorises these water uses.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	• Meeting international obligations. Sections 12 -20 of the NWA include provisions relating to the protection of water resources, including the water reserve and water quality. Section 13 relates to the establishment of water quality objectives, including the: • presence and concentration of particular substances in the water • characteristics and quality of the water resource and the in-stream and riparian habitat • characteristics and distribution of aquatic biota • regulation and prohibition of in-stream and land-based activities which June affect the quantity and quality of the water resources Section 19 of the NWA provides for pollution prevention and requires that a person who owns, controls, occupies or uses the land in question, is responsible for taking reasonable measures to prevent pollution of water resources. A catchment management agency June take action to prevent or remedy the pollution and recover all reasonable costs from the responsible party. The 'reasonable measures' which have to be taken June include measures to: • Cease, modify or control any act or process causing the pollution; • Comply with any prescribed waste standard or management practice; • Contain or prevent the movement of pollutants; • Eliminate any source of pollution; • Remedy the effects of the pollution; and • Remedy the effect of any disturbance to the bed and banks of a watercourse". Section 21 of the NWA recognises and defines water uses that require the approval of the DWS through a WUL; or alternatively in certain prescribed circumstances the water user June register a General Authorisation. There are restrictions on the extent and scale of identified activities that occur in proximity to watercourses, determined through a risk assessment, for which a General Authorisation apply.	

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
The National Heritage Resources Act (Act 25 of 1999) (NHRA)	The protection and management of South Africa's heritage resources are controlled by the NHRA. The national enforcing authority for the NHRA is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features, such as graves, archaeology and fossil beds, are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. In terms of section 38 of the NHRA, a permit is required for certain categories of development as follows: *"(1) (a): The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;* *(c): Any development or other activity which will change the character of a site* *i. exceeding 5 000 m² in extent;* *ii. involving three or more existing erven or subdivisions thereof;* *iii. involving three or more erven or divisions thereof which have been consolidated within the past 5 years; or* *iv. the costs of which will exceed a sum in terms of regulations by SAHRA or a provincial heritage resource authority."* In terms of Section 38(8) of the NHRA, section 38(1) approval from SAHRA is not required where an environmental impact assessment is undertaken under NEMA, including a HIA, and SAHRA's requirements are considered by the CA when granting the EA. Section 38(8) of the NHRA provides that: *"The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the ECA, or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent."* Accordingly, provision is made for the assessment of heritage impacts as part of a basic assessment process and, if such an assessment complies with the NHRA	A heritage investigation is being undertaken as part of the EIA process, which will be submitted to SAHRA for consideration and comment, which comments will be incorporated in the FEIR.

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	and SAHRA's requirements and the CA considers heritage impacts when granting the EA, a separate application for consent under the NHRA is not required.	
National Forests Fire Act (84 of 1998)	In terms of section 15(3) of the NFA, the Minister published a list of protected tree species.[1] The effect thereof is that no person June cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as June be stipulated.	Should TNPA require any licence to disturb a protected tree, it will be duly applied for.
Hazardous Substances Act (Act 15 of 1973) (HSA)	The HSA aims to control the production, import, use, handling and disposal of hazardous substances. Under the HSA, hazardous substances are defined as substances that are toxic, corrosive, irritant, strongly sensitising, flammable and pressure generating under certain circumstances and June injure, cause ill-health or even death in humans. Where hazardous substances from any of the 4 groups below are to be used, (see below) care must be taken that they are sourced, and transported, handled and disposed of in compliance with the provisions of the Act. • Group I: industrial chemicals (IA) and pesticides (IB); • Group II: 9 classes of wastes excluding Class 1: explosives and class 7: radioactive substances; • Group III: electronic products and group; and • Group IV: radioactive substances. The list of group IA hazardous substances is provided in the HSA. The HAS provides for the: • Control of certain electronic products; • Division of such substances or products into the groups above in relation to the degree of danger, with licensing requirements for certain activities undertaken in respect of Groups I and III; • Prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products; and	Hazardous substances June be stored, handled or transported as part of the proposed projects and include diesel and other liquid fuel, oil and hydraulic fluid, cement, etc. TNPA will comply with the HSA, as required.

[1] GN 536 of GG 41887 on of 7 September 2018

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	• Matters connected therewith.	
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA)	The MHSA provides that OHSA is not applicable to any matter in respect of which any provision of the MHSA is applicable.	TNPA is committed to comply with the OHSA on their sites.
KZN Nature Conservation Management Act (Act No. 9 of 1997) (KZN NCMA)	To provide institutional structures for nature conservation in KwaZulu Natal and to establish control and monitoring bodies and mechanisms, and to provide for matters incidental thereto.	The site is outside of the regulated area.
National Ports Act (Act No. 12 of 2005).	The National Ports Act creates a dual role for the National Ports Authority whereby it is responsible for the port regulatory function at the ports - i.e. controlling the provision of port services through licensing or entering into agreements with port operators to ensure that efficient port services are provided.	The activity takes place within the port area which will provide TNPA to regulate the generator site.
Other legislation and policies	Other policies, legislation and associated regulations (where applicable) considered as part of the application process include: • Disaster Management Act (Act No. 57 of 2002). • Integrated Resource Plan 2019. • Local Government: Municipal Systems Act, No 32 of 2000. • National Development Plan 2030. • Protection of Personal Information Act, No. 4 of 2013. • Water Services Act 108 of 1997. • Promotion of Access to Information Act 2 of 2000 • Promotion of Access to Justice Act 3 of 2000 • Basic Conditions of Employment Act 75 of 1997; • Labour Relations Act 66 of 1995	
Municipal By-Laws and Provincial Legislation	Provincial / Municipal policies, legislation and associated regulations (where applicable) considered as part of the application process include: • KZN Heritage Act (Act No. 04 of 2008) (KZN HA) • KZN Nature Conservation Management Act (Act No. 9 of 1997) (KZN NCMA)	

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	• King Cetshwayo District Municipality (KCDM) Environmental Management Framework (EMF) • CoM Integrated Development Plan (IDP) for 2022/2027 • CoM Spatial Development Framework (SDF) for 2022/2023 – 2026/2027 • Strategic Infrastructure Projects (SIPs)	

Guidelines	In addition to the abovementioned Acts and their associated Regulations, the following guidelines and reports have been taken cognisance of during the application process:
	• Guidelines for consultation with communities and interested and affected parties issued by the DMRE.
	• NEMA Implementation Guidelines: Sector Guidelines for EIA Regulation[2]
	• Department of Environmental Affairs (DEA) (2011): A user friendly guide to the National Environmental Management: Waste Act, 2008. South Africa, Pretoria.
	• Department of Environmental Affairs and Tourism (2004): Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11.
	• DFFE Integrated Environmental Management Guideline on Need and Desirability, 2017.
	• Guideline for Implementation: Public Participation in the EIA Process.[3]
	• Publication of Public Participation Guideline (GN 807 of 10 October 2012 GG No. 35769).
	• Mining and Biodiversity Guideline: mainstreaming biodiversity into the mining sector
	• Department of Water and Forestry ("DWAF"), 2006. Groundwater Assessment II
	• DWS, 2011 The Groundwater Dictionary – A comprehensive reference of groundwater related terminology, 2nd ed
	• DWS, 2016 New Water management Areas, South Africa: Government Gazette No 40279
	• South African Water Quality Guidelines (DWAF):
	  ○ South African Water Quality Guidelines (2nd Edition). Volume 4: Agricultural Use: Irrigation (1996a);
	  ○ Water Quality Guidelines - Volume 1: Domestic Use (1996b);	

[2] Published under GN 654 in GG 3333 of 29 June 2010

[3] Published in under GN 807 in GG 35769 of 10 October 2012

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	○ South African Water Quality Guidelines (2nd Edition). Volume 5: Livestock Watering (1996c); ○ Water Quality Guidelines Volume 7: Aquatic Ecosystems (1996d); ○ Water Quality Guidelines Volume 2: Recreational Use (1996e); and ○ Water Quality Guidelines Volume 3: Industrial Use (1996f). • Best Practice Guidelines (DWAF): ○ G3: Water Monitoring Systems (2007); ○ A5: Water Management for Surface Mines (2008b); and ○ G4: Impact Prediction (2008) • SANS 10103 of 2008: The measurement and rating of environmental noise with respect to annoyance and to speech communication[4] • SANS 10210 of 2004: Calculating and predicting road traffic noise. • SANS 10357: 2004: The calculation of sound propagation by the Concave method.	

[4] Published under GN 718 in Government Gazette No. 18022

1.7 Aspects of the activities that are covered by the EMPr

The proposed development will entail the construction of the following infrastructure within the existing port areas. The project will comprise the following main components (which are discussed in more detail below):

- A dual fuel generator for the electricity generation of 22MW output which can be operated with diesel or liquid natural gas;
- The installation of diesel fuel tank(s) storage of the total capacity of 600m3;
- The installation of a 200m3 tank storage of demineralised water;
- Evacuation lines to the substations;
- Fencing for the site;
- An auxiliary pit;
- A drain facility for the used diesel and sludge;
- Underground transmission line from the generator to the Harbour West Substation, Sorting Yard project substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution from the generator to the rest of the port; and
- LNG pipeline from the Gas hub to the Generator site.

1.7.1 22 MW Generator

A generator is designed by General Electric (GE Gas Power) which are the Original Equipment Manufacturer (OEM). The generator is dual fuel and can operate on either Diesel fuel or Liquified Natural Gas (LNG). The generator model is TM2500+ GEN 4, the newest generation of one of the world's most experienced, reliable gas turbine solutions.

The gas turbine is a General Electric Model TM2500 that is ISO rated for continuous duty and configured for operation on either natural gas or liquid fuel (diesel 50 ppm). Altitude, humidity and inlet and exhaust losses will affect power output, heat rate and fuel efficiency. In addition to the inlet air filter, the engine is equipped with a stainless-steel mesh screen in the inlet air stream for "last chance" protection against foreign object damage.

An illustration of the generator can be seen below in Figure 1-3: Generator model is TM2500+ GEN 4.

Figure 1-3: Generator model is TM2500+ GEN 4

1.7.2 Diesel Storage Tanks

Diesel storage tanks(s) with a combined 600m^3 capacity will be installed to store the diesel used for the generator. The tanks will be in a bunded facility and drains will be in in place for possible spills.

1.7.3 Demineralised Water Storage

A water storage container for demineralised water will be installed to be able to store up to 200m^3 of water on site. The water is used for the generator and therefore requires demineralised water to prevent both the build-up of impurities and the reduction of the lifetime of the generator.

1.7.4 Substation Transmission Lines

A transmission line from the generator to the Harbour West Substation, Sorting Yard substation, Liquid Pitch Substation, Arrivals Yard Substation, Eastern Intake Substation, Carina Substation and Admin Quay Substation will be installed in order to allow for power distribution within the port.

1.7.5 Auxiliary Pit

An auxiliary pit will be constructed to manage the noise emanating from the generator to mitigate the noise impacts from the generator.

1.7.6 Fencing

The generator area will be fenced off. There is already access control to the PoBR and the generator fence will be solely for the protection of the generator infrastructure, diesel and it is required when working with high voltage equipment for safety.

1.7.7 Installation of the Liquid Natural Gas (LNG) Pipeline

Pipelines for Liquid Natural Gas (LNG) will be installed as a supporting fuel source for the generator. The generator can be fuel with diesel or LNG. The LNG pipeline will be installed from the panned future distribution hub and would reduce the need for diesel which is a non-renewable fuel source. The pipelines would be buried where possible to prevent vandalism and theft. The installation of the pipeline will require vegetation removal which will be allow for revegetation of the disturbed areas

1.8 Project Phases and Activities

The proposed projects will have the following phases which are included within the scope of this EMPr:

Planning and Design Phase activities will include:

- Site design and layout;
- Construction planning; and
- Relevant permitting.

Construction and operational phase activities of the project will include:

- Typical earthworks are required to clear the areas.

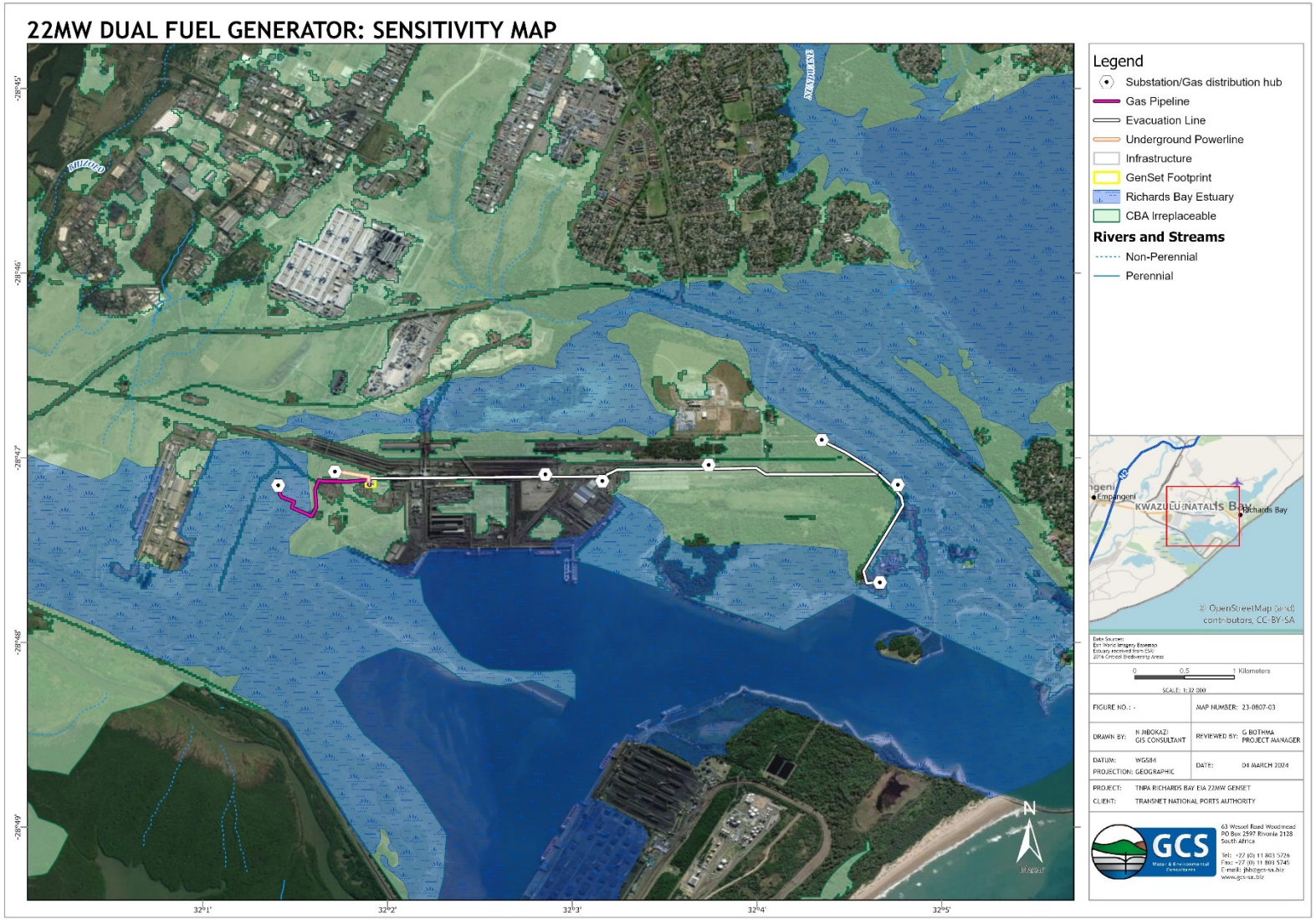
- Construction of foundations, storage facilities and buildings.
- Excavations.
- Establishment of service platforms, material handling areas and other temporary infrastructure.
- Dust suppression during construction on site.
- Placing of topsoil in designated areas.

No decommission phase is likely to occur, and if decommission takes place it is foreseen that the risks and impacts will be similar to the construction phase. Throughout the project lifecycle, the construction, operating and decommissioning teams must be prepared for unplanned emergencies or incidents threatening human health or the environment.

1.9 Environmental Site Sensitivity

Based on the results of the desktop assessment and specialist studies, environmental sensitivity maps have been compiled depicting the proposed 22MW Generator Project and associated infrastructure. Refer to Figure 1-7.

Figure 1-4: Composite Environmental Sensitivity Map



1.10 Assumptions and Limitations

This EMPr has been drafted with the acknowledgement of the following assumptions and limitations:

- It is assumed that the investigations and findings the specialist studies undertaken in support of the Proposed TNPA 22 MW Generator Project are still valid and applicable;
- It is assumed that TNPA will be developing the proposed TNPA 22 MW Generator Project as described within this report and that no deviation will be required;
- Information used to guide the development of this EMPr was gained during the site visit, through the national web-based screening tool, through specialist input, specialist reports and using the EAP's experience in such developments; and
- The mitigation measures recommended in this EMPr document are based on the risks/impacts and associated mitigation measures identified in the Scoping and EIA processes. These impacts were identified according to the activities described and the known receiving environment.

2 ENVIRONMENTAL IMPACT STATEMENT

Appendix 4 of the 2014 NEMA EIA Regulations, as amended, requires that the EMPr include a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated, as identified through the environmental impact assessment process for all phases of the development. The results of the impact assessment indicated that the most significant impacts on the receiving environment would be those listed in Table 2-1 to Table 2-3. The decommissioning of the generator is not foreseen to take place in the near future. However, should the generator be decommissioned at some point, environmental impacts are anticipated to be similar to those identified for the construction phase, specifically in terms of topography, soil, surface water contamination, waste management, and impacts on vegetation and soils. The correct implementation of the mitigation measures outlined within this document will ensure that all impacts are managed, mitigated or avoided as far as practicably possible.

Table 2-1: Key impacts during the construction phase

Environmental Aspect	Impacts
Air Quality & Climate	• Air pollution during site clearance and construction vehicles.
Terrestrial Biodiversity	• Potential increase in alien vegetation • Contamination of the area by petrochemical spillages • Contamination of the area by construction waste • Contamination of the area by domestic waste.

	• Contamination of the area as a result of leaking portable toilet facilities.
Loss Agricultural Activities, Soils and Land use	• Soil Compaction and Erosion • Soil Pollution Potential
Estuary and Aquatic Ecosystems	• Contaminated run-off from the site
Hydrology	• The destruction of the vadose zone sediments by clearing activities (levelling) or cut and fill activities. This impact is permanent and is therefore not included in the impact able as no mitigation measures can be recommended. This could lead to sediment runoff and surface water contamination. • Clearing topsoil from footprint areas will influence the rate of infiltration of water to the shallow groundwater system and/or baseflow component to shallow streams. • Handling of waste and transport of material can cause various types of spills (i.e. hydrocarbons) which can infiltrate and contaminate the soils and groundwater system. • Oil and fuel spills and leakages at vehicle park areas, and in the project areas, June cause poor-quality seepage and soil contamination.
Visual	• Change of visual landscape and character
Noise	• Noise disturbance from the movement of construction vehicles • Noise disturbance from the operation of machinery
Heritage & Paleontological Impacts	• Loss of cultural heritage resources • Loss of palaeontological resources
Social	• Increased annoyance, air quality and noise • Influx of construction workers • Job creation and skills development • Positive economic impacts
Traffic	• Increase in traffic of construction vehicles • Additional abnormal loads

Table 2-2: Key impacts during the operational phase

Environmental Aspect	Impacts
Air Quality	• Air pollution due to generator operation
Terrestrial Biodiversity	• Spreading of alien invasive vegetation • Contamination by domestic waste generated by the operations

	• Contamination by leaking petrochemical substances.
Loss Agricultural Activities, Soils and Land use	• Pollution potential from the use of fertilisers • Continued Soil Compaction and Erosion • Continued Soil Pollution Potential
Estuary & Aquatic Systems	• Contaminated run-off from the site.
Hydrology	• Poor quality stormwater discharge onto soils or into the surface environment. • There is a potential for poor quality seepage from the generator, diesel storage areas and stormwater system that will be developed (i.e., poor workmanship, wear and tear over time or clogging of stormwater systems). Raw sewage would impact both the soils and could run into the nearby watercourses. Prolonged pollution migrate to the shallow groundwater environment. • Oil and fuel spillages associated with service vehicles accessing and undertaking maintenance work at the site, as well as leakages from residential vehicles parked at the site.
Visual	• Impacts from smoke or emissions from the generator.
Noise	• Noise from the operation generator
Traffic	• Increase in trucks delivering fuel

3 ROLES AND RESPONSIBILITIES

The effective implementation of this EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project-specific requirements will ultimately determine the need for the appointment of a specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that if no specific person, for example, an EC is appointed, the holder of the EA remains responsible for ensuring that the duties of the EC indicated in this document are undertaken. See Table 3-1.

Table 3-1: Roles and Responsibilities for Implementation of the EMPr

Responsible Person	Roles and Responsibilities
Project Manager (PM)	Role The Project Manager is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). An EC will be contracted by the PM to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the EA. The PM is further responsible for providing and giving the mandate to enable the EC to perform responsibilities, and he must ensure that the EC is integrated as part of the project team while remaining independent. Responsibilities - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Applicant and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project through site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Site Supervisor (SS)	Role The SS reports directly to the PM, oversees site works, liaises with the contractor(s) and the EC. The SS is responsible for the day-to-day implementation of the EMPr and ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr. Responsibilities - Ensure that an Environmental Officer (EO) is identified; - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, PM and EC; - Must ensure that the landowner, TNPA has the relevant contact details of the site staff, EC and EO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	Role The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the EC is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the EC is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The EC is also required to conduct compliance audits, verifying the monitoring reports submitted by the EO. The EC provides feedback to the SS and PM regarding all environmental matters. The Contractor and EO are answerable to the EC for non-compliance with the performance specifications as set out in the EA and EMPr.

	The ECO provides feedback to the Transnet Environmental representative, SS and PM, who in turn reports back to the Contractor and potential and Registered Interested and Affected Parties, as required. Issues of non-compliance raised by the EC must be taken up by the Transnet Environmental representative and resolved with the Contractor, as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the performance specification) must be endorsed by the Employer's PM. The EC must also, as specified by the EA, report to the relevant CA as and when required. Responsibilities The responsibilities of the EC will include the following: - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections/audits of the construction site according to the generic EMPr and applicable licenses to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan, to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated method statements (to be compiled once detailed designs have been completed); - In consultation with the SS, order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the Transnet Environmental Representative, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular Environmental Audit Report (EAR), highlighting any non-compliance issues; and satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the EO; - Checking the EO's record of environmental incidents (spills, impacts, legal transgressions etc.) and corrective and preventive actions taken; - Checking the EO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training to reviewing the training programmes of the Contractor; - In the case of non-compliances, the EC must first communicate this to the Transnet Environmental Representative, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; and - Communication of all modifications to the EMPr to the relevant stakeholders.

Contractor's EO	Role The EO will report to the PM and are responsible for the implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the PM and Contractor's Manager, liaising with contractors and the landowner, TNPA, as well as a range of environmental coordination responsibilities. Responsibilities - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s); - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (or EO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to the Applicant and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compiling investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with Transnet Environmental Representative; - Ensure that the necessary legal permits and/or licenses are in place and up to date; and - Acting as Applicant's environmental representative on site and working together with the ECO and contractor.
Contractor	Role The Contractor appoints the EO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that method statements are implemented as described (to be compiled once detailed designs have been completed). External contractors must ensure compliance with this EMPr while performing the onsite activities, as per their contract with the Project Applicant. The contractors are required, where specified, to provide method statements setting out in detail how the impact management actions contained in the EMPr will be implemented (to be compiled once detailed designs have been completed). Responsibilities - Project delivery and quality control for the development services as per appointment; - Employ a suitably qualified person to monitor and report to the Project Applicant's appointed person on the daily activities on-site during the construction period; - Ensure that safe, environmentally acceptable working methods and practices are implemented, and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely;

	- Attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; and - Ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the EC.
Transnet Environmental Representative	The Transnet Project Environmental Resource (PER) will be responsible for ensuring that the EA and EMPr requirements are complied with the EC. The Transnet PER will report functionally to the relevant PM. The specific tasks will include: Tender evaluation, development of environmental criteria and adjudication thereof Liason with the EC and Contractor on environmental matters • Liaison with the relevant environmental Competent Authorities with the EC on behalf of the applicant; Review and approve site layout plan including any subsequent revisions thereof; • Environmental Induction of Contractor's staff; • Generate an inspection checklist prior to construction commencement; • Review and Sign off Method Statements prepared by Contractor with the EC; • Prepare environmental monitoring protocols/checklists to be used during construction with the EC and contractor; • Prepare monthly conformance audit reports, including sign-off on Monthly Inspection Reports; • Conduct monthly observation & inspections of all work places based on the approved inspection checklist; • Audit conformance to Method Statements; • Monitor the Contractor's compliance with any other environmental requirements relevant to the site with the EC; • Develop an Audit Finding and Close out Register that documents all audit findings, close out actions and the time frame allowed for in order to close the finding/s to the sati; • Ensure that all environmental monitoring programmes (sampling, measuring, recording etc. when specified) are carried out according to protocols and schedules; • Measurement of completed work (e.g. areas top soiled, re-vegetated, stabilised etc.); • Attendance at scheduled SHE meetings, as and when required, and project coordination meetings; • Ensure that site documentation (permits, licenses, EA, EMPr, SOP-CEM, method statements, audit reports, waste disposal slips etc.) related to environmental management is maintained on the relevant Document Control System;

	• Inspect and report on environmental incidents and check corrective action; • Keep a photographic record of all environmental incidents; • Environmental incident management as required by Transnet policies and procedures; • Implementation of environmental-related actions arising out of the minutes from scheduled meetings; • Management of complaints register with EC and EO; • Conduct any environmental incident investigations with EO; • Coordinate and/or facilitate any environmental monitoring programmes e.g. EMI Inspections, EC Audits, Transnet Environmental Assurance Audits etc. • Collate information received, including monitoring results into a monthly report that is supported with photographic records to the Transnet CM and Transnet PM showing progress against targets; and • Report environmental performance of the project on a monthly basis through relevant governance channels.

4 ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, several reporting systems, documentation controls and compliance mechanisms must be in place as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. The filing system must be updated, and relevant documents added as required. The EMPr file must always be made available on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project, the following preliminary list of documents shall be placed in the filing system and be always accessible:

- A full copy of the signed EA from the CA in terms of NEMA;
- Any amendments to the EA;
- Copy of EMPr and any amendments thereof;
- Copy of declaration of implementing of site-specific EMPr and amendments thereof;
- All method statements (to be compiled once detailed designs have been completed);
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record; and
- Complaints register.

4.3 Monthly Environmental Checklist

The EO is required to complete a monthly environmental checklist, the format of which is to be agreed upon prior to the commencement of the activity. The EO is required to sign and date the checklist, retain a copy in the EMPr file, and submit a copy of the completed checklist to the file monthly. The checklists will form the basis for the monthly environmental reports. Copies of all completed checklists will be attached as Annexures to the EAR as required in terms of the EIA Regulations.

4.4 Monthly Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the monthly report that is distributed to attendees. Each set of minutes must record “Matters for Attention” that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the Transnet Environmental Representative can assess whether the contractor's proposal is in accordance with the EMPr (to be compiled once detailed designs have been completed).

The method statement must include the following:

- Development procedures;
- Materials and equipment to be used;
- Getting the equipment to and from the site;
- How the equipment/ material will be moved while on site;
- How and where the material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that June occur;
- Timing and location of activities;
- Compliance/ non-compliance with the EMPr; and
- Any other information deemed necessary by the TER/EC.

Unless indicated otherwise by the Transnet Environmental Representative, the Contractor shall provide the following method statements to the Transnet Environmental Representative no less than 14 days prior to the commencement date of the activity:

- Site establishment – Storage areas, and infrastructure;
- Handling, transport and storage of hazardous chemical substances (HCS);
- Vegetation management –clearing, aliens;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management -transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- and
- Heritage and palaeontology management.

The EO shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor must be included in the environmental file.

4.6 Environmental Incident Log (Diary)

The EO is required to maintain an up-to-date and current environmental incident log (environmental diary). The environmental incident log is a means to record all environmental incidents and/or all non-compliances. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the Transnet Environmental Representative. (For example, a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information, such as road kills or injured wildlife.

The EO is to investigate, record all environmental incidents in the environmental incident log. All incidents regardless of severity must be reported to the Applicant. The log is to be kept in the EMPr file and at a minimum, the following records will be recorded in incident log for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor/ Employee responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The environmental incident log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the Transnet Environmental Representative. The non-compliance notices will be issued in writing; a copy filed in the EMPr file; and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action is to be completed.

The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the

development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The Transnet Environmental Representative should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define how the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, *inter alia*, there is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as set out in the EMPr, and which deviation has, or June cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the SS, the EO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action, the EO is to issue a corrective action report in writing to the Transnet Environmental Representative. If satisfied that the corrective action has been completed, the Transnet Environmental Representative is to sign-off on the corrective action report and attach the report to the non-compliance notice in the EMPr file.

Corrective action is considered complete once the report has been signed off by the Transnet Environmental Representative.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post-rehabilitation evidence of the project and can be used in any damages claims, if they arise. Each image must be dated, and a brief description note attached.

The Contractor shall:

- Allow the Transnet Environmental Representative and EO access to take photographs of all areas, activities and actions.
- The EO shall keep an electronic database of photographic records which will include:
    - Pictures of all areas designated as work areas, development sites and storage areas

taken before these areas are set up;
- All bunding and fencing;
- Road conditions and road verges;
- All areas to be cordoned off during construction;
- Waste management on site;
- Ablution facilities (inside and out);
- Any non-conformances deemed to be “significant”;
- All completed corrective actions for non-compliance;
- All required signage;
- Photographic recordings of incidents;
- All areas before, during and post-rehabilitation; and
- Include relevant photographs in the Final EAR.

4.10 Complaints Register

The Transnet Environmental Representative shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The complaints record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (EC to take relevant photographs); and
- Contain a copy of the EC’s written response to each complaint received and keep a record of any further correspondence with the complainant. The EC’s written response will include a description of any corrective action to be taken and must be signed by the Contractor, EC and affected party. Where a damage claim is issued by the complainant, the EC shall respond as described below.

4.11 Claims for damages

If a claim for damages is submitted by a community or individual, the following will be undertaken:

- The EO shall Record the full details of the complaint as described above.
- The PM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval.
- Following consideration by the PM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim is communicated in writing to the claimant. Should the claimant not accept this, the EC shall, in writing, report the incident to the Applicant’s negotiator and legal department.
- A formal record of the response by the EO to the claimant and the rectification of the claim

will be recorded in the EMPr file.

4.12 Interactions with Interested and Affected Parties

Open, transparent and good relations with adjacent landowners, communities and rother stakeholders are an essential aspect of the successful management and mitigation of environmental impacts.

The Transnet Environmental Representative and EOs shall ensure that:

- All queries, complaints and claims are dealt with within an agreed timeframe;
- Any or all agreements are documented, and signed by all parties and a record of the agreement is kept in the EMPr file;
- Contact with affected parties is always courteous.

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes are included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The Transnet Environmental Representative must prepare a periodic and quarterly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the Meeting and the final report will be circulated to the Applicant's PM and filed in the EMPr file. At a frequency determined by the EA, the EC shall submit the quarterly reports to the CA. At a minimum, the quarterly report is to cover the following:

- Weekly environmental checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental monitoring;
- General environmental findings and actions; and
- Minutes of the Environmental Site Meetings.

4.14 Final environmental audits

On completion of the rehabilitation and/or requirements of the EA, a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations. At this stage no decommissioning or rehabilitation is planned for 22MW Generator Facility.

4.15 Environmental Training and Awareness-Raising

The Contractor, sub-contractors and employees require an appropriate level of environmental awareness and competence to ensure continued compliance with environmental legislation, conditions of the EA and the provisions in the EMPr. Training needs should be identified based on the available and existing capacity of site personnel (including all Contractors and sub-contractors) to undertake the required management actions and monitoring activities. All personnel must be adequately trained to perform their designated tasks to an acceptable standard.

Upfront environmental training is aimed at:

- Promoting environmental awareness;
- Informing the main contractor of all environmental procedures, policies and programmes applicable;
- Providing generic training on the implementation of environmental management specifications; and
- Providing job-specific environmental training to understand the key environmental features of the construction site and the surrounding environment.

Training will be offered in the main languages (Afrikaans, Zulu and English). In addition to the upfront environmental training by the Transnet Environmental Representative, the Contractor should make provision for regular training or “Toolbox Talks”.

General environmental awareness must be fostered, to ensure that environmental incidents are minimised and there is environmental compliance.

5 PROPOSED IMPACT MANAGEMENT ACTIONS

This section outlines aspects related to the development of the proposed TNPA 22MW Generator Project and associated infrastructure and for each aspect, a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, to mitigate the impact of such aspects.

Method statements must be prepared and agreed to by the holder of the EA. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

Appendix 4 of the EIA Regulations 2014 requires that the EMPr must aim to achieve the following through the proposed impact management actions:

- Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- Comply with any prescribed environmental management standards or practices;
- Comply with any applicable provisions of NEMA regarding the closure, where applicable; and

ASPECT: ENVIRONMENTAL TRAINING						
Impact management outcome	Impacts on the environment are minimised during site establishment and the development footprint is kept to the demarcated development area.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- All staff must receive environmental awareness training prior to the commencement of the activities, in line with the requirements of the existing EMPrs. - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their roles and responsibilities in achieving compliance with the EA and EMPr. - A record of all environmental awareness training courses undertaken as part of the EMPr must be available. - A staff attendance register of all staff to have received environmental awareness training must be available. - Course material must be available and presented in appropriate languages that all staff can understand.	EC	Schedule training sessions with all contractors as required prior to construction Document all trainees	Prior to the start of construction activities	EC EO TER	Schedule training sessions with all contractors as required prior to construction	Training register/s Information posters Training materials

ASPECT: STORMWATER AND WASTEWATER MANAGEMENT						
Impact management outcome	Impacts on the environment caused by stormwater and wastewater discharges are avoided.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Stormwater and wastewater management must be undertaken in line with the requirements of the existing EMPrs. - All stormwater outlets must be designed to dissipate the energy of outgoing flows to levels that present a low erosion risk. Suitably designed energy dissipation and erosion protection structures will need to be installed at appropriate locations. - All erosion protection measures must be established to reflect the natural slope of the surface and located at the natural ground level. - Measures to capture solid waste and debris entrained in stormwater runoff must be incorporated into the design of the system and should include the use of either curb inlet/inlet drain grates and/or debris baskets/bags. - Runoff from the cement/concrete areas must be strictly controlled, and contaminated water must be collected, stored and disposed of off-site, at a location approved by the Applicant's PM. - After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley, for additional protection until vegetation has re-colonised the rehabilitated area. - Ensure that incident response and contingency plan is prepared to deal with any potential unforeseen impacts that could arise. - A monitoring and maintenance programme should be prepared, to ensure the ongoing performance of infrastructure and the prevention of foreseeable faults/problems that could result in leakage/failure.	PM Contractor EC	Compile and implement the approved stormwater management plan (SWMP) Certificates of safe disposal for general, hazardous and recycled waste Record spills/ discharges and environmental incidents	All phases (ongoing)	TER EO	All phases (ongoing)	Certificates of safe disposal for general, hazardous and recycled waste Complaints register Environmental incident register

ASPECT: STORMWATER AND WASTEWATER MANAGEMENT						
Impact management outcome	Impacts on the environment caused by stormwater and wastewater discharges are avoided.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Demarcated dirty areas are to be limited to generator, parking areas and chemical storage areas. - Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created. - Any recommendations provided by a storm water management plan must be adhered too. - Should contaminants enter the soil profile due to spillages or other unforeseen circumstances a rehabilitation/spill specialist must be consulted regarding implementation of suitable mitigation and/or rehabilitation measures - Vehicles and equipment to be regularly maintained and cleaned in suitably designed areas, preferably off site. - Have fuel and oil cleanup kits available to clean spillages if they occur. - Ensure maintenance vehicles are fully operational before undertaking work. - Visual soil assessments for signs of contamination during construction (monthly) - Regular inspections of the generator and fuel storage tank areas. If any pollution is observed action should be taken according to site cleanup protocols. - Adequate waste containers must be provided on-site and maintained in a way that potential and actual environmental harm resulting from such material waste is minimised.						

ASPECT: STORMWATER AND WASTEWATER MANAGEMENT						
Impact management outcome	Impacts on the environment caused by stormwater and wastewater discharges are avoided.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Building activities must be carried out on a pervious surface, such as grass or open soil, or in such a manner that all sediment-laden runoff is prevented from discharging into a water body. -						

ASPECT: SOLID AND HAZARDOUS WASTE MANAGEMENT						
Impact management outcome	Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Solid and hazardous waste management must be undertaken in line with the requirements of the existing EMPrs. - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided. - A suitably positioned and demarcated temporary waste collection site must be identified and provided, maintained in a clean and orderly manner and managed in accordance with the National Norms and Standards for the Storage of Waste (GNR.926, November 2013). - Waste must be segregated into separate bins and marked for each waste type for recycling and safe disposal. - Staff must be trained in waste segregation. - Bins must be emptied regularly. - General waste produced onsite must be disposed of at registered waste disposal sites/recycling companies. - Hazardous waste must be disposed of at an appropriately licensed waste disposal site.	PM Contractor EC	Compile and implement the approved SWMP Certificates of safe disposal for general, hazardous and recycled waste Record spills/ discharges and environmental incidents	All phases (ongoing)	TER EO	All phases (ongoing)	Certificates of safe disposal for general, hazardous and recycled waste Complaints register Environmental incident register Training register Training materials

ASPECT: SOLID AND HAZARDOUS WASTE MANAGEMENT						
Impact management outcome	Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Certificates of safe disposal for general, hazardous and recycled waste must be maintained. - Regular inspections of the generator and fuel storage tank areas. If any pollution is observed action should be taken according to site cleanup protocols.						

ASPECT: VEGETATION CLEARING AND DISTURBANCE						
Impact management outcome	Minimise the disturbance of the proposed infrastructure on indigenous vegetation.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Restrict the movement of personnel and construction vehicles to designated area. - Strategically plan the location of laydown areas, so that minimal vegetation is cleared. - All disturbed areas should be rehabilitated as soon as possible. - Only a registered pest control operator June apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered or appropriately trained pest control operator. - Alien invasive vegetation must be removed and disposed of at a licensed waste management facility. - The EC must undertake monthly compliance monitoring audits. - All plant and equipment that make use of petrochemical substances must be checked leakages daily before operations commence.	PM Contractor EC	Demarcation of protected species prior to construction Implementation of the approved alien and invasive plant control and eradication plan The daily register must be kept of all relevant details of herbicide usage Certificates of safe disposal for general,	All phases (ongoing)	TER EO	All phases (ongoing)	Environmental incident register Training register and materials Monitoring of success of rehabilitation Records of permits for the relocation of protected plants where applicable Daily register of herbicide usage

ASPECT: VEGETATION CLEARING AND DISTURBANCE						
Impact management outcome	Minimise the disturbance of the proposed infrastructure on indigenous vegetation.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- All plant and equipment found to be leaking must be removed from the property to be repaired and only returned once fixed. - If any spillages occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider. - Clearing topsoil from footprint areas will influence the rate of infiltration of water to the shallow groundwater system and/or baseflow component to shallow streams. - Measures must be put in place to attenuate water from the infrastructure site and reduce runoff. Attenuation measures include but are not limited to - the use of sand bags, hessian sheets, silt fences, retention or replacement of vegetation and geotextiles such as soil cells which must be used in the protection of any slopes that are created. -		hazardous and recycled waste				Certificates of safe disposal for general, hazardous and recycled waste

ASPECT: PROTECTION OF HERITAGE RESOURCES						
Impact management outcome	Impact on heritage resources is minimised.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- All work must cease immediately if any human remains and/or other archaeological,	PM Contractor EC	Reporting of heritage findings to SAHRA	All phases (ongoing)	TER EO	All phases (ongoing)	Environmental incident register Training register

ASPECT: PROTECTION OF HERITAGE RESOURCES						
Impact management outcome	Impact on heritage resources is minimised.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
palaeontological and historical material are uncovered. - Reporting of heritage findings to the SAHRA. - Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services (SAPS)), so that a systematic and professional investigation can be undertaken. - Sufficient time must be allowed to remove/collect such material before development recommences. - If any fossils are found, a palaeontologist must be notified immediately by the TER and/or EAP and a site visit must be arranged at the earliest possible time with the palaeontologist. - In the case of the ECO or the Site Manager becoming aware of suspicious-looking palaeo-material, construction must be halted in that specific area and the palaeontologist must be given enough time to reach the site and remove the material before excavation continues. -		Reporting of graves/ human remains to SAPS				Training materials Permits for damage or repairs to heritage sites Records of reports to heritage agencies/ SAPS

ASPECT: SOCIO-ECONOMIC						
Impact management outcome	All precautions are taken to minimise the risk of injury, harm or complaints, and to enhance socio-economic development.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Appoint contractors in line with Procurement Procedures. - Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. - Fence off the construction site and control access to these sites. - Women should be given equal employment opportunities and encouraged to apply for positions. - Ensure all construction equipment and vehicles are always properly maintained. - Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they June pose to the community. Place specific emphasis on the vulnerable sector of the population, such as children and the elderly. - Identify fire hazards, demarcate and restrict public access to these areas and notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc. - All unattended open excavations must be adequately fenced or demarcated. - Ensure warning signs are erected on the perimeter of these areas in the local language/s. - Structural safety to be ensured according to engineering standards. - Adequate protective measures must be implemented to prevent unauthorised access to the works area. - Ensure structures vulnerable to high winds are secured.	TNPA SSC		All phases (ongoing)	TER EO	All phases (ongoing)	Complaints register Training register Training materials

ASPECT: SOCIO-ECONOMIC						
Impact management outcome	All precautions are taken to minimise the risk of injury, harm or complaints, and to enhance socio-economic development.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Maintain an incidents and complaints register, in which all incidents or complaints involving the public are logged.						

ASPECT: EMERGENCY PROCEDURES						
Impact management outcome	Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project. - The ERAP must deal with accidents, potential spillages and fires, in line with relevant legislation. - All staff must be made aware of emergency procedures as part of environmental awareness training. - The relevant local authority must be made aware of a fire as soon as it starts. - In the event of an emergency, necessary mitigation measures to contain the spill or leak must be implemented.	PM, Contractor, Transnet Safety and Environment Representatives, ECO	Compile ERAP prior to the commencement of construction Certificates of safe disposal for general, hazardous and recycled waste Record spills/ discharges and	All phases (ongoing)	EC EO	All phases (ongoing)	Complaints register Training register and materials ERAP Environmental incident register

ASPECT: SOCIO-ECONOMIC						
Impact management outcome	All precautions are taken to minimise the risk of injury, harm or complaints, and to enhance socio-economic development.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Designate smoking areas where the fire hazard could be regarded as insignificant. - Smoking must be controlled as per the Tobacco Products Control Act, 1993 (Act No. 83 of 1993), as amended. - Firefighting equipment must be available on all vehicles located on site. - The local Fire Protection Agency (FPA) must be informed of construction activities. - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site.		environmental incidents				

ASPECT: HAZARDOUS SUBSTANCES						
Impact management outcome	Safe storage, handling, use and disposal of hazardous substances.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible. - All hazardous substances must be stored in suitable containers, as defined in the method statement - Petrochemical substances must be stored on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. - The floor of the bund must be sloped, draining to an oil separator. - Containers must be marked to indicate contents, quantities and safety requirements.	PM Contractor EC	Compile ERAP prior to the commencement of construction Compile HCS control sheet MSDS Certificates of safe disposal for general,	All phases (ongoing)	EC EO	All phases (ongoing)	Complaints register Training register and materials ERAP HCS control sheet and updates MSDS

ASPECT: HAZARDOUS SUBSTANCES						
Impact management outcome	Safe storage, handling, use and disposal of hazardous substances.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Bunded areas to be suitably lined with a South African Bureau of Standards (SABS) approved liner. - An Alphabetical HCS control sheet must be drawn up and kept up to date continuously. - All hazardous chemicals that will be used on site must have product-specific Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet. - Employees handling hazardous substances /materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate PPE must be made available. - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid are stored in appropriate storage tanks or bowsers. - Provision must be made for refuelling at the storage area by protecting the soil with an impermeable ground cover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained. - All empty externally dirty drums must be stored with a lid on a drip tray or within a bunded area. - No unauthorised access into the hazardous substances' storage areas must be permitted. - No smoking must be allowed within the vicinity of the hazardous storage areas. - Adequate fire-fighting equipment must be made available at all hazardous storage areas. - Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used.		hazardous and recycled waste Record spills/ discharges and environmental incidents				Spill kits available on site Environmental incident register

ASPECT: HAZARDOUS SUBSTANCES						
Impact management outcome	Safe storage, handling, use and disposal of hazardous substances.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- An appropriately sized spill kit must always be kept onsite relevant to the scale of the activity/s involving the use of hazardous substances. - The responsible operator must have the required training to make use of the spill kit in emergencies. - An appropriate number of spill kits must be available in all areas where activities are being undertaken. - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the NEM: WA.						

ASPECT: EMISSIONS AND AIR QUALITY						
Impact management outcome	Dust prevention measures are applied to minimise the generation of dust.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Comply with the NCR and all applicable local bylaws. - Visible emissions should be monitored to determine whether there is possible disturbances from the generator emissions. - Ensure that all construction vehicles are maintained to the manufacturer's specifications.	PM Contractor EC	Compile ERAP prior to the commencement of construction Compile HCS control sheet MSDS Certificates of safe disposal for general, hazardous and recycled waste	All phases (ongoing)	EC EO	All phases (ongoing)	Complaints register Training register Training materials ERAP HCS control sheet and updates MSDS

ASPECT: EMISSIONS AND AIR QUALITY						
Impact management outcome	Dust prevention measures are applied to minimise the generation of dust.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
		Record spills/ discharges and environmental incidents				Spill kits available on site Certificates of safe disposal for general, hazardous and recycled waste Environmental incident register

ASPECT: NOISE						
Impact management outcome	Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- The Contractor must keep the noise level within acceptable limits. - Comply with the NCR and all local noise bylaws. - Restrict the use of sound amplification equipment for communication and emergency only. - Any complaints received by the Contractor regarding noise must be recorded and communicated to the EC and PM. - Operating hours as determined by the EA are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.	PM Contractor EC	Employee Code of Conduct Control of working hours	All phases (ongoing)	TER EO	All phases (ongoing)	Complaints register Training register Training materials Environmental incident register

ASPECT: VISUAL IMPACTS AND LIGHTING						
Impact management outcome	Minimise the visual impact					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
- Use suitable building finishes/colours that blend in with the surrounding landscape. - Set up visual screens (such as trees, shrubs or hedges) along the perimeter of the study area. - Choose suitable types of lighting that minimize glare and sky glow. - Only focus light sources on where it is needed	PM Contractor EC	Compile ERAP prior to the commencement of construction	All phases (ongoing)	TER EO	All phases (ongoing)	Complaints register Training register Training materials Environmental incident register.

6 DECLARATION

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

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Signature Proponent/applicant/ holder of EA Date

NOTE:

Should the EA be transferred to a new holder, this declaration must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of the EMPr not be submitted. Once approved, the EMPr becomes legally binding to the new EA holder.

APPENDIX A

Curriculum Vitae of Environmental Assessment Practitioner (EAP)

Rona Schröder

Senior Environmental Assessment Practitioner

CORE SKILLS

- Project Management
- Environmental Impact Assessment
- Water Use Licencing
- Mining Environmental Compliance
- Environmental Compliance Auditing
- Environmental Strategic Action Plans

DETAILS

Qualifications

- B.Sc. (Hons) Environmental Analysis and Management - University of Pretoria (2011)
- B.Sc. Geology and Management - University of the Free State (2012)
- SHEilds (NEBOSH) International General Certificate in Occupational Health and Safety (2018)
- Certificate in Project Management for Strategic Advantage, University of Stellenbosch Business School (2017)

Professional Registrations

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1149)
- Pr.Sci.Nat (120605), South African Council for Natural Scientific Professionals)
- International Association for Impact Assessors of South Africa (IAIASA)

Languages

- English
- Afrikaans

Countries Worked In

- South Africa
-

PROFILE

Rona has over 10 years's experience within the environmental management, water and mining field and is aimed at delivering the required environmental services for each client.

Rona has experience in the environmental fields as an Environmental Assessment Practitioner as well as having worked in the mining field on-site ensuring environmental compliance for several mining and processing sites.

She has dealt with projects in the mining, municipal, farming, electricity generation, telecommunications and water industries. She has been involved with environmental projects from site screening and feasibility, environmental application, writing of Environmental Management Programes (EMPr), writing of technical reports all the through to Stakeholder Engagement Processes and completing of projects up to issuing authorization permits and licenses.

- Proposal Writing and project management
- Stakeholder Management and Engagement
- Government institution and authority liaison
- Water Use Licence Applications
- Environmental Impact Assessment / Basic Assessments
- Environmental Compliance Officer
- Public Participation Processes
- Environmental Compliance Auditing
- Mining Environmental Projects and Licensing
- Environmental Screening and Site Evaluations
- Environmental Training

Previous Experience

Period	Employer	Position	Role/ Responsibility
2021 - 2023	Ikwezi Mining & Zinoju Coal & Zarbon Coal	Group Environment Manager	**I started as Group Environment Officer for Ikwezi Mining and Zarbon Coal and was promoted to Group Environment Manager for Ikwezi Mining, Zarbon Coal and Zinoju Coal. Here is a brief description of my responsibilities at Ikwezi Mining and Buffalo Coal.** • **Responsible for obtaining all relevant environmental authorizations and licenses for the current mining and plant operations as well as new projects;** • **Managing environmental compliance for opencast and underground mining operations as well as washing plants;** • **Departmental and community liaising on all environmental aspects;** • **Project planning, project management and process management for applications and specialist studies;** • **Developing and reviewing SOPs and COPs for environmental aspects;** • **Environmental Auditing, compliance tracking and reporting;** • **Environmental awareness program development and implementation;** • **Environmental monitoring and reporting;** • **Action plans development and implementation;** • **Guidance and implementation of Environmental Legislation;**
2019 - 2021	ACE Environmental Solutions	Head of Department: Environmental	• **Project Management; Proposal Writing for new projects; Company Marketing; Document Quality Assurance;** • **Environmental Authorizations, Water Use License Applications and Waste Management License Applications;** • **Client and Government Department Liaisons;** • **Environmental Compliance Auditing;** • **Managing of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts;** • **Managing Stakeholder Engagement Processes for authorizations and licensing**

			applications; • Development and implementation of Environmental Management Plans (EMP); • Developing Protocols for environmental processes
2013 - 2019	Alta van Dyk Environmental Consultants	Environmental Consultant	• Project Management of multi-disciplinary teams; • Please note that our standard 2023 terms and conditions were sent out in December of 2022. • Environmental Compliance Auditing of Authorizations (ECO), Authorizations and Environmental Management Programmes (EMP); • Project Management for Environmental Processes under the National Environmental Management Act (NEMA), Mineral and Petroleum Resources Development Act (MPRDA) and National Water Act (NWA); • Environmental Authorization, Water Use License and Waste Management License Applications; • Proposal Writing for new projects; • Identification and assessments of Environmental Impacts Assessments and developing implementable mitigation measures to reduce possible impacts; • Report Writing and reviewing; Client and Government Department Liaisons; • Stakeholder Engagement Processes for authorizations and licensing applications; • Development and implementation of Environmental Management Plans (EMP); • Developing License Auditing Protocols for conducting environmental legal compliance audits, • Experience as a Data Controller for a large international company with several operations as part of their due diligence process and management system actions;
2013	**Prime Africa Consultants**	**Risk Assessment Matrix Developer**	• Developing a Multi Criteria Risk Assessment Matrix for site selection during Environmental Impact Assessments.

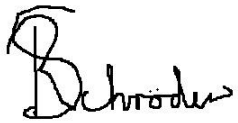
Project Experience

Year	Client	Project Description	Role/Responsibility
2013-2015	Pandora Platinum Mine	Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner
2014	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2014-2019	Lonmin Plc	Marikana Operations Water Use Licence Audit	Environmental Practitioner
2015	Lonmin Plc	Precious Metal Refinery Water Use Licence Application	Environmental Practitioner
2015-2016	Lonmin Plc	Marikana Operations Water Use Licence Application	Environmental Practitioner
2016	Keaton Energy	Vanggatfontein Colliery Wash Plant Extension Authorisation	Environmental Practitioner
2016-2018	Keaton Energy	Vanggatfontein Colliery External Water Use Licence Audits	Environmental Practitioner
2016	Nqutu Local Municipality	Rural Electrification Project Ndodekhling-Shayiwe Small Scall Hydropower Plant	Environmental Practitioner
2016	Mhlontlo Local Municipality	Rural Electrification Project Kwa-Madiba Small Scale Hydropower Plant	Environmental Practitioner
2016	Anglo Thermal Coal	Licence and Permitting Database Development – For all Coal Operations	Data Controller
2016	Anglo Platinum	Licence and Permitting Database Development – For all Platinum Operations	Data Controller
2019	Ekurhuleni Metropolitan Municipality	Mooifontein Cemetery Extension Water Use Licence Application	Environmental Practitioner
2019	Blue Valley Golf Estate	Environmental Management Programme	Environmental Practitioner
2017	Nkomati Anthracite	Water Use Licence Audit Report	Environmental Practitioner
2017	Nkomati Anthracite	Basic Assessment Report	Environmental Practitioner
2017-2019	Lonmin Plc	Baobab, Dwaalkop and Doornvlei External Water Use Licence Audits	Environmental Practitioner
2018	Glencore	Chrome Plant Environmental Impact Assessment and Water Use Licence Application	Environmental Practitioner

2018-2019	Lonmin Plc	Precious Metal Refinery Water Use Licence Audit	Environmental Practitioner
2018-2019	Lonmin Plc	Marikana Operations Water Use Licence Application Amendment	Environmental Practitioner
2020-2021	Atlas Towers	Telecommunications Mast Basic Assessments	Project Manager and Environmental Practitioner
2021-2023	Ikwezi Mining	Opencast Mining and Coal Washing Plant Compliance	Group Environmental Manager
2022-2023	Buffalo Coal	Underground Mining and Coal Washing Plant Compliance	Group Environmental Manager

DECLARATION

I, Rona Schröder, hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 15/01/2024

UNIVERSITY OF THE **FREE STATE**
UNIVERSITEIT VAN DIE **VRYSTAAT**
YUNIVESITHI YA **FREISTATA**

THIS IS TO CERTIFY THAT THE DEGREE HIERMEE WORD VERKLAAR DAT DIE GRAAD

Baccalaureus Scientiae

HAS BEEN CONFERRED UPON
TOEGEKEN IS AAN

SCHRÖDER, Rona Wilma

IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY. AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEëL VAN DIE UNIVERSITEIT HIERONDER.

ENDORSEMENT: GEOLOGY AND MANAGEMENT
ENDOSSEMENT: GEOLOGIE EN BESTUUR

VICE- CHANCELLOR / VISEKANSELIER

DEAN / DEKAAN

REGISTRAR / REGISTRATEUR

BLOEMFONTEIN
2012-03-28
2007009976

28055749

Universiteit van Pretoria

Die Raad en die Senaat verklaar hiermee dat die graad

Baccalaureus Scientiae Honores

in

Omgewingsanalise en -bestuur

met al die regte en voorregte daaraan verbonde by geleentheid van 'n kongregasie van die Universiteit toegeken is aan

Rona Wilma Schroder

kragtens die Wet op Hoër Onderwys, 1997 en die Statuut van die Universiteit

Namens die Raad en die Senaat

C. de la Rey

Visekanselier en Rektor

Namens die Fakulteit
Natuur- en Landbouwetenskappe

Dekaan

Registrateur

2013-04-17

nebosh

Management of international health and safety

A unit of the:
NEBOSH International General Certificate in Occupational Health and Safety
NEBOSH International Certificate in Construction Health and Safety
NEBOSH International Certificate in Fire Safety and Risk Management

Rona Wilma Schroder

achieved this unit on

12 November 2018

William Nixon
Chair

Ian Taylor
Chief Executive

Master log certificate No: IGC1/00447107/1026644
SQA Ref: UE48 04

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Hiermee word gesertifiseer dat
It is hereby certified that

Rona Wilma Schroder

die volgende kursus suksesvol voltooi het
successfully completed the following course

PROJECT MANAGEMENT FOR STRATEGIC ADVANTAGE (ONLINE)

Number of Short Course Credits : 8

Vir die periode
Over the period

24/01/2017 - 10/03/2017

Prof Piet Naude
Director/Direkteur USB

Frik Landman
Chief Executive Officer
Hoof-Uitvoerende Beampte

USB Executive Development
University of Stellenbosch Business School

4497/55470

EAPASA
Unit 19 Oxford Office Park
3 Bauhinia Street
Highveld Techno Park
Centurion
0157
Tel. (+27) 12 880 2154

Email: registrar@eapasa.org / Website: www.eapasa.org

Environmental Assessment Practitioners Association of South Africa
Advancing environmental assessment practice in South Africa

Miss Rona Schroder
384 Fountains Avenue
Lyttelton
Pretoria
0157

Sent by email to: blommetjie@ymail.com

Dear Miss Schroder

Registered Environmental Assessment Practitioner: Number 2020/1149
Rona Wilma Schroder : South African ID 8901300067080

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Rona Wilma Schroder is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

https://registration.eapasa.org/registered-practitioners

Your registration is effective for a period of five years from 31 August 2020, and expires on 31 August 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

RC Hill

Dr Richard Hill
Registrar
Date: 31 August 2020

Board Members: Ms Snowy Makhudu (Chairperson), Mr Khangwelo Desmond Musetsho (Vice-Chairperson),
Mr Ntsako Baloyi, Mr Zama Dlamini, Mr Siyabonga Gqalangile, Ms Jacqui Hex,Mr Phumudzo Nethwadzi, Mr Danie Neumann.
Registrar: Dr Richard Hill
NPO Reg. No. 122-986

Gerda Bothma

GCS Group Environmental Manager

CORE SKILLS

- Project Management
- Technical & Impact Assessment Guidance
- Environmental Assessment
- Water Use Licencing
- Waste Management Licencing
- Environmental & Waste Auditing and Compliance Monitoring

DETAILS

Qualifications

- B.Sc. Microbiology (Honours) University of Pretoria 1996
- B.Sc. Biological Sciences University of Pretoria 1994

Memberships/ Professional Affiliations

- International Association for Impact Assessors of South Africa (IAIA)
- Institute of Waste Management of South Africa (IWMSA)
- SACNASP (No.117348) (South African Council for Natural Scientific Professionals)

Languages

- Afrikaans
- English

Countries worked in:

South Africa, Zambia, Namibia

PROFILE

Gerda has over 25 years' experience within the environmental and waste management field and strives to deliver custom environmental services to clients.

Gerda began her career in the environmental field within the government sector, managing environmental aspects and impacts as well as reviewing environmental assessments with the view of authorizing or declining authorization of the developments.

After six years within the government sector she joined a consulting engineering firm where she was ultimately responsible for the Management of the Environmental Sub-Division. Gerda has experience in project and client management, financial management and the compilation and costing of project proposals and tenders. She has been involved in several engineering projects as the Environmental Assessment Practitioner as well as the Environmental Control Officer during construction working closely with the Occupational Health and Safety Officer. Gerda has also been involved in projects where waste licensing as well as water use licensing processes formed an integral part of the services offered. Environmental auditing and compliance monitoring of waste disposal sites also forms part of her experience gained. She also has experience in dealing with projects which involve NEC3 Contracts, the Equator Principles and World Bank IFC Principles.

Gerda has specialist skills in the following areas:

- Project proposals, planning, costing and timing
- Project and Client Management
- Authority Liaison
- Basic Assessments & Scoping/EIA Processes
- Amendment of EA's & EMP's
- S24G Applications
- Facilitation of Public Participation Processes & Stakeholder Engagement
- IWULA & IWWMP Applications
- Environmental Control Officer (ECO) duties
- Environmental Compliance Auditing (IFC Performance Standards & Equator Principles)
- Mentorship & Guidance

Work Experience

Period	Employer	Position	Role/ Responsibility
2019 to Current	GCS Water and Environment (Pty) Ltd	Environmental Manager	Management of the environmental unit since 2019 up to January 2024 and then the GCS Group Environmental Division since February 2024. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2018 to 2019	Terramanzi Group (Pty) Ltd	Senior Environmental Consultant	Management of the environmental unit within the Terramanzi Group. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2014 to 2017	GIBB (Pty) Ltd	Senior Environmental Scientist	Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2011 to 2013	WorleyParsons RSA	Senior Environmental Scientist & Durban Department Head Environment	Management of the environmental unit in the Durban Office. Management of applications for rectification in terms of Section 24G of the EIA Regulations, undertaking of basic environmental assessment and full Scoping & EIR applications in terms of the Regulations. Management of Integrated Water Use License Applications in terms of the NWA. Undertaking of environmental compliance audits for various construction projects as well as environmental legal audit reviews and environmental due diligence investigations.
2003 to 2011	KV3 Engineers	Senior Environmental Scientist	Management of applications for exemption from compliance with the EIA Regulations, undertaking of basic environmental assessment applications, as well as full environmental impact assessment applications.
2000 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Assistant Director: Waste Management Division	Project management and environmental management pertaining to all developments within a designated area in Gauteng Province. Review of EIAs, formulation of comments and or authorisations within designated area in Gauteng Province. Liaison with waste contractors, industries and others. Management of legal interventions required in terms of environmental legislation within a designated area. Supporting environmental officers at all levels in terms of technical and environmental guidance, input into strategic decisions, resolving complex and potentially challenging issues.
1999 to 2000	Gauteng Department of Agriculture, Conservation & Environment	Senior Environmental Officer: Waste Management Division	
1997 to 1999	Gauteng Department of Agriculture, Conservation & Environment	Environmental Officer: Waste Management Division	
1996	Spartan Private School	Teacher: Natural Science & Biology	Teacher in Biology and Natural Science for Grades 7 to 12.

Year	Client	Project Description	Role/ Responsibility
Strategic and Environmental Guidance Projects			
1999 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of a Health Care Risk Waste Management Strategy for Gauteng.	Part of Development Team
2001 to 2003	Gauteng Department of Agriculture, Conservation & Environment	Development of Minimum Domestic Waste Collection Standards for Gauteng Province.	Part of Development Team
2002	Gauteng Department of Agriculture, Conservation & Environment	Development of new EIA guidelines and regulations for the Gauteng Province.	Part of Development Team
2005	Gauteng Department of Agriculture, Conservation & Environment	GDACE Green Procurement Project: Development of the GDACE Green Procurement Policy, Gauteng	Project Manager & Reviewer
2008	GAUTRAIN Project Engineers (i.e. KV3 Engineers)	Environmental Assistance for the Gautrain Project: Environmental Evaluation of various documentation and engineering designs in terms of their environmental compliance.	Project Manager & Reviewer
2009	Department of Environmental Affairs	Alignment of MIG Project Process with EIA Process: Evaluation of the EIA process as well as the MIG process in order to produce a process alignment guideline to the municipalities to streamline the two processes.	Part of Development Team
2021	CoalTech	Development of "A Manual for the Authorisation of Pitlakes as a Closure Option for South African Coal Mines"	Part of Development Team
Environmental Feasibility and Screening			
2008	Nu Way-property Developments	Management of Environmental Screening and Due Diligence Assessment for several proposed Nu Way-property Developments, Gauteng.	Project Manager
2008	Department of Water Affairs	Mokolo Croc WAP Environmental Feasibility and Screening, Limpopo.	Project Manager & Senior Environmental Assessment Practitioner (EAP)
2016	Kwadukuza Municipality	Environmental Feasibility for Civil Engineering Project Foxhill Road Alignment and Construction, Tongaat, Kwa-Zulu-Natal.	Environmental Project Leader
2016	King Sabata Dalindyebo Local Municipality (C/O OR Tambo District Municipality)	Environmental Screening Investigation of six proposed development corridors for the Mthatha Bulk Water Infrastructure Presidential Intervention – Phase 2: Secondary Bulk Infrastructure project.	Environmental Project Leader
2019 to 2020	Phumaf Holdings (Pty) Ltd	Environmental Screening for various sites within Ekhurhuleni Municipality as part of the Gauteng Rapid Land Release Programme (GRLRP) project for the Provincial Department of Human Settlements	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Environmental Opinions & Appeals			
2019 to 2020	Tendele Coal	Environmental Review Report for the Somkhele Anthracite Mine (MR 10041) High Court Case Number 82865.	Project Manager & Senior EAP
2022	CNG Holdings	Environmental Opinion regarding the Environmental Legislative Requirements for the proposed Compressed Natural Gas Motherstation in Avoca, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Tendele Coal	Environmental support to the Somkhele Anthracite Mine for the IWULA Appeals Process.	Project Manager & Senior EAP
Development Environmental Assessments			
2003 to 2005	ABSA DevCO	Environmental Impact Assessment for a change of land-use from agricultural to Residential and Town Development of the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Senior EAP
2005 to 2010	Air Traffic Navigation Services (ATNS)	The project entails the upgrading of existing, and the provision of new air navigation sites (27 in total) throughout South Africa. Civil and electrical infrastructure to the sites needed to be upgraded to accommodate the equipment. Various Environmental Impact Assessments for various individual projects in various provinces within South Africa.	Project Manager & Senior EAP
2006 to 2009	Amathole District Municipality	Elliotdale Rural Sustainable Human Settlement Pilot Project Environmental Impact Assessment. Responsible for the environmental assessment process which was based on a strategic approach for the Elliotdale Rural Housing Project, Elliotdale, Eastern Cape.	Project Manager & Senior EAP
2007	Elkem Ferroveld	Environmental Basic Assessment for the upgrading and expansion of the Ferroveld Plant in Ferrometals, Emahlaheni, Mpumalanga.	Project Manager & Senior EAP
2008	ABSA DevCO	Environmental Impact Assessment for a change in land use from agricultural to Residential and Town development of Montana X40, Pretoria, Gauteng.	Project Manager & Senior EAP
2012	Transnet Capital Projects	Environmental Basic Assessment and technical environmental investigations for the proposed expansion of the existing tug jetty and construction of a new tug jetty for Transnet Capital Projects in the Port of Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	Dube TradePort	Environmental Impact Assessment for the proposed construction of the Dube TradePort TradeZone 2 in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2017	Dube TradePort	Environmental Impact Assessment for the proposed Support Precinct 2 Development in La Mercy, KwaZulu-Natal.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities at the Areena Resort, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2016 to 2017	Areena Resort	Application for rectification in terms of S24G and associated Environmental Basic Assessment for the alleged unlawful construction activities on Hillsdrift Farm, Great Kei Municipality, Eastern Cape.	Project Manager & Senior EAP
2018 to 2019	Watchman Properties (Pty) Ltd	Environmental Basic Assessment for the proposed Vendome Residential Development on Portion 1 of Farm 1766 and Portion 2 of Farm 1766, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2018 to 2019	Keysha Investments 213 (Pty) Ltd	Environmental Basic Assessment for the proposed River Farm Estate Development and associated infrastructure on remainder of farm Rivierplaas No. 1486, Erf 111 and Erf 197, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Paarl Vallei Developments (Pty) Ltd	Environmental Basic Assessment for the proposed Paarl Valleij Retirement Village Development, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2018 to 2019	Val de Vie Investments (Pty) Ltd	Parallel Substantive Amendment Application process for the authorised Pearl Valley II & Levendal Residential Developments, Paarl, Western Cape, South Africa.	Project Manager & Senior EAP
2019 to 2021	Phumaf Holdings (Pty) Ltd	Environmental Services for: • Full Environmental Impact Assessment for the proposed Unitas Park Ext 16 Mixed Use Development; • Basic Environmental Impact Assessment for the proposed Evaton West F Mixed Use Development; and • Basic Environmental Impact Assessment for the proposed Evaton West I Mixed Use Development.	Project Manager & Senior EAP
Renewable Energy Environmental Assessments			
2011	Farmsecure Carbon	Environmental Basic Assessment and Water Use License Application process for a proposed Biogas Waste to Energy project for a pig farm, Mooiriver, KwaZulu-Natal.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Doornfontein Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 230 MW Doornfontein Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 118, Doornfontein, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	GPIPD – Kruispad Solar Farm (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Kruispad Photovoltaic Solar Energy Facility (PVSEF) located on Remainder of Farm 120, Kruispad, Piketberg, Bergrivier Local Municipality, Western Cape.	Project Manager & Senior EAP
2018 to 2019	Brandvalley Wind Farm (Pty) Ltd	Part 2 Amendment Application for the authorised 140 MW Brandvalley Wind Energy Facility (WEF) located within the Karoo Hoogland, Witzenberg and Laingsburg Local Municipalities in the Northern and Western Cape Provinces.	Project Manager & Senior EAP
2018 to 2019	Copperton Wind Farm (Pty) Ltd	Non-Substantive Amendment Application to update the information of the Holder of the Environmental Authorisation & an EMPr Amendment Process to update the Airstrip Alignment and to provide an updated "outcomes based" EMPr for the Copperton Wind Energy Facility near Copperton in the Northern Cape.	Project Manager & Senior EAP
2018 to 2019	WKN Windcurrent SA (Pty) Ltd	Environmental Impact Assessment for the proposed 150 MW Haga Haga Wind Energy Facility (WEF) & Environmental Basic Assessment for the associated Haga Haga Overhead Powerline (OHPL) in Haga Haga, Great Kei Local Municipality, Eastern Cape.	Project Manager & Senior EAP
2021 to 2022	Cennergi Holdings	Environmental Impact Assessment and Water Use License Application (GA) process for the proposed 100MW Lephalale Solar Plant located mainly on the Farm Appelvlakte 448 within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Mining Environmental Assessments			
2007	Chris Hani Municipality	Environmental Assessment and DME Licence Application on behalf of Chris Hani Municipality. Responsible for exemption application from Mining Permit and Environmental Management Programmes for 17 borrow pits in Middelburg, Eastern Cape.	Project Manager & Senior EAP
2010	Samancor Chrome Limited	The Lwala Greenfields Mine and Smelter EIA and EMP. Responsible for the Environmental impact assessment and technical investigations for the waste management issues for the proposed development of a new chrome smelter project in the Steelpoort area, Limpopo.	Project Manager & Senior EAP
2011	Xtrata Alloys	Xtrata Alloys Western Mines PSV application for authorization in terms of the MPRDA. Responsible for the undertaking of the EIA and compilation of the amended EMPr and technical environmental investigations for the proposed development of an open cast mine in Rustenburg, North West.	Project Manager & Senior EAP
2019 to 2021	Harmony Gold	Environmental Assessment process to obtain environmental authorisation for the proposed expansion of the existing Kareerand Tailings Storage Facility, Dr Kenneth Kaunda District Municipality, North-West Province.	Project Manager & Senior EAP
2019 to 2021	Zululand Anthracite Colliery	Environmental Basic Assessment for the proposed New Mngeni Adit & Associated Infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2021 to 2022	Sibanye-Stillwater	Part 2 Amendment Application for the approved Burnstone Gold Mine EA/EMPr located near Balfour within the Dipalaseng Local Municipality, Mpumalanga.	Project Manager & Senior EAP
2021 to 2022	Exxaro Resources	Section 34 EMPr Amendment Application for the approved Grootegeluk Mine EMPr located near Lephalale within the Lephalale Local Municipality, Limpopo.	Project Manager & Senior EAP
2021 to 2022	Booysendal Northam Platinum	Part 2 Amendment Applications for the Booysendal Mine located near Lydenburg, across both Mpumalanga and Limpopo provices: • Booysendal North Mine: New Emergency Escape Portal and two new Ventilation Shafts and associated Infrastructure; and • Booysendal South Mine: New Ventilation Shafts and associated infrastructure.	Project Manager & Senior EAP
2022 to 2023	Booysendal Northam Platinum	Integrated Environmental Authorisation Application for the Booysendal South Phase III Expansion, Lydenburg, Mpumalanga: • Booysendal South Tailings Storage Facility Expansion; • Booysendal South Run of Mine Stockyard Stockpile Expansion; and • Booysendal South New Merensky Plant.	Project Manager & Senior EAP
2022 to 2023	Kangra Coal	Integrated Environmental Authorisation Application for the establishment of a Co-Disposal Discard Facility and Wastewater Treatment Plant at the Maquasa East Operations, Piet Retief, Mpumalanga.	Project Manager & Senior EAP
2023	Kangra Coal	Integrated Environmental Authorisation Application for the Umgala/Knights Hill Mining Application, Utrecht, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
Waste Management Environmental Assessments			
2003	Assmang Chrome Machadodorp	Environmental Impact Assessment for the permitting of the H:H Hazardous Waste Disposal Facility at Assmang Chrome, Machadodorp.	Senior EAP
2004	Emfuleni Local Municipality	Environmental Impact Assessment for the closure of the Zuurfontein Landfill site for the Emfuleni Local Municipality, Sedibeng, Gauteng	Senior EAP
2004	Ekurhuleni Municipality	Environmental Impact Assessment for the closure of the Sebenza Landfill Site for the Ekurhuleni Municipality, Gauteng.	Senior EAP
2004	Tzaneen Local Municipality	Application for authorisation and EIA for the permitting of an existing solid waste disposal site for the Tzaneen Local Municipality, Mpumalanga.	Senior EAP
2006	Samancor Chrome Middelburg	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Middelburg, Mpumalanga.	Senior EAP
2006	Samancor Chrome Ferrometals	Environmental Basic Assessment for the permitting of the existing Slag Waste Disposal facility for Samancor Chrome Ferrometals Witbank, Mpumalanga.	Senior EAP
2007	Steve Tshwete Municipality	Environmental Impact Assessments for four Solid waste Transfer Stations for the Steve Tshwete Municipality, Mpumalanga.	Senior EAP
2008	Assmang Chrome Machadodorp	Environmental Impact Assessment for the expansion of the existing Slag Waste Disposal Facility at Assmang Chrome. Responsible for the EIA application for authorization for the proposed expansion project in Machadodorp, Mpumalanga.	Project Manager & Senior EAP:
2010	ArcelorMittal	ArcelorMittal BOF Slag Disposal site licensing of new site and closure of old site, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP:
2010	Lekwa Municipality	Waste Management License Application for authorization and the conducting of an EIA and technical environmental investigation for the proposed development of two landfill sites for the Lekwa Municipality, Mpumalanga.	Project Manager & Senior EAP:
2015 to 2017	Umgungundlovu Municipality	Advanced Solid Waste Management Project for Umgundgundlovu Municipality for proposed Materials Recovery Facilities located in various Local Municipalities, Umgungundlovu Municipality, KwaZulu-Natal.	Project Manager & Senior EAP:
2019 to 2022	Buffalo Coal	Magdalena Colliery Waste Management License Application, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP:
Water and Wastewater Environmental Assessments			
2004	Msukaligwa Municipality	Environmental Impact Assessment for the installation of a water reticulation system at Nganga for the Msukaligwa Municipality, Mpumalanga.	Senior EAP
2006 to 2010	eThekwini Municipality: Water and Sanitation	Proposed upgrading of the WWTW capacity in the Northern Areas of the eThekwini Municipality. Responsible for EIA application for authorization, technical environmental investigations, and waste management license application for the proposed expansion of the WWT capacity in Northern eThekwini, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2008	Johannesburg Water	Environmental Management Services for Johannesburg Water: Environmental Impact Assessment (Exemption) for various individual projects related to the upgrading of the Bryanston Water Mains, Gauteng.	Project Manager & Senior EAP
2014 to 2017	eThekwini Municipality: Water and Sanitation	Environmental Basic Assessment and Water Use License Application for the Northern Aqueduct Water Augmentation Project (Phase 5), Durban, KwaZulu-Natal.	Project Manager & Senior EAP
Electrical and Linear Environmental Assessments			
2005	Magallies Water	Application for (exemption) authorisation on behalf of Magallies Water for the installation of the Rising Main from the Roodeplaat Waterworks to the Wallmannsthal Reservoir, in Wallmannsthall, Gauteng.	Senior EAP
2010	Moloto Rail Corridor Development	EIA for the Moloto Rail Corridor Development. Responsible for the EIA application for authorization and technical environmental investigations for the proposed Moloto Rail Corridor Development, Moloto, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Honingklip 88kV & ESKOM Randjiesfontein 88kV overhead line and Sub-Stations, Johannesburg, Gauteng.	Project Manager & Senior EAP
2010	ESKOM	Environmental Basic Assessment of for the ESKOM Ubertas Strategic Servitude Sub-Station, Johannesburg, Gauteng	Project Manager & Senior EAP
2014 to 2017	Msunduzi Municipality	Environmental Impact Assessment for the proposed Msunduzi IRPTN project, Pietermaritzburg, KwaZulu-Natal	Project Manager & Senior EAP
Environmental and Waste Management Compliance Monitoring and Auditing			
2005 to 2009	Sedibeng District Municipality	Auditing of Zuurfontein and Boitshepi Landfill sites for the Sedibeng District Municipality, Gauteng.	Part of Audit Team
2006 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Amberfield Development on the farm Brakfontein 399 JR, Centurion, Gauteng.	Project Manager & Environmental Control Officer (ECO)
2007 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Zambezi Estate Development, Montana, Gauteng.	Project Manager & ECO
2008 to 2009	Steve Tshwete Municipality	Auditing of Middelburg Landfill Site for the Steve Tshwete Municipality, Mpumalanga.	Part of Audit Team
2008 to 2009	ABSA DevCO	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the Cedar Creek Development, Fourways, Gauteng.	Project Manager & ECO
2017 to 2018	Dube TradePort	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of TradeZone 2, Dube TradePort, La Mercy, KwaZulu-Natal.	Project Manager & ECO
2017	Richards Bay Minerals	Environmental Legal Compliance Audit to determine the level of compliance of Richards Bay	Project Manager &

Year	Client	Project Description	Role/ Responsibility
		Minerals' to their various mining, water and waste licenses and environmental authorisations and permits, Richards Bay, KwaZulu-Natal.	Environmental Auditor
2017 to 2018	eThekwini Municipality	Environmental Compliance monitoring in accordance with relevant authorisation conditions and environmental management plans for the construction of the Northern Aqueduct Phase 5, Durban, KwaZulu-Natal.	Project Manager & ECO
2019	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena Operations, Dundee, KwaZulu-Natal.	Project Manager & Lead Auditor
2020	Samancor Eastern Chrome Mines	Annual Performance Assessment Audits for the following mines in Limpopo: • Doornbosch, Steelpoort and Montrose Mines; • Quartz Mine; • Lwala Mine; • Lannex Mine; • Spitskop Mine; and • Tweefontein Mine.	Project Manager & Technical Review
2020	ESKOM	ESKOM Biennial PCB Phase-out Compliance Audit, various sites within South Africa.	Project Manager & Lead Auditor
2020	ESKOM	Majuba Power Station Legal Compliance Audit, Volksrust, Mpumalanga.	Project Manager & Lead Auditor
2021	Zululand Anthracite Colliery	Annual IWUL Audit for 2020, Mandlakazi Traditional Authority, KwaZulu-Natal	Project Manager & Technical Review
2021	ESKOM	Kendal Power Station Legal Compliance Audit, eMalahleni Local Municipality, Mpumalanga.	Project Manager & Lead Auditor
2021	Coalition Trading	External Compliance Audit for the Humberdale Landfill Site, in terms of the Waste Management Permit, KwaZulu-Natal	Project Manager & Auditor
2021	Tronox KZN Sands (Pty) Ltd	NEM: WA Norms and Standards External Waste Compliance Audit for the Tronox Central Processing Complex located in Empangeni, KwaZulu-Natal	Project Manager & Lead Auditor
Integrated Water Use License Applications			
2010	FOSKOR	Integrated Water Use License Application for a new storage dam for FOSKOR, Richards Bay, KwaZulu-Natal.	Part of Project Team
2014 to 2015	SANRAL	Integrated Water Use License Applications as required for the proposed SANRAL N2 Road upgrade from Mthunzini to Empangeni, KwaZulu-Natal.	Project Manager & Senior EAP
2014	eThekwini Municipality: Roads	Integrated Water Use License Application for the proposed Realignment of Inanda Arterial Road, Durban, KwaZulu-Natal.	Project Manager & Senior EAP

Year	Client	Project Description	Role/ Responsibility
2015 to 2017	SMEC (Umzimkulu Municipality)	Integrated Water Use License Application for the proposed Licensing of the existing Umzimkhulu Waste Water Treatment Works, Umzimkhulu, KwaZulu-Natal.	Project Manager & Senior EAP
2014 to 2016	eThekwini Municipality: Roads	Water Use License Application for the proposed eThekwini BRT Route C1A, Durban, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2020	Zululand Anthracite Colliery	Integrated Water Use License Application for the new Mngeni Adit and associated infrastructure, Mandlakazi Traditional Authority, KwaZulu-Natal.	Project Manager & Senior EAP
2019 to 2021	South32 SA Coal Holdings	Integrated Water Use License Application for the Roy Point Mine, Newcastle, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Amendment Application for the Magdalena Colliery, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
2020 to 2022	Buffalo Coal	Integrated Water Use License Application for the Coalfields Processing Plant, Dundee, KwaZulu-Natal.	Project Manager & Senior EAP
Management and Master Plans			
2005	Livingstone Municipality	Development of the Livingstone Integrated Development Plan, Zambia.	Part of the Project Team
2008	Steve Tshwete Municipality	Development of an Integrated Waste Management Plan for the Steve Tshwete Municipality, Mpumalanga.	Part of the Project Team
2008	Kungwini Local Municipality	Development of an EMP (Framework) for Kungwini Local Municipality, Mpumalanga.	Part of the Project Team
2010	KZN Department of Public Works – Southern Region	Compilation of an Environmental Management Plan for the Fort Napier sewage upgrading project, Pietermaritzburg, Kwa-Zulu Natal.	Project Manager & Senior EAP

DECLARATION

I, ___Gerda Bothma_____ hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:  Date: 21/02/2024

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae

with specialization in
Biological Sciences

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of
Science
(Sgd) N Sauer
Dean

(Sgd) CR de Beer
Registrar

Date of Conferment
8 December 1994

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

9222065

University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Baccalaureus Scientiae Honores

with specialization in
Microbiology

with all the associated rights and privileges
was conferred on

GERDA DE LANGE

in terms of the Act and Statute of the University

On behalf of the Council and Senate
(Sgd) P Smit
Vice-Chancellor and Principal

On behalf of the Faculty of Biological
and Agriculrural Sciences
(Sgd) J van Zyl
Dean

(Sgd) JA Boon
Registrar

Date of Conferment
27 March 1996

Certified a true translation of the original Certificate

Registrar
Signed at Pretoria on the third day of September, 2008

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Gerda Bothma

Registration Number: 117348

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **15 November 2017** Expires **31 March 2024**

Chairperson

Chief Executive Officer

To verify this certificate scan this code