DRAFT

BASIC ASSESSMENT REPORT FOR THE PROPOSED UPGRADE OF TRANSNET HELIPAD AND ASSOCIATED INFRASTRUCTURE AT THE PORT OF RICHARDS BAY WITHIN THE CITY OF UMHLATHUZE MUNICIPALITY IN THE KWAZULU NATAL PROVINCE

PROJECT REF: F004-22

DATE

24 JANUARY 2022

PREPARED FOR

TRANSNET

PREPARED BY

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"From the world, we live to the world we seek"

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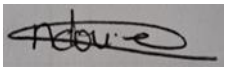
Draft Basic Assessment Report	Munyadziwa Rikhotso  SACNASP Registration:No.300076/15 EAP EAPASA: Registration No. 2019/1156	Esther Ndou  Candidate EAP EAPASA: Registration No. 2020/2319

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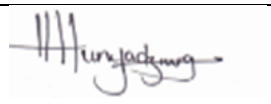
Signature	
Date	**24 January 2023**

EXECUTIVE SUMMARY

Nsovo Environmental Consulting (Nsovo) has been appointed by Transnet SOC Limited (Transnet) as the independent Environmental Assessment Practitioner (EAP) to undertake the relevant environmental impact assessment (EIA) for the proposed upgrade of Transnet Helipad and associated infrastructure at the Port of Richards Bay within the City of uMhlathuze in the KwaZulu-Natal Province.

Careful consideration of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations of December 2014 as amended in April 2017 (the Regulations) has confirmed that the proposed development requires a Basic Assessment process.

Transnet has recognized that its current infrastructure facilities are not adequate to accommodate an additional helicopter, equipment, and personnel for rendering maintenance and operational services. Furthermore, the current helipad infrastructure layout poses various operational challenges that limit compliance with the South African Council Aviation Authority (SACAA). Therefore, Transnet proposes to upgrade the existing facilities in the Port of Richards Bay. The existing facility includes the following key components:

- Apron;
- Hangar;
- Helipad;
- Storage space;
- Workshop;
- Above-ground diesel storage;
- Offices; and
- Sleeping bunkers.

To avoid needless environmental impacts related to developing a new site, an upgrade of the existing site is recommended as the site is already functional and only requires minor upgrades to accommodate the additional capacity. Site Alternatives have not been considered. However, various layouts and technological alternatives have been assessed (Refer to Section 9). The following have been identified as the Preferred Alternatives:

- Layout Alternative 1: Concept design Massing Layout Option 1A & B
- Technical Alternative 1: Deck on Pile Method for Helipad

During construction, existing operations will have to be relocated to another location and Alternative 2 (Thuzigazi quay) is recommended in this regard.

The Basic Assessment Report (BAR) has been compiled in accordance with the requirements of Appendix 1 of the EIA Regulations. This report aims to fully assess the impacts of the proposed development on the affected environment. To ensure that the report complies with the minimum requirements and further addresses the potential impacts in a comprehensive manner, Specialist input was sought from the following Specialists:

a) **Terrestrial and marine biodiversity; and**
b) **Heritage and Archaeology**

Other specialist studies that were deemed necessary for the completeness and comprehensiveness of the report include the following:

- **Social Impact Assessment –** the SIA undertaken for the port expansion project by Acer was reviewed and the impacts of the port expansion and the proposed project will be the same**.**

Much as it was recommended by the DFFE Oceans and Coast that a **Noise Impact Study** be undertaken, it is the view of the EAP that given the magnitude of the expansion relative to the status quo, not much of a difference is expected. Furthermore, it was also noted that previous public engagements on projects within the Port indicated that noise is not a major concern. Therefore, without undermining the recommendation, we trust that the motivation will be adequate.

Given that the proposed project is located in an area with a high coastal vulnerability risk for estuary flooding and erosion, Climate **Change and Coastal Vulnerability Risk Assessment** is required to inform the engineering designs; as such, this is included in the BAR.

The study identified positive and negative, direct and indirect impacts, and rated them accordingly. Further cumulative impacts have been identified and assessed, such impacts include traffic, noise, tourism, recreation, etc. The primary risks identified as negative without mitigation include the impact on marine biodiversity and the climate change risk. All identified impacts can be mitigated through the implementation of the Environmental Management Programme (EMPr).

The proposed development will improve Transnet's ability to meet customer requirements and improve operational efficiency in the Port of Richards Bay. Therefore, it is recommended that this proposed development be approved by the Competent Authority.

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LIST OF ACRONYMS AND ABBREVIATIONS

CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries, and Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GNR	Government Notice Regulations
I&APs	Interested and Affected Parties
IUCN	International Union for Conservation of Nature
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)
NFEPA	National Fresh Water Ecosystem Priority Areas
NWA	National Water Act, 1998 (Act No. 36 of 1998)
TPT	Transnet Port Terminal
TNPA	Transnet National Port Authority
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SWMP	Storm Water Master Plan
SOC	State-Owned Company
SQG	Sediment Quality Guideline
TNPA	Transnet National Ports Authority (a division of Transnet SOC Limited)
WULA	Water Use Licence Application
WQG	Water Quality Guideline

1 INTRODUCTION

Transnet National Ports Authority (TNPA) appointed Nsovo to undertake a Basic Assessment process for the proposed upgrade of Transnet Helipad and associated infrastructure at the Port of Richards Bay within the City of uMhlathuze in the KwaZulu-Natal Province (proposed development). After a thorough investigation of potentially triggered listed activities, it was confirmed that the proposed development requires a basic assessment as defined in the EIA Regulations.

Richards Bay is South Africa's premier bulk port and the most modern. Richards Bay handles more than 80 million tons of cargo annually, representing 55% of South Africa's seaborne cargo. This makes it the country's largest port in terms of volumes handled. Richards Bay services the coalfields of KwaZulu-Natal and Mpumalanga as well as timber and granite exporters from as far away as the Eastern Cape and Northern Cape. The port is now handling an increasing variety of bulk and neo bulk cargo in addition to breakbulk. Much of the general cargo has migrated away from Durban in recent years. Exports remain the main activity of the port (Department of Transport, 2022)

TNPA operates a helicopter service for the transportation of Marine Pilots that are responsible for safely maneuvering vessels into the Port for the loading of cargo. The Port is in the process of purchasing an additional helicopter to meet operational and customer requirements. The Port's strategy is to operate the Aviation Department in-house after the expiry of the contractual obligations of the current Service Provider (Denel Aeronautic). The existing helicopter facility has been operational since the first helicopter marine pilot operations were commissioned in 1995. Currently, the facility consists of one, (01) helicopter hangar, one (01) helipad, and three (03) offices. The Helipad accommodates the existing helicopter and fifteen (15) to eighteen (18) aviation personnel with some offices being shared amongst three (03) to four (04) employees.

TNPA has established that the current infrastructure facilities are not adequate to accommodate an additional helicopter, equipment, and personnel, for rendering necessary maintenance and operational services. Further, the current helipad infrastructure layout poses various operational challenges specifically regarding compliance with the South African Council Aviation Authority (SACAA). Based on the above factors, Transnet has taken a decision to upgrade the existing facilities to include but not limited to the following additional facilities:

- Apron;
- Hangar;
- Helipad;
- Storage space;
- Workshop;
- Above-ground 30 000 L diesel storage;

- Offices; and
- Sleeping bunkers.

The proposed development triggers listed activities and a Basic Assessment process must be undertaken in accordance with the EIA Regulations of 2014, as amended.

The objectives of the Basic Assessment process as defined in the EIA Regulations are to, through a consultative process—

1. determine the policy and legislative context within which the proposed activity is located and how the
2. activity complies with and responds to the policy and legislative context;
3. identify the alternatives considered, including the activity, location, and technology alternatives;
4. describe the need and desirability of the proposed alternatives,

   through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of the proposed activity and technology alternatives on these aspects to determine-

   (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

   (ii) 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;

   ranking of the site sensitivities and possible impacts on the activity and technology alternatives will impose on the sites and location identified through the life of the activity to-

   (i) identify and motivate a preferred site, activity, and technology alternative;

   (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and

   (iii) identify residual risks that need to be managed and monitored

Accordingly, the BAR has been prepared in accordance with the requirements of Appendix 1 of the EIA Regulations and it contains the following information:

(a) The details and expertise of the Environmental Assessment Practitioner (EAP) who prepared the report;
(b) The location of the proposed activities;
(c) A plan which locates the proposed activities to be undertaken at an appropriate scale;
(d) Description of the scope of the proposed project including the listed activities and the associated structures and infrastructures;

(e) Description of policy and legislative context within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context t;
(f) A motivation for the need and desirability of the proposed development;
(g) a motivation for the preferred site, activity, and technology alternative;
(h) A full description of the process followed to reach the proposed preferred activities, site, and proposed location of the development footprint within the site;
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity;
(j) an assessment of each identified potentially significant impact and risk;
(k) a summary of the findings and impact management measures identified in any specialist report
(l) an environmental impact statement
(m) the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;
(n) a description of any assumptions, uncertainties, and gaps in knowledge;
(o) a reasoned opinion as to whether the proposed activity should or should not be authorised;
(p) An undertaking under oath or affirmation by the EAP.

The project proponent is Transnet National Ports Authority, and the Competent Authority is the National Department of Forestry, Fisheries, and Environment (DFFE). The proposed development will be undertaken in terms of NEMA, and the EIA Regulations as amended (hereafter referred to as the Regulations) and other applicable Acts and Legislations will be equally considered. Nsovo Environmental Consulting has been appointed as the EAP and the details are provided in Section 2 below.

2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo has been appointed by Transnet as the independent EAP for the proposed project and meets the general requirements as stipulated in regulations 13(1) of the NEMA 2014 EIA Regulations, as amended. Nsovo is, therefore:

- Independent and objective;
- Has expertise in conducting EIAs;
- Ensures compliance with the EIA Regulations;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant, relevant environmental authority, specialists, and Interested and Affected Parties (I&APs).

Table 1 provides details of the EAP and relevant experience. A detailed CV and Qualifications are attached in **Appendix E**.

Table 1: Details of the Environmental Assessment Practitioner (EAP)

Name of Company	Nsovo Environmental Consulting
Person Responsible	Munyadziwa Rikhotso
Professional Registration	Cert.Sci.Nat: 300076/15 (SACNASP) EAP (EAPASA): Reg 2019/ 1156
Telephone Number	087 803 9294
Fax Number	086 602 8821
Email	munyadzi@nsovo.co.za
Qualifications & Experience	B.Sc. Honours Environmental Management PMBOK **18 years of experience**
Project Related Expertise	In terms of project-related expertise, the Environmental Assessment Practitioner has undertaken projects of varying scale and complexity, including: • Integrated Environmental Impact Assessment and WULA for Exxaro discard dump expansion (2021). • Integrated Environmental Impact Assessment and WULA for Bushveld Vanchem Expansion project (2021). • Integrated Environmental Impact Assessment and WULA for Grammatikos Vogelfontein project (2021). • EIA for the proposed Tubatse Strengthening Phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province 2018). • EIA for the proposed Maphutha-Witkop powerline in Limpopo Province (2018). • EMPr, WULA, and EA amendment for the proposed Juno Gromis 400kV power line (2017).

Details of the applicant and specialist are provided below.

2.1 DETAILS OF THE APPLICANT

The Applicant for this development is Transnet SOC Limited.

Table 2: Details of the Applicant

Name of Company	Transnet SOC Limited (Transnet National Ports Authority)
Physical Address	TNPA Emendi Administration Building Neptune Rd Port of Ngqura Gqeberha
Postal Address	P.O Box 181 Richards Bay 3400
Contact Person	Nosicelo Biyana
Telephone Number	T: (+27) 35 905 4532 C: (+27) 67 367 0110
Project Manager	Nokwethemba Mngadi
Cell	T: (+27)35 905 4532 C: (+27)60 572 9805
Email	Nokwethemba.Mngadi@transnet.net

2.2 DETAILS OF SPECIALIST

To identify and assess potential environmental impacts associated with the proposed project, sub-consultants have been appointed to conduct specialist impact assessments. The specialist reports are referenced and included in the Basic Assessment Report (BAR). Refer to Table 3 below for the specialist studies undertaken.

Table 3: Details of Specialists

Specialist Study	Company	Specialist
Terrestrial and Aquatic Biodiversity	CRUZ-E	Prof. Digby
Heritage Impact Assessment	Vhubvo	Munyadziwa Magoma
Climate Change Risk and Vulnerability	Kijani Green	Simon Gear

Estuarine Assessment	Confluent Aquatic Consulting and Research	James Dabrowski
Referenced Specialist Reports		
Richards Bay Port Expansion Social Impact Assessment (May 2015)	ACER (Africa) Environmental Consultants	Mr. D.N. Keal

3 DESCRIPTION OF LOCALITY OF THE ACTIVITY

This section provides detailed information on the location of the proposed development. The main aim is to provide the environmental aspects found within the area of the proposed development and to provide the baseline description of the surroundings.

The study area is situated within the City of uMhlathuze. The natural environment in this area is highly sensitive and under severe development pressure. The local landscape is characterised by an interconnected network of hydrological ecosystems that also sustains a growing population in an area with very high levels of poverty. As the activities happening within the Port are beneficial to more than just the Port of Richards Bay, the study area has been delineated as follows:

- Primary study area (Port of Richards Bay which hosts the Helipad and its associated infrastructure);
- Secondary study area (Richards Bay and surrounding settlements); and
- Tertiary study area (KwaZulu-Natal province and South Africa).

3.1.1 PORT OF RICHARDS BAY

The proposed development is situated within the boundaries of the Port of Richards Bay. The site is approximately 160 km north of Durban and is situated on a 30 square kilometer lagoon of the Mhlathuze River, which makes it one of the country's largest harbour. Figure 1 below shows the proposed study area at a scale of 1:50 000. Refer to Appendix A for the A3 locality and sensitivity maps.

3.1.2 MUNICIPALITY AND WARD NUMBER

The proposed development is located within Municipal Ward Number 2 of the City of uMhlathuze within the jurisdiction of the King Cetshwayo District Municipality in the KwaZulu-Natal Province

3.1.3 PROVINCE AND PROVINCIAL BOUNDARIES

The proposed development will be located within the KwaZulu-Natal Province which is situated in the eastern part of South Africa. The province borders the Mpumalanga, Free State, and Eastern Cape Provinces.

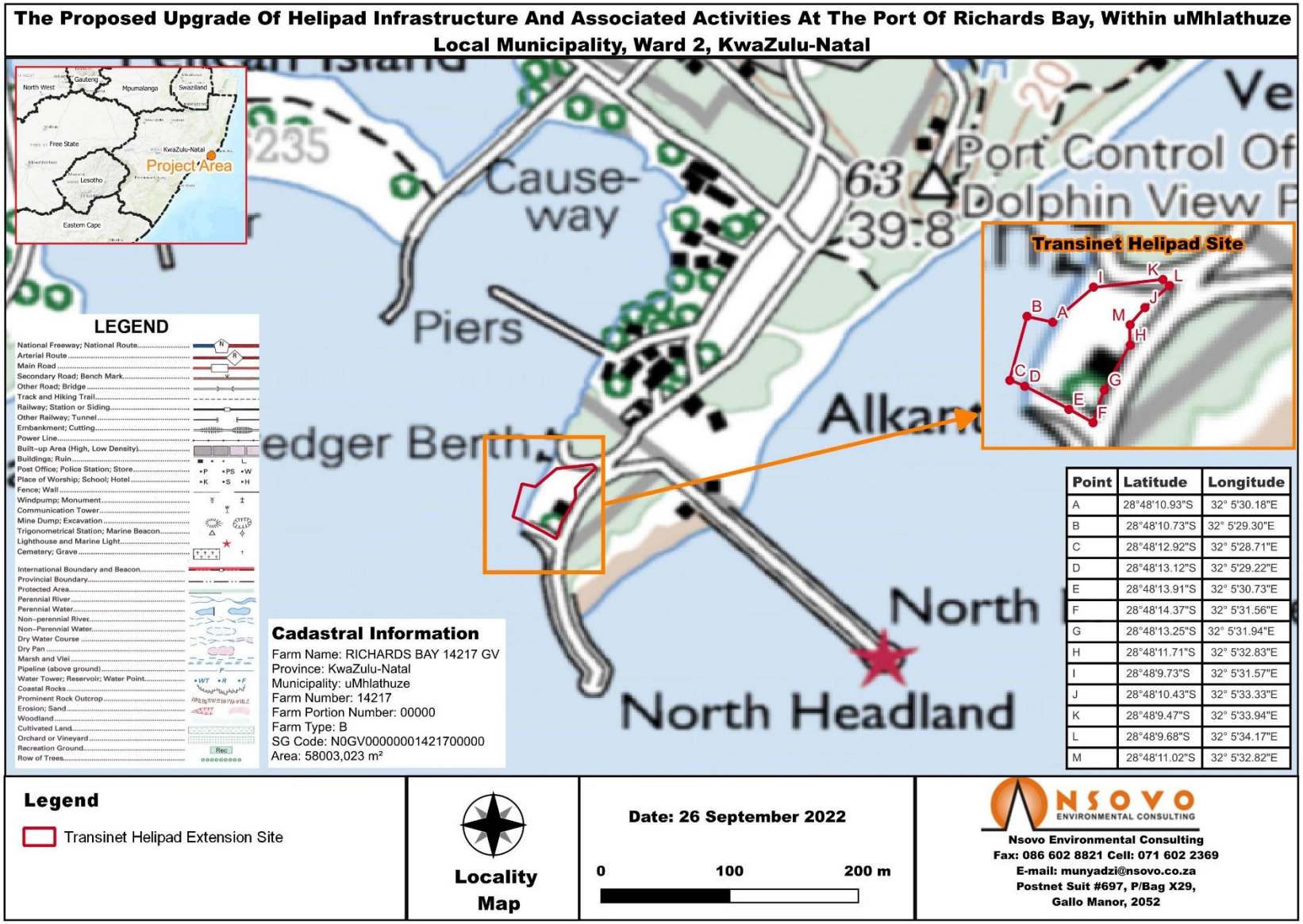


Figure 1 Locality map showing the proposed Transnet Helipad Study Area

Figure 2: Location of the Helipad Site in the Port of Richards Bay (TNPA, 2019)

3.2 THE 21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL;

The proposed project will be located on Farm Richards Bay 12217 GV. Details of the farm are provided in Table 4 below.

Table 4: Details of the proposed site property

Farm Name	Portion	Surveyor General 21 Digit Code
Richards Bay 14217 GV	Portion 0	NOGV00000001421700000

The physical address of the property is as follows:

1st Floor Bayvue Centre
Ventural Road
Port of Richards Bay
3900

3.3 COORDINATES OF THE BOUNDARY OF THE PROPERTY OR PROPERTIES;

The corner Coordinates of the property described above are presented in Table 5 below.

Table 5: Coordinates of the Boundary of the Property

Farm Name	Point	Latitude	Longitude
Farm Richards Bay 14217 GV.	A	28°48'10.93"S	32° 5'30.18"E
	B	28°48'10.73"S	32° 5'29.30"E
	C	28°48'12.92"S	32° 5'28.71"E
	D	28°48'13.12"S	32° 5'29.22"E
	E	28°48'13.91"S	32° 5'30.73"E
	F	28°48'14.37"S	32° 5'31.56"E
	G	28°48'13.25"S	32° 5'31.94"E
	H	28°48'11.71"S	32° 5'32.83"E
	I	28°48'9.73"S	32° 5'31.57"E
	J	28°48'10.43"S	32° 5'33.33"E
	K	28°48'9.47"S	32° 5'33.94"E
	L	28°48'9.68"S	32° 5'33.94"E
	M	28°48'11.02"S	32° 5'32.82"E

3.4 SURROUNDING LAND USES

This section describes the land uses within and around the proposed study area which includes residential, commercial, and industrial, and are discussed, as follows:

3.4.1 RESIDENTIAL

The site is located to the west of Richards Bay town; approximately 10km from the harbor. The residential communities located adjacent to the study area include informal, semi-suburban (township) as well as medium-income suburban households. Table 6 below describes the affected communities.

Table 6: Residential Communities and Farms adjacent to the study area

COMMUNITY	DESCRIPTION
Empangeni	Empangeni is an industrial, commercial, and service centre to the settlements of eSikhaleni, Eshowe, Nkandla, Ntambanan, and other rural settlements attracting many people to the range of higher-order services available in the town. According to the uMhlathuze SDF Review, 2013/2014, Empangeni is the most significant economic centre within the Local and District Municipalities.
eSikhawini	eSikhawini is a mid-size, middle-income residential area with a population of approximately 49,265 people. eSikhawini is located 2 km off the N2 route. Richards Bay and Empangeni are the closest towns, being both located 15–20 km away.
Ngwelezane	Ngwelezane is a township on the outskirts of Empangeni. The township is home to the Ngwelezane Hospital, which services the area with 554 beds. The township is located 21 km from the proposed project site.
Felixton	Felixton is a medium-income suburban household in King Cetshwayo District Municipality in the KwaZulu-Natal province of South Africa. Located 10 km southeast of Empangeni. The local sugar mill is one of the largest in the country.
Durban	Durban is one of the fastest-growing urban areas in the world. Its port is the busiest in South Africa and also one of the 10 largest ports in the world. The Port of Richards Bay is located approximately 160 km North-East of Durban.

3.4.2 COMMERCIAL AND INDUSTRIAL

Richards Bay falls within the fastest-growing provincial economies at an average rate of 4.3% per annum. The Port of Richards Bay is one of the two largest and busiest Ports in Africa creating a drive for the area to be one of the major industrial investment opportunities. The Port plays an important economic role not only for the KwaZulu-Natal Province but for the whole of South Africa. Richards Bay also functions as a district node and dominant commercial center in the district, providing greater economic opportunities for the town and surrounding areas.

Manufacturing is highly specialized and export-orientated, largely concentrated on basic iron and steel, paper and printing as well as food and beverages. The sector is characterized by highly sophisticated manufacturing processes. The large-scale industrial strengths of the uMhlathuze center comprise a varied industrial base of coal terminals and aluminium smelters, coupled with several industries including mining companies and paper mills, forestry, production of materials handling equipment, as well as fertilizer and special chemicals production.

The main economic sectors within the City of uMhlathuze are presented in Table 7 below. These include agriculture, community services, construction, mining, electricity, finance, manufacturing, transport, and trade.

Table 7: Main economic sectors (Integrated Development Plan (IDP), 2017)

Sector	Percentage Contribution
Agriculture	3.2%
Community services	10.4%
Construction	11,5%
Finance and business	10.7%
Manufacturing	45.9%
Mining	11.6%
Transport	9.1%
Trade	6.3%
Utilities	1.6%

As indicated in the Table above, uMhlathuze is rich in mineral resources and the mining of these minerals meets all of South Africa's demand for titanium dioxide, zircon, and all of the country's pig iron requirements. The manufacturing sector employs most of the South African population, further, it contributes 29% to the national GDP. The advent of the Richards Bay Industrial Development Zone (IDZ) within the vicinity of Richards Bay harbour serves to boost economic activity and attract international investors wishing to take advantage of the opportunities on offer.

3.4.3 TOURISM

The tourism system incorporates an integrated multi-faceted industry that includes accommodation, attractions (natural, built, cultural, social), activities, entertainment, restaurants, shops, conferences, sporting, and cultural events, and protected areas, etc. The main players in the industry from the public and private sectors are brokers, locals, and tourists (Coastal and Environmental Services, 2013).

Richards Bay was named after British naval commander Rear Admiral Sir Frederick William Richards, who landed troops on the Zululand coast in 1879, this was a small fishing village until the port opened in 1976. Richards Bay is considered to be the industrial and tourism center of the area and occupies 37% of the total 796 sq. km municipal area. Richards Bay began its existence as a small fishing town and flourished with the development of the Port of Richards Bay, the country's deepest and largest port, in 1976. The Government has earmarked it as one of the country's growth

and development points, and the Industrial Development Zone initiative (IDZ) will attract considerable investment. Richards Bay is already home to some of the country's most productive and lucrative industries and based on Municipal stats, tourism within the primary areas is not predominant.

3.4.4 SURFACE INFRASTRUCTURE

This section describes the surface infrastructures within the study area, which include the description of road networks, port facilities, and existing substations and powerlines.

3.4.4.1 Road Network

Access roads to the proposed study area are regional level via the John Ross Parkway (R34) and the North Central Arterial (619). Both these arterials originate from the N2 which bypasses Richards Bay and link Durban to Mpumalanga Province, Eswatini, and Mozambique.

The external street network, which services the Port directly, is summarized as follows:

- John Ross Highway (R34) - A Provincial main road is the main link between Richards Bay and Empangeni and links to the National Route (N2) for the Port and neighbouring industries.
- National Route 2- north-south link in KwaZulu Natal providing national and regional linkages.
- West Central Arterial- serves as the western entrance to the Port linking to Urania Road, the main access to the coal and liquid bulk terminals as well as to the Richards Bay Central Business District.
- Harbour Arterial- serves as an alternative link to the port from John Ross Highway and provides access to the Alusaf Bayside smelters.
- Medway Road- serves as the eastern entrance to the Port and serves the Multi-Purpose Terminals (Berths 701-708) including the Ferro and Timber storage areas.
- Bayview Boulevard- provides a third entry point into the Port serving the small crafts harbour and commercial developments on the eastern section of the Port.

Growth for the port continues to be in dry bulk cargo. However, coal has a definitive life span with volumes increasing steadily up to 2016/17 and decreasing after 2020 (at a rate of 2% per annum). Apart from the multi-purpose terminal, the movement of cargo by road is relatively low. The predicted growth rates for this terminal are 2% per annum and accommodated by the current road capacity (except John Ross Highway) within the 20-year planning horizon.

The internal road network is well developed given the number of berths served. The main routes are as follows:

- Newark Road: Main east-west collector/distributor consisting of serving the Multi-Purpose and Dry Bulk Terminals; and the Port administration complex.

- Urania Road / Dune Road: Linking to the Richards Bay Coal Terminal and Island View bulk liquid storage areas.
- Medway Road: Parts of this route fall outside of the port boundary/ operational area and serves as a link between Newark Road and John Ross Highway.
- Bridgetown Road: Together with Pioneer Road serve the small crafts harbour, Naval Island, and commercial developments at the eastern end of the port.
- Ventura Road: Serves as the main link to the Port administration complex.
- Quayside Road: Unnamed Road running between berths 701 to 708 and forms back of quay stack area.
- Tugela Road: Runs alongside the back of the quay between berths 301 to 305 catering for service vehicles and links to the coal terminal administration area via Hardwick Road.

It is not anticipated that new access roads will be developed as there are existing routes to the site. However, should it be necessary to construct new access routes, the recommendations in the EMPr must be implemented.

3.4.4.2 Port Facilities

The port of Richards Bay contains a dry bulk terminal, a multi-purpose terminal, and a privately operated coal terminal. Other private operators within the port include several wood chip export terminals and a bulk liquid terminal. The port has extensive rail and conveyor belt systems servicing the berths from nearby factories and plants (http://www.kzntransport.gov.za/public_trans/freight_databank/kzn/ports/Richards_Bay/index_xml.html#:~:text=The%20Richards%20Bay%20Multi%2DPurpose,namely%20breakbulk%2C%20neobulk%20and%20containers.

Furthermore, the Port of Richards Bay accommodates various terminals including the following:

Table 8: Description of Activities within the Port

Facilities	Description
Richards Bay Coal Terminal (RBCT)	The terminal has handled well over 1 billion tons of coal for export since its opening.
Richards Bay Dry Bulk Terminal	The terminal has the use of three import and five export berths. The total throughput capacity is 18 million tons per annum. Extensive use of conveyor systems is made that require thorough cleaning after each commodity. The terminal currently handles about 12 million tons of dry bulk cargo annually for import and export, consisting mainly of ores and mineral cargo.

Richards Bay Multi-Purpose Terminal (MPT)	The MPT is the product of the merging of two separate terminals, namely the Bulk Metal and Combi terminals. The resultant integration of infrastructure and facilities has enhanced the terminal's ability to manage a variety of cargo types, namely breakbulk, neo bulk, and containers. The MPT terminal operates 24 hours a day and is open 363 days a year. The multi-purpose terminal specialises in raw and semi-processed materials such as steel, Ferro-alloys, and forest products. The terminal currently operates across seven berths in the port. The terminal has a throughput capacity of 5,6 million tons per annum and covers a land surface area of 62,2 hectares. The terminal has extensive warehousing and covered storage areas for sensitive cargo, and a huge open storage area comprising 330,000m² for cargo handling.
Richards Bay Liquid Bulk Terminal	Richard Bay has a single dedicated liquid bulk berth (Berth 209), which handled 1,129 051 tons of bulk liquids in 2005/2006 The maximum vessel size permitted alongside berth 209 is 225 metres LOA (length overall), 12,5 metres draft or not more than 67 000 deadweight tonnage (dwt.)
Other Private Operators	Other private operators include the following: • Sasol Agri • Marine Services • Marine Craft • Diving and Engineering Companies and dock ship repair facilities.

3.4.5 SENSITIVE ENVIRONMENTS AROUND THE PORT

The Port is surrounded by various water resources including the following:

- Lake Mzingazi
- Estuary
- Pans
- Dams
- Indian Ocean

Other areas include the Richards Bay Sanctuary. Even though aquatic studies around the Port have been undertaken in the past, a dedicated estuarine specialist study has been commissioned to assess the direct impacts of the proposed helipad expansion on the surrounding water features. Furthermore, the impact of the proposed project freshwater aquatic habitats has been undertaken for the project. Of primary concern is the proposed helipad deck, which will be extended over using the proposed deck on pile method in the estuary. According to the technical input provided, other

options of the deck were proposed and the presented options were potentially feasible. Therefore, a comparative analysis of the helipad extend over methods will be assessed and the one with the least impact will be recommended.

3.4.6 RECREATION FACILITIES

To the North of the proposed helipad site is a fishing harbour. The fishing harbour attracts tourists and locals to the Port for recreational activities. The SIA (2015) identified an area referred to as the 'Casuarinas', which is currently open to, and used by the public for recreational purposes. The area is utilised by families and individuals from in and around Richards Bay for fishing, walking, picnicking, etc. In this regard, it should be noted that the 'Casuarinas' area is located on Transnet land, and it is understood that the use by the public has been at the consent of Transnet with no commitment of any type to keep the area for recreational purposes in perpetuity. The proposed expansion project will not have a direct impact on the Casuarinas or pose a loss of this area as a recreational facility. Other identified recreational facilities include the privately owned other stakeholders, Tuzi Gazi Waterfront. Although impacts such as noise, dust, and increased traffic will be experienced, it's expected that with proper mitigation measures the expansion project and the Casuarinas can continue to exist. The Final BAR will address impacts identified and raised by the directly affected communities, while the EMPr addresses the proposed mitigation measures.

Figure 3 below shows the surrounding land uses.

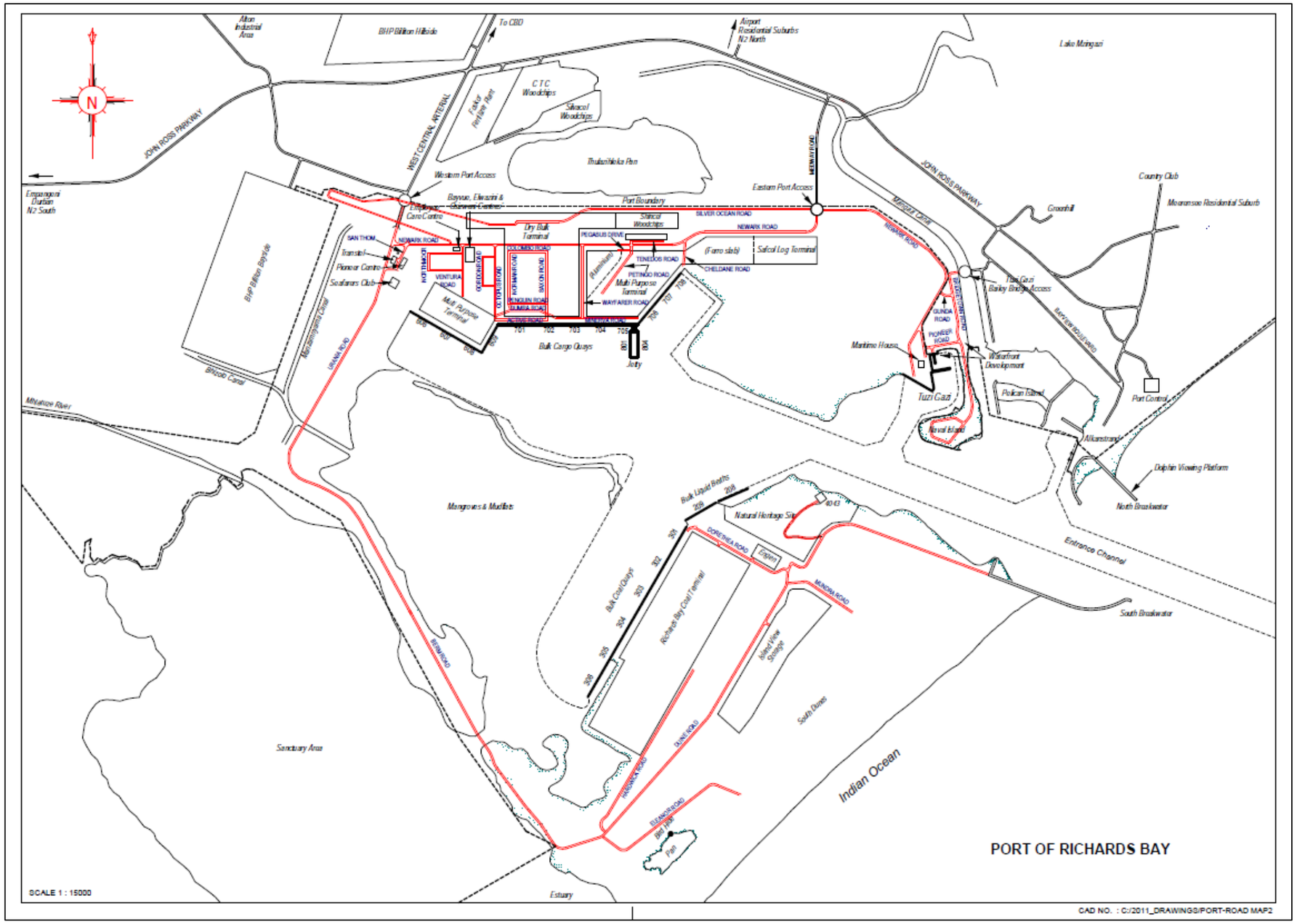


Figure 3: Surrounding Land uses

4 A PLAN WHICH LOCATES THE PROPOSED ACTIVITY OR ACTIVITIES APPLIED FOR AS WELL AS ASSOCIATED STRUCTURES AND INFRASTRUCTURE AT AN APPROPRIATE SCALE.

Figure 4: Sensitivity Map showing the site location

5 DESCRIPTION OF THE PROPOSED ACTIVITY

This section describes the proposed activities which include the scope of the proposed project mainly focusing on the listed activities which trigger the BA process.

5.1 BACKGROUND AND THE PROPOSED SCOPE OF WORK

TNPA operates a helicopter service for the transportation of marine pilots as part of the pilotage services. The Port is in the process of purchasing an additional helicopter to meet operational and customer requirements.

The Port's strategy is to operate the aviation department in-house after the expiry of the contractual obligations of the current service provider (Denel Aeronautics). TNPA has established that current infrastructure facilities are not adequate to accommodate an additional helicopter, equipment, and personnel for rendering maintenance and operational services. Moreover, the shared offices and ablution facilities are not adequate to house these numbers of personnel.

The Port of Richards Bay's helicopter facility has been operational since the first helicopter marine pilot operations were commissioned in 1995. Currently, the facility consists of one (01) helicopter hangar, one (01) helipad, and three (03) offices. The Helipad accommodates the existing helicopter and fifteen (15) to eighteen (18) aviation personnel with some offices being shared amongst three (03) to four (04) employees.

The current helipad infrastructure layout poses various operational challenges specifically compliance with SACAA requirements. Based on the above factors, Transnet has decided to upgrade the existing facilities to include but not limited to the following additional facilities:

- Apron;
- Hangar;
- Helipad;
- Storage space;
- Workshop;
- Offices;
- 30 000 L Diesel Storage; and
- Sleeping bunkers.

The development phase of the proposed project entails the following key activities:

Table 9: Proposed Project activities

Activity	Description	Options
Decommissioning and demolition of the existing helipad and associated infrastructure	Transnet proposes to decommission and demolish the existing helipad infrastructure. This activity will entail the following: • Site compound and security setup. • Intrusive pre-demolition surveys (such as asbestos surveys for demolition, structural survey, hazardous materials surveys, etc.). • Isolation of utilities and removal of meters. • Disconnection of utilities. • Asbestos removal if any (in accordance with the Control of Asbestos Regulations). • Soft strip (taking the structure back to construction materials including the removal of windows and door frames). • Superstructure demolition with special measures as constraints demands, such as de-build or protection of adjacent structures. • Processing of superstructure arisings. • Slab and foundation demolition. • Processing of arisings. • Site levelling and finishes as required. The demolition of facilities and buildings generally contains hazardous waste for landfill and recyclable material. The EMPr will incorporate waste management practices that are considered best practices to ensure that optimum recycling chains are in place. The required demolition permits will be obtained from the responsible Competent Authority i.e., Municipality. A Heritage Impact Assessment has been conducted and it indicated that none of the buildings within the primary study area are older than 60 years, therefore no permits will be required.	Hand Demolition Machine demolition

Activity	Description	Options
Relocation of the helipad activities	To avoid disruption of the existing helipad activities, Transnet proposes to temporarily relocate the helipad infrastructure to an alternative location within the Port. The temporary site will consist of existing offices, a paved area for helicopter landing, and other relevant facilities. 9 sites within and outside the Port have been considered and assessed.	9 sites
Vegetation Clearance	Approximately one (1) hectare is required for the proposed helipad and only the immediate footprint within the study area will be cleared for construction. Furthermore, clearance will be undertaken in accordance with the approved EMPr, permits, licences, Municipal by-laws as well as Transnet's policies and guidelines. According to the preliminary assessment undertaken by CRUZE-E (2022), no environmentally related issues are anticipated with the actual utilisation of this site earmarked for the temporary relocation.	
Development of the new helipad infrastructure.	Transnet proposes to develop the new infrastructure presented above over 18- 24 months. The construction activities will entail primarily civil and engineering work and this will be undertaken according to the approved layout option. The civil works will include the establishment of foundations and construction of the helipad and associated infrastructure i.e., apron, hangar, storage space, Workshop, offices; and sleeping bunkers.	Three technical options for extending over ofthe helipad in the estuary are presented.
Development of a hazardous substance storage facility	Transnet proposes the development of a 30 000 litres above-ground diesel storage facility, to be located within the site earmarked for the helipad. This forms part of the associated infrastructure that will support the operation of the helipad.	Aboveground
Extending over of the Helipad	Transnet proposes to extend over the apron in the estuary nearby. This activity will entail the removal of silt and rocks below the surface of the estuary. The method proposed for extending over of the helipad is the deck on pile, while other alternatives have been considered.	3 options

Activity	Description	Options
Rehabilitation Activities	Upon completion of construction work, the site will be rehabilitated as per the specifications of the EMPr and approved Method Statements. The rehabilitation activities will include: • Removal of excess building material and waste; • Repairing any damage caused by construction activities; • Rehabilitating the area affected by temporary access roads; • Reinstating existing roads; and • Replacing topsoil and planting indigenous vegetation where necessary.	

Figure 5 and Figure 6 below illustrate the proposed infrastructure.

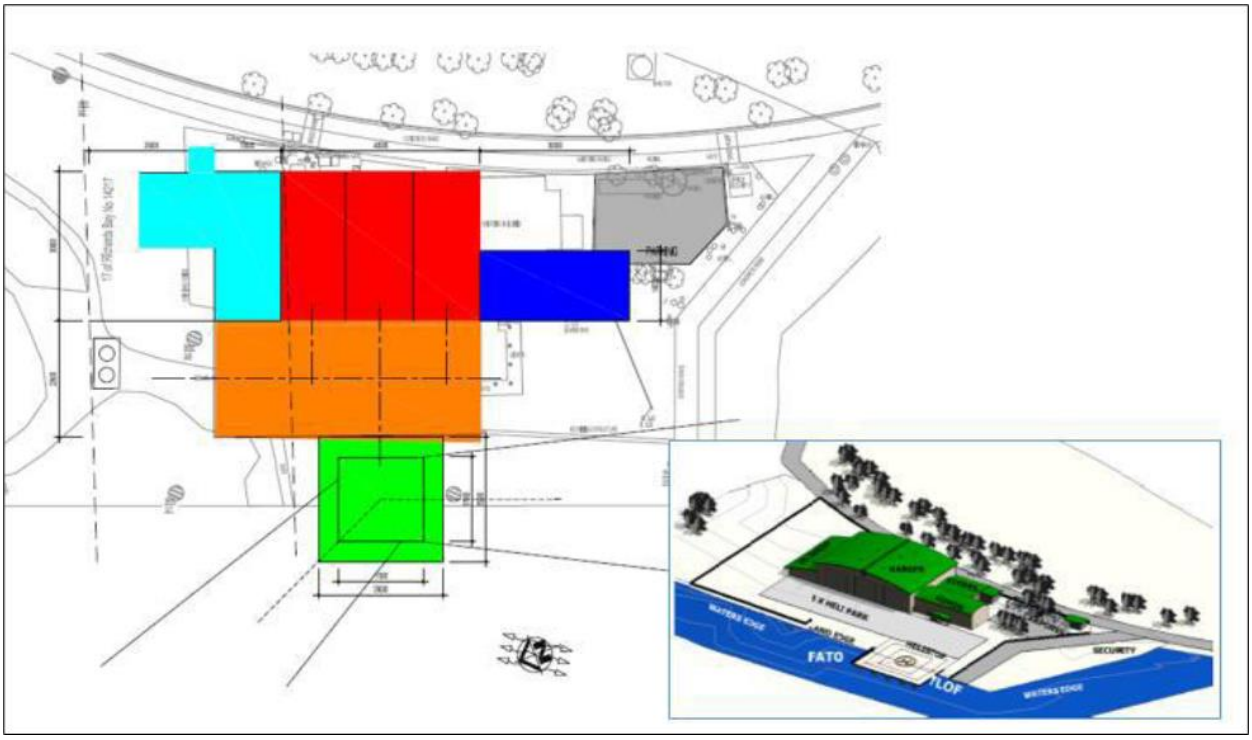


Figure 5. Layout Plan for the proposed helipad and associated infrastructure

Figure 6. Zoomed-in illustration of the proposed helipad and associated infrastructure

5.2 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The proposed development triggers listed activities and a Basic Assessment process must be undertaken in accordance with the EIA Regulations, 2014, as amended. The listed activities applicable are included and briefly described in Table 10 below:

Table 10: Listed activities applicable to the project

Listed activities	Activity/Project description
Activities listed under the National Environmental Management Act, 1998 (Act 107 of 1998)	
GN R 327 of 2017 Listing Notice 1	
Activity 17 Development— (i) in the sea; (ii) in an estuary;	The portion of the helipad that extends into the estuary as indicated in Figure 5 above is the only section of the proposed development that triggers this activity as it is estimated to be more than 50 m^2

Listed activities	Activity/Project description
(iii) within the littoral active zone; (iv) in front of a development setback; or (v) if no development setback exists, within a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of— (a) fixed or floating jetties and slipways; (b) tidal pools; (c) embankments; (d) rock revetments or stabilising structures including stabilising walls; or (e) infrastructure or structures with a development footprint of 50 square metres or more.	in extent and will thus increase the development footprint of the port. or **A portion of this development will extend into the estuary at approximately 50m^2 in extent, and it will increase the development footprint.**
Activity 19A *The infilling or depositing of any material of more than 5 cubic meters into, or the dredging excavation, removal, or moving of soil, sand, shells grit, pebbles, or rock of more than 5 cubic meters from* *(ii) the littoral active zone, an estuary, or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is greater.*	The proposed development will entail extending over the helipad in the estuary, which may require moving sand, shells grit, pebbles, or rock of more than 5m^3 from the estuary.
Activity 34: *The expansion of existing facilities or infrastructure for any process or activity where such expansion will result in the need for a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the release of emissions, effluent, or pollution.*	The proposed development may require a permit from DFFE Oceans and Coasts if water found during excavations is discharged into the sea or estuary. This will be confirmed once the proposed solution for such discharge has been confirmed by Transnet.
Activity 55 *Expansion* *(ii) in an estuary* *(iv) infront of a development setback line; or*	The portion of the helipad that extends into the estuary as indicated in Figure 5 above is the only element of the proposed development that triggers this activity as it is estimated to be more than 50m^2 in extent and will increase the development footprint of the port.

Listed activities	Activity/Project description
(v) if no development setback exists, within a distance of 100 meters inland of the high-water mark of the sea or estuary whichever is greater; *In respect of* *f) Coastal habours or ports*	
Activity 65 *The expansion and related operation of—* *(i) an anchored platform; or* *(ii) any other structure or infrastructure;* *on or along the sea bed, where the expansion will constitute an increased development footprint,*	The portion of the helipad that extends into the estuary as indicated in Figure 5 above is the only element of the proposed development that triggers this activity as it is estimated to be more than 50m^2 in extent and will increase the development footprint of the port.
GN R 324 of 2017 Listing Notice 3	
Activity 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* *i. In an estuarine functional zone;* *vi. Within 500 metres of an estuarine functional zone;* *ix. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *x. Core areas in biosphere reserves;* *xii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *xiv. Inside urban areas:*	The proposed development includes a diesel storage facility with a capacity of 30m^3 to be established within 100m of the high-water mark of the sea.

Listed activities	Activity/Project description
(bb) Areas seawards of the development setback line or within 100 metres from the high-water mark of the sea if no such development setback line is determined;	
Activity 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* *(vi)Within the littoral active zone or 100 metres inland from the high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas*	It is anticipated that approximately 300m^2 or more, of indigenous vegetation, will be cleared.

6 A DESCRIPTION OF THE POLICY AND LEGISLATIVE CONTEXT WITHIN WHICH THE DEVELOPMENT IS PROPOSED

The EIA Regulations of 2014 as amended, under Appendix 2 Section 1(e) requires a description of applicable legislation in the Basic Assessment Report. Therefore, this section lists and describes the acts and legislations applicable to the proposed development and associated infrastructure. A list of the current South African environmental legislation, which is considered to be pertinent to the proposed development is described in Table 11 below.

Municipal policies, plans, and by-laws, as well as Transnet policies and world best practices, were considered during the undertaking of the EIA process. Table 11 describes legislations that apply to the proposed development, it is not an exhaustive analysis; however, it provides a guideline to the relevant aspects of each legislation.

Table 11: Legislation pertaining to the proposed project

Aspect	Relevant Legislation	Brief Description
Environment	• National Environmental	The overarching principles of sound environmental responsibility as reflected in the National Environmental

Aspect	Relevant Legislation	Brief Description
	Management: Act 1998, (Act No. 107 of 1998) as amended. • Environmental Impact Assessment Regulations, December 2014 as amended	Management Act, 1998 (Act No. 107 of 1998) apply to all listed projects. Construction and operation of activities must be conducted in line with the accepted principles of sustainable development, integrating social, economic, and environmental factors. The EIA process followed complies with the NEMA and the EIA Regulations of December 2014 as amended. The proposed development involves "listed activities", as defined by NEMA. Listed activities are an activity that may potentially have detrimental impacts on the environment and therefore require an EA from the relevant Competent Authority, in this case, DFFE.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction of existing sites, pending the archaeologist's recommendations through permitting procedures. Permits for this specific project would be administered by the KwaZulu-Natal Heritage Agency or

Aspect	Relevant Legislation	Brief Description
		South African Heritage Resources Agency (SAHRA). A heritage study has been undertaken as required.
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of air quality and to prevent air pollution. The Act makes provision for measures to control dust, noise, and offensive odours. Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. The Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance or other measures aimed at the control of dust. The National Dust Control Regulations (2013) provide for the management and monitoring of dust.
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation, 1989 (Act 73 of 1989).
Water Resources Management	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of the law relating to water resources and use. The preamble to the Act recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure the sustainability of the nation's water resources in the interests of all water users.

Aspect	Relevant Legislation	Brief Description
		The DWS confirmed that there is no need for a Water Use Licence.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996	The Constitution provides for an environmental right (section 24). The State is obliged "to respect, protect, promote and fulfill the social, economic and environmental rights of everyone…" The environmental right states that: "Everyone has the right - a) To an environment that is not harmful to their health or well-being; and b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - • Prevent pollution and ecological degradation; • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."
Waste	National Environmental Management: Waste Act, 2008 (Act 59 of 2008)	This Act provides fundamental reform of the law regulating waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This Act also ensures the provision of national norms and standards for regulating the management of waste by all spheres of government. Furthermore, it provides for specific waste management measures; licensing and control of waste management activities; remediation of contaminated land; compliance and enforcement; and matters connected therewith.
Coastal Management	National Environmental Management: Integrated	The main aim of this act is to establish a system of integrated coastal and estuarine management in the

Aspect	Relevant Legislation	Brief Description
	Coastal Management Act 24 of 2008.	Republic of South Africa, including norms, standards, and policies, to promote the conservation of the coastal environment, and maintain the natural attributes of coastal landscapes and seascapes, and to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable.

Table 12: List of Associated Policies and Guidelines

Aspect	Document	Brief Description
Municipal systems	Local Government: Municipal Systems Act (Act 32 of 2000)	Details all the systems issue that municipalities must be compliant with and allocate various functional requirements for various tiers of officials, as well as issues of municipal planning and performance management. This includes the review and comments of the Environmental Impact Assessment reports for development undertaken within the Municipality.
Spatial Planning and Development	City of uMhlathuze Spatial Development Framework 2022/2023 – 2026/2027	Represents the Fifth Generation Spatial Development Framework (SDF) for uMhlathuze Municipality for 2022/23 – 2026/2027 and aims to achieve the following: • Include any updated information, specifically sector plan information, available since the preparation and subsequent reviews of the 2017/2018 – 2021/2022 SDF in 2017. • Further interrogate areas where strategic intervention is required and where strategic opportunities exist and provision of indicative mapping of such. • Update mapping given any new/updated information available.

Aspect	Document	Brief Description
		• Address comments received from the provincial Department of Cooperative Governance and Traditional Affairs (CoGTA) on the assessment of the fourth review of the 2017/2018 – 2021/2022 SDF as adopted in May 2021. • Consider alignment and cross-border issues from the King Cetshwayo District family. • Consider improved alignment between the uMhlathuze Land Use Scheme and the uMhlathuze SDF. • Provide any information from government departments and other services.
Water	Water Services Act	Sets out the parameters and regulatory issues around the management of water and sanitation issues within the Municipality.
Climate Change	United Nations Framework Convention on Climate Change (UNFCCC)	The UNFCCC is an international treaty formed by the United Nations in 1992. The objective of the treaty is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.
	Kyoto Protocol	The Kyoto Protocol is an international treaty among industrialised nations that sets mandatory limits on GHG emissions. The purpose of the Kyoto Protocol is to even out human-generated emissions at a level that will not inflict further harm on the atmosphere.
	21st Conference of Parties (COP 21) Paris Agreement	A historic agreement to combat climate change towards a low-carbon, resilient and sustainable future was agreed upon by 165 nations in Paris in December 2015. The 21st COP 21 Paris Agreement confirms the irreversible transition to a low carbon, safer and healthier world.

Aspect	Document	Brief Description
	South African National Climate Change Response White Paper	The South African National Climate Change Response White Paper (White Paper), published by the Department of Environmental Affairs (DEA, 2011), prioritises both climate change mitigation and adaptation in moving towards a climate-resilient and lower-carbon economy and society.
	Climate Change Bill (GG No. 41689, Notice 580)	The purpose of the Bill is to communicate and implement an effective nationally determined climate change response, including mitigation and adaptation actions, which represents South Africa's fair contribution to the global climate change response.
	National Greenhouse Gas Emission Reporting Regulations (GG No. 40762, Notice 275)	The purpose of the regulations is to introduce a single national greenhouse gas (GHG) reporting system, which will be used to inform policy formulation and help South Africa to meet its international obligations such as targets set under the United Nations Framework Convention on Climate Change.
	Draft National Climate Change Adaptation Strategy (GG No. 42446, Notice 644) (NCCAS) Ambient Air Quality Guidelines and Standards	The NCCAS serves as South Africa's National Adaptation Plan and fulfils South Africa's commitment to its international obligations as outlined in the Paris Agreement under the UNFCCC. The NCCAS will be used as the basis for meeting South Africa's obligations in terms of the adaptation commitments outlined in the National Determined Contributions.This guideline provides a basis for protecting public health from adverse effects of air pollution and for eliminating, or reducing to a minimum, those contaminants of air that are known or likely to be hazardous to human health and well-being. Once the guidelines are adopted as standards, they become legally enforceable. The South African Bureau of Standards (SABS), in collaboration with DEA (currently known as DEFF), established the

Aspect	Document	Brief Description
		ambient air quality standards for gravimetric dust fallout to manage air pollution.

7 A MOTIVATION FOR THE NEED AND DESIRABILITY FOR THE PROPOSED DEVELOPMENT INCLUDING THE NEED AND DESIRABILITY OF THE ACTIVITY IN THE CONTEXT OF THE PREFERRED LOCATION

This section justifies the need and desirability of the proposed development with a focus on its associated benefits and importance to both the locals and the region at large.

The Integrated Development Plan (IDP) for the City of uMhlathuze provides the overall framework for development within the city. The IDP recognise the precincts of the Port of Richards Bay and acknowledges that port expansion will occur over time; therefore, the proposed expansion of the Port of Richards Bay is consistent with the provisions of the IDP. Subsequently, to cater to increased Port capacity, facilities such as the helipad would need to be expanded, hence the proposed development. The proposed upgrade will ensure that the operational challenges that limit compliance with SACAA requirements are alleviated and that the required additional capacity is obtained. One of the key objectives of the Business Case is to upgrade the current infrastructure facilities to accommodate an additional helicopter, equipment, and personnel for rendering maintenance and operational services at TNPA: Marine Aviation Department. This need was triggered by the strategy to in-source the resources (equipment and personnel) that will be deployed to execute maintenance and operational activities as well as the purchase of the additional helicopter.

7.1 BENEFITS OF THE PROJECT

As indicated above TNPA operates a helicopter service for the transportation of Marine Pilots as part of the pilotage services. The Port is in the process of purchasing an additional helicopter to meet operational and customer requirements.

The Port strategy is to operate the Aviation Department in-house after the expiry of the contractual obligations of the current Service Provider (Denel Aeronautics), which expired in June 2019. According to the Aviation insourcing strategy, the current infrastructure facilities are not adequate to accommodate an additional helicopter, equipment, and personnel for rendering maintenance and operational services. Moreover, the shared offices and ablution facilities are not adequate to house these numbers of personnel. Subsequently, the proposed project aims to respond to the identified need.

7.1.1 ECONOMIC BENEFITS

It is indicated that the purpose of the helicopters at the Port of Richards Bay is for transferring marine pilots to and from vessels entering the habour. In February 2018, Zululand Observer reported that TNPA announced that negotiations had been concluded and an agreement had been signed for the manufacture, supply, and delivery of two new helicopters to service the Ports of Durban and Richards Bay and the contract for the new helicopters includes a 25% supplier development obligation by the global supplier to ensure that the contract creates socio-economic benefits within South Africa. The benefits associated with the acquisition of a new helicopter include:

- Job creation, skills development, and use of locally empowered companies and local materials or parts.
- Prospect of improved operational efficiency and safety in TNPA's marine aviation service.

Van Schooten et al., (2003) define economic processes as those processes that affect the economic activity in a given area. This includes the way people make a living, employment rates as well as macro-economic factors that affect society as a whole. The jobs created from the proposed development will include the following:

- **Waged labour** - while a breakdown of anticipated jobs for construction and operation is not available, it is anticipated that some jobs will be created directly as a result of the proposed port expansion.
- **Direct employment** opportunities will be created during the construction process while during the operational phase it is anticipated that due to the expansion activities, there will be a demand for more labour increasing job opportunities.
- **Indirect economic opportunities** emanating from projects of this nature open up potential economic opportunities for local businesses. Local contractors and SMEs providing required services, such as transport services, material supply, road maintenance, etc., could be employed during construction. The demand for goods and services by workers involved in the project could increase sales for local retailers and business owners in the city and nearby settlements.

It is however anticipated that there will be significant direct and indirect employment opportunities created. Considering the high levels of unemployment experienced within the greater study area and region, an increase in employment opportunities of this nature is likely to have significant positive social impacts. As a direct impact of employment, the level of household income in communities will increase as will the amount of disposable income. Indirectly, local businesses will benefit through the increase in household income while the general standard of living of communities should also see an improvement. While it is unclear at this stage how many of the jobs will be required for the entire construction period of 18 – 24 months, some of the jobs will be relatively long-term, thereby prolonging this positive impact. In addition to the financial benefits of employment creation, an increase in employment opportunities will also enable skills development and re-skilling, both of which have the potential to have long-term social benefits (SIA, 2015).

7.1.2 BENEFITS FOR THE LOCALS

Furthermore, the SIA (2015) identified the benefits of the Port expansion for the locals, and these apply to the Helipad expansion project too. During construction, various services will be required which can be fulfilled by local service providers. Examples of such services include security, fencing, accommodation, earth moving, refuse removal, transport, etc. The appointment of local service providers will lead to further employment for the local population and, thus, put a greater amount of money into the local economy.

7.1.3 SUPPORT TNPA STRATEGIES

Richards Bay Port has an existing fleet of three AW109 helicopters and this purchase forms part of the Fleet Replacement Programme. The acquisition of new helicopters had been a priority for TNPA under the Transnet Market Demand Strategy, which among others seeks to improve operational efficiency and safety in the ports. Further, it will allow TNPA to be in a position to respond to long-time industry calls.

7.1.4 BENEFITS AT A MUNICIPAL LEVEL

According to the City of uMhlathuze SDF review (2013/2014), a key component of the City's SDF is the Port Development Framework, as developed by TNPA. The Municipality is therefore aligning its spatial planning to the Port Development Framework and, has an extended planning horizon applicable to its SDF. Richards Bay is classified as a Primary Node and is regarded as the fastest-developing industrial centre in South Africa due to the following:

- Centres of employment, industrial, residential, mining, offices, ecotourism, nature reserve, and commercial activity;
- It is well positioned to take full advantage of the export of manufactured goods and raw materials & minerals to Africa and the rest of the World;
- It functions as a major link to the world economy through the Richards Bay Harbour;
- It plays a dominant role in KwaZulu-Natal, especially within the commercial and industrial Sectors;
- It plays a major role in the regional economy as a service centre (industrial, retail, commercial, business, transportation, administrative and office core, etc.).

The National Ports Act (2005) prescribes that the National Ports Authority is to prepare and periodically update a Port Development Framework Plan (PDFP) for each Port. This process ensures that the development plans remain current, remain aligned with national policies and remain inclusive of changes in the ports' environment. The creation of new capacity in the ports' system results from the implementation of the Port Development Framework Plans. The proposed

upgrade is in accordance with the current district and local municipal plans for development and is in alignment with TNPA's port development plans.

8 A MOTIVATION FOR THE PREFERRED SITE, ACTIVITY AND TECHNOLOGY ALTERNATIVE

This section describes the process followed to reach the proposed preferred activity, site, and location within the site. This process included a review of the proposed project site as well as the technical aspect. The proposed project will be undertaken within the existing operational helipad, as such, no site alternatives are being considered for the project. Additionally, the proposed development will expand the footprint of the existing site.

8.1 MOTIVATION FOR THE PREFERRED SITE

TNPA undertook a feasibility study that sought to identify alternative sites for the proposed project and none of the considered sites were feasible. The existing site was preferred as it meets all the requirements to ensure efficient operation of the transportation of Marine Pilots as part of the pilotage services. Hence the proposal to expand at the existing location. Therefore, no site alternatives will be assessed as this will defeat the purpose of the proposed development.

The proposed site is recommended for the following reasons:

- Proximity to Marine Operations will reduce fuel costs
- No Additional security requirements as it is within the Port
- Port efficiency, proximity to Port control, and marine pilot movement.
- Reduced noise pollution as it will continue to fly over within the Port which is zoned as "industrial"

Despite not considering alternative site locations, layout alternatives and site alternatives for the temporary facility have been considered and will be assessed to ensure maximum efficiency and reduce the impact on the environment.

Important that during the pre-application engagements KZN EDTEA highlighted sea level rise for the proposed site as a major issue. Subsequently, a Climate change impact assessment has been appointed to assess the risk of sea level rise as expected. The report has been attached in **Appendix** and mitigation measures included in the EMPr.

8.2 MOTIVATION FOR THE PREFERRED LAYOUT OPTION

The current helipad infrastructure layout poses various operational challenges regarding compliance with the South African Council Aviation Authority (SACAA). The architectural team produced two (2) massing diagrams for infrastructure

expansion based on the User's Requirement Specification. Several workshops were held in conjunction with all stakeholders (TNPA Dredging and Port Infrastructure and Aviation Services) from which four spatial layouts were developed to address the operational requirements for the facility that can be seen as building blocks in isolation or in a combination with each other to increase the capacity options, and all their possible combinations. In total, eight (8) options were identified as well as their expected benefits to operations. For this BAR, only the four most feasible options will be assessed.

Four layout options within the current site have been considered. A comparative analysis was undertaken, and recommendations were made. An illustration of the preferred option is provided.

Figure 7: Preferred Layout Option Illustration

Motivation for the preferred layout include:

- The helipad is a partially elevated structure and is favourable with the aviation team as it poses little or no challenges to the flight approach and take-off and landing of the helicopters.
- The position of the helipad is also favourable for the wind direction needed for the landing and take-off of the helicopters. The helipad is positioned in front of the hangar apron for ease of movement and limited taxi of the helicopters into and out from the hangar to the helipad.
- The layout of the car park adjacent to the administration building is favourable as visitors and the public visiting the administration building are restricted from walking across the hangar apron, as this could be a safety hazard.

- This layout allows for the future expansion of the site should the need arise as the infrastructure on the site may easily be extended to accommodate additional buildings, structures, and parking.

From an environmental point of view the layout option will have the same impacts as detailed in Section 9.

8.3 MOTIVATION FOR THE ACTIVITY

The need and desirability for the proposed development has been detailed in Section 7 above. In summary, the proposed activities seek to address the challenges that are currently experienced at the Port. This will be achieved through the helipad expansion and provision of an additional helicopter.

8.4 MOTIVATION FOR THE PREFERRED TECHNOLOGY

As highlighted above technologies under consideration are discussed below.

8.4.1 HAND AND MANUAL DEMOLITION

Demolition technology were in hand and machine technologies are being considered for the demolition of the existing facilities.

8.4.1.1 Hand demolition

These methods may be used for small-scale projects, or when demolition has to be conducted in a more sensitive manner due to site constraints such as: proximity to uncapped mineshafts, overhead utilities, pedestrian access, adjacent structures, or structural instability. It involves the progressive demolition of a structure by operatives using hand tools. In general, the order of demolition is the reverse that of construction.

8.4.1.2 Machine demolition

This is the most frequently-used method and it reduces the need for people to work at height, or manual handling.

Given the sensitivity of the site, explosive demolition was considered not feasible. Subsequently, the two methods briefly described above will be implemented interchangeably during the demolition phase.

8.4.2 HELIPAD EXTENDING OVER METHODOLOGY

Three alternatives have been considered for the helipad deck that will be extended over into the estuary, which is considered a sensitive environment, hence an estuarine impact assessment has been conducted. The options considered include the following:

- Option 1 – Deck on Pile
- Option 2 – Sheet pile wall with rubble mound
- Option 3 – Sheet pile wall

According to the estuarine biodiversity specialists, all 3 options will not result in modifications to surface flows into the estuary. The development will therefore in no way impact on the base flows or hydrological regime (i.e. timing and magnitude of surface flows) of the estuary or cause fragmentation or loss of ecological connectivity. Furthermore, the proposed activity is of such a scale that will in no way impact on the frequency of estuary mouth closure. The impacts expected from the extension of the helipad include the following:

Of the three proposed options, Option 1 is preferred and recommended from the perspective of minimising impacts on the estuary. The most significant impact resulting from Option 1 will be the transformation of a small area of intertidal and subtidal soft sand habitat (approximately 390 m^2) into artificial rock habitat that will be insignificant considering the extent of the greater RB estuary and that no adverse impacts to species of conservation concern or ecological processes are anticipated.

Construction Phase Impacts	Operational Phase Impacts
• Mobilisation of sediments and suspended solids caused by construction of helipad foundations Hydroacoustic impacts of pile driving on fish and marine mammals • Loss of natural inter- and subtidal habitat caused by the construction of the foundation of the helipad. • Loss of artificial rock habitat caused by the construction of the foundation of the helipad • Impairment of water quality caused by spills and leaks of hydrocarbons from vehicles and machinery working in close proximity to the estuary	• Impact of the helipad foundation on the hydrodynamics of the estuary. • Impact of refueling and maintenance of helicopter on water quality • Impact of increased noise levels on fish and marine mammals.

The options have been discussed in detail below and none of these have been dismissed, however, Option 1 is highly recommended. Following engagement with relevant authorities, specialists, and stakeholders during the PPP process,

the preferred method that has the least impacts on the environment will be recommended and presented in the Final BAR.

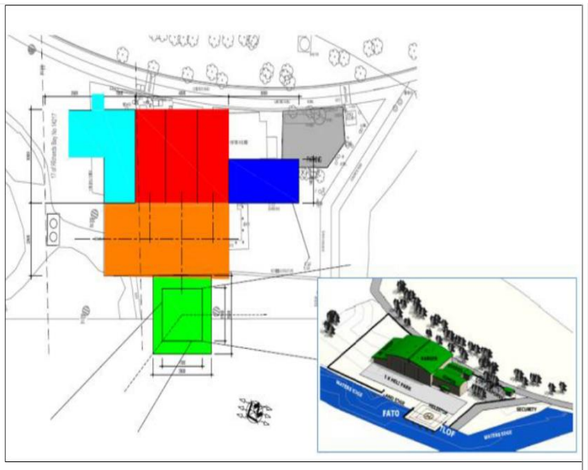
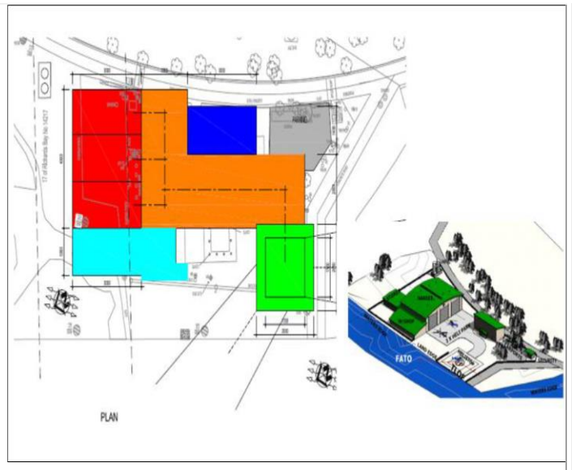
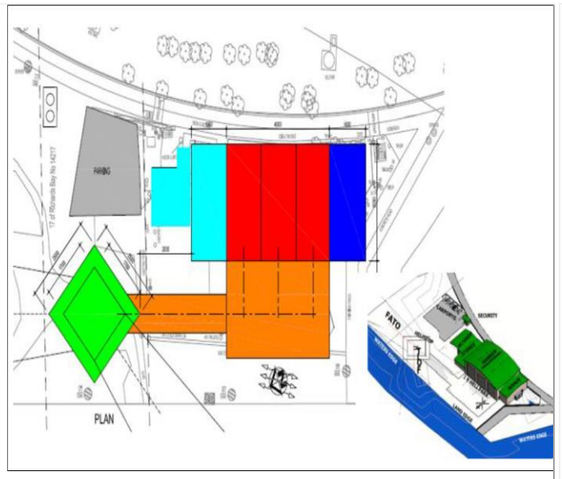
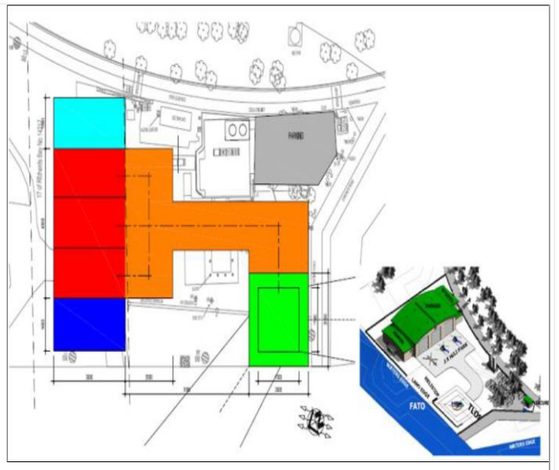
9 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED, SITE AND LOCATION WITHIN THE SITE

The identification of alternatives is a crucial component of the EIA process. The identified alternatives are assessed in terms of environmental acceptability, technical as well as economic feasibility during the EIA process, wherein the preferred alternative is highlighted and presented to the Authorities. A comparative analysis of the alternatives considered has been undertaken and preferred option motivated for.

9.1 LAYOUT ALTERNATIVES CONSIDERED

Four (4) design alternatives for the proposed helipad and the associated infrastructure are being considered and these are discussed below.

Table 13: Comparative Analysis of the Layout Alternatives

Alternative 1: Concept design Massing Layout Option 1A & B	Alternative 2: Concept design Massing Layout Option 2A & B	Alternative 3: Concept design Massing Layout Option 3A & B	Alternative 4: Concept design Massing Layout Option 4A & B
			
• The existing parking and security kiosk is in a decent condition and is preferred to be retained and re-used. • A new administration building, hangar, and engineering workshop is envisaged. • The buildings and structures proposed in the layout ensures optimal operational flows and functional requirements. • The helipad is a partially elevated structure and is favourable with the aviation team as it poses little or no challenges to the flight approach and take-off and landing of the helicopters. • The position of the helipad is also favourable for the wind direction needed for the landing and take-off of the helicopters. • The helipad is positioned in front of the hangar apron for ease of movement and limited taxi of the helicopters into and out from the hangar to the helipad. The layout of the car park adjacent to the administration building is favourable as visitors and public visiting the administration building are restricted from walking across the hangar apron, as this could be a safety hazard.	• The existing parking and security kiosk is in a decent condition and is preferred to be retained and re-used. • A new administration building, hangar, and engineering workshop is envisaged. • The helipad is a ground level structure, however the aviation team raised concerns with regards to the lengthy taxi way to and from the hangar. • The movement of the helicopter on a turning taxiway was also discussed as an unfavourable challenge. • The position of the helipad is favourable for the wind direction needed for the landing and take-off of the helicopters. The layout of the buildings also proved challenging to the flight approach and take-off and landing of the helicopters. • The buildings may have to be avoided during take-off and landing. • The layout of th321e car park adjacent to the administration building is also not favourable as visitors and public visiting the administration building are restricted from walking across the hangar apron, as this could be a safety hazard.	• The existing parking and security are relocated and a new security kiosk and parking, administration building, hangar, and engineering workshop is envisaged. • The helipad is a ground level structure, however, the aviation team raised concerns about the lengthy taxiway to and from the hangar. • The movement of the helicopter to turn into and from the hangar raised concerns to an unfavourable challenge. • The position of the helipad in respect to the wind direction needed for the landing and take-off of the helicopters was also discussed as an unfavourable concern. • The flight path is obstructed by adjacent trees during flight approach and take-off and landing of the helicopters. • The trees may have to be removed for a favourable landing and take-off. The security fence needed for the facility is also viewed as obstructive from the flight path for landing and take-off. • The layout of the parking layout proposed opposite the administration building posed a hazard and safety concerns were raised as visitors and public visiting the	• The existing parking and security are retained and a new administration building, hangar, and engineering workshop is envisaged. • The helipad is a ground-level structure, however, the aviation team raised concerns about the lengthy taxiway to and from the hangar. • The movement of the helicopter on a turning taxiway was also discussed as an unfavourable challenge. • The position of the helipad is favourable for the wind direction needed for the landing and take-off of the helicopters. • The layout of the buildings also proved challenging to the flight approach and take-off and landing of the helicopters. • The buildings may have to be avoided during take-off and landing. • The layout of the parking away from the administration building is not favourable as visitors and the public visiting the administration building are restricted from walking across the hangar apron, as this could be a safety hazard.

Alternative 1: Concept design Massing Layout Option 1A & B	Alternative 2: Concept design Massing Layout Option 2A & B	Alternative 3: Concept design Massing Layout Option 3A & B	Alternative 4: Concept design Massing Layout Option 4A & B
• This layout allows for the future expansion of the site should the need arise as the infrastructure on the site may easily be extended to accommodate additional buildings, structures and parking. The user requirement received vs the current land area available for the development has necessitated the acquirement of additional land as indicated in the various option presented.	• The sizes of the structures may have to be compromised to fit onto the site and the facilities described in the URS would not be achieved.	administration building are restricted from walking across the hangar apron. • The sizes of the structures may have to be compromised to fit onto the site and the facilities described in the URS would not be achieved.	

It must be noted that the layout has no significant bearing on the environmental attributes identified on the site as this area is already disturbed. The terrestrial and aquatic assessment highlighted that the biodiversity on the proposed site is very low, owing to the modification of the habitat over time. Therefore, the primary vegetation found on site is manicured grass, with commonly occurring trees and shrubs. Also, the specialist indicated that no endangered faunal species were identified. The only impacts that the layout would have would relate to the sensory attributes, i.e., a visual impact which is neutral.

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Based on the comparative analysis above the preferred layout option is Layout Option 1A & B.

9.2 ALTERNATIVE SITES CONSIDERED FOR THE PROPOSED TEMPORARY SITE

The alternative sites considered for the temporary relocation of the current helicopter operations and associated activities:

- Site 1: Naval Island
- Site 2: Small craft (Left-hand side)
- Site 3: Small craft (Right hand side)
- Site 4: Action Cricket (Outside the Port)
- Site 5: Action Cricket (Inside the Port)
- Site 6: Behind Ice cream shop (Opposite Action Cricket)
- Site 7: Richards Bay Industrial Development Zone (RBIDZ)
- Site 8: Employee Care Centre
- Site 9: Permit office / Truck staging

Figure 8 below includes comparative analysis of the aforementioned sites. .

Table 14: Comparative Analysis of the Temporary Relocation Sites (Transnet, 2018)

Criteria	Option 1 Naval Island	Option 2 Thuzigazi quay	Option 3 TG Port Control	Option 4 TG Maintenance Hangar 1	Option 5 TG Maintenance Hangar 2	Option 6 TG Behind Police Station	Option 7 RBIDZ	Option 8 Employee Care centre	Option 9 Permit Office
Approach/departure path (180deg max points and 135deg 50% and lesser 0)	Naval Island LZ has the clearest approach and departure routes for all LZs considered	Due to approach/departure routes directly over the small craft quay, the repair quay will not be available to the port if this location is used for the temp LZ. ZS- RRB (A109E) is not permitted to operate in a vertical departure profile due to CAT A limits and thus could hamper operations from this site	Due to approach/departure routes directly over the small craft quay, the repair quay will not be available to the port if this location is used for the temporary LZ. ZS- RRB (A109E) is not permitted to operate in a vertical departure profile due to CAT A limits and thus could hamper operations from this site	During the aerial operational evaluation, it became obvious that LZ options 4, ,5 and 6 would cause significant disturbance to the community. Noise pollution would be excessive, especially on busy nights. Further, proximity to busy roads serving the restaurants and hotels would create a hazard for motorists who could be distracted while driving when the helicopter comes into land or take off right beside them. The helicopter flight path into and from the landing areas would certainly overfly places of residence. In addition the ,security of the helicopter and crew could be threatened by drunk party goers losing control of vehicles or throwing bottles etc. at the helicopter. The potential for lasers and bright flashlights being pointed at the helicopter during flight is also very real. In addition, the crew would potentially not be able to rest due to loud music from the clubs located next to the LZs. Lastly in the unlikely event of an accident, being in proximity to night clubs and restaurants would expose the public to unnecessary risk.		During the aerial operational evaluation of LZ 7 it was evident that the close proximity to the extended centre line of the Richards Bay Aerodrome could impact on operational availability. Combined with high tension power lines in close proximity to the LZ and extensive dark areas on approach and departure for night ops this was not a viable site.	During the aerial operational evaluation of LZ 8 and 9 it was determined that these 2 LZs are not suitable as they are located in close proximity to numerous large and high obstructions such as the lead in lights and the silos. Further to this it was noted how busy this area of the port is and that it was quite likely for cranes and other large pieces of equipment/structures to be erected at short notice. This would have a significant impact on the safety of flight operations. In addition, coal/sulphur/phosphor dust and pollution was evident in this area and being downwind from the loading births the helicopter turbine engines could be harmed. Also these LZs are on the western side of the extended centre line of the airfield which would impact operational availability. It is also noted that drone activity in this part of the harbour is increasing (security and surveying) which is an additional risk for the helicopter.	
Alignment with the predominant wind direction and strength	Naval Island LZ is aligned with the predominant wind direction	This site is aligned with the predominant wind provided no ship is docked at the repair quay	This site is aligned with the predominant wind provided no ship is docked at the repair quay						
Compliance with Obstacle restrictions (Approach/Departure path Slopes 1:15 or 3.8° or 6.7% and Transitional Slopes 1:4 or 14° or 25%) all measured from edge of Safety Area.	Naval Island LZ complies with obstacles clearance as stated	This would need to be measured formally as it wasn't obvious from the air if we would meet this obstacle clearance requirements. As a minimum clearing old vessel parts, repositioning 2 masts and at least 4 tall light poles would be required. Proximity to fuel depot a concern	This would need to be measured formally as it wasn't obvious from the air if we would meet this obstacle clearance requirements. As a minimum, repositioning at least 4 tall light poles would be required. Port Control would also possibly need to be relocated to provide required clearances.						

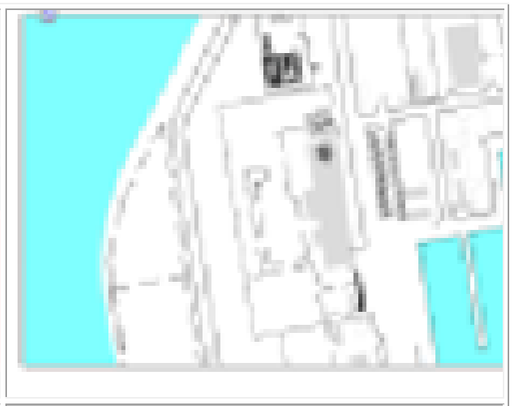
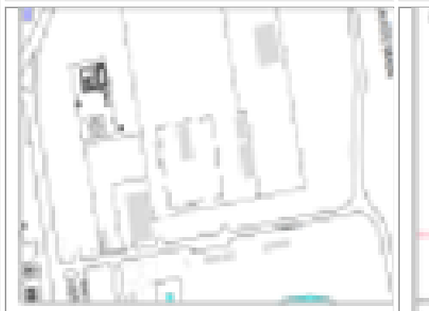
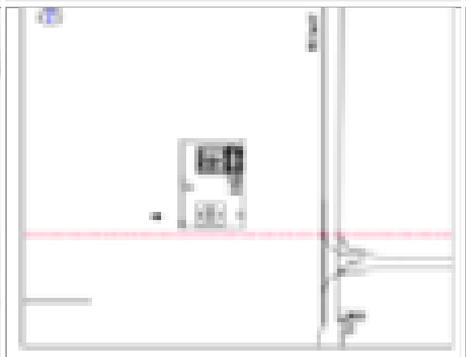
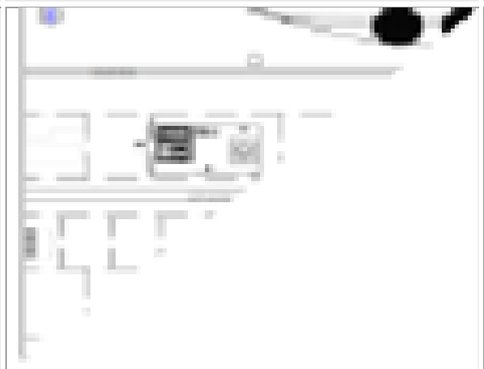
Improved accessibility of the facility and helipad	Access to the LZ is close to Port Control and can be secured from the public easily	Access to the LZ is close to Port Control and secured from the public	Access to the LZ is close to Port Control and secured from the public			
Improvement on existing infrastructure/operations	A temporary hangar would be required at this LZ	A temporary hangar would be required at this LZ	A temporary hangar would be required at this LZ and Port Control would possibly need to be relocated to provide required clearances.			
Provide adequate and compliant facilities for rendering maintenance & operational service	This LZ can accommodate a temporary facility which would satisfy these requirements	This LZ can accommodate a temporary facility which would satisfy these requirements	This LZ can accommodate a temporary facility which would satisfy these requirements			
Noise pollution, over fly of residential areas 24hrs	This LZ would produce the least amount of noise pollution to the public	This LZ is closer to public spaces than Naval Island and will certainly cause a disturbance and produce noise pollution for the local residents	This LZ is closer to public spaces than Naval Island and will certainly cause a disturbance and produce noise pollution for the local residents			
Operational availability. Weather consideration and low- level procedures.	Naval Island would have no negative effect on operational availability and our low-visibility procedures could be adapted to permit operations to this LZ	This site would have no negative effect on operational availability and our low-level procedures could be adapted to permit operations to this LZ, although noise pollution would increase in adverse weather	This site would have no negative effect on operational availability and our low-level procedures could be adapted to permit operations to this LZ, although noise pollution would increase in adverse weather			
TNPA controlled security	Naval Island would provide the best security for the crew and aircraft as it is isolated on an island.	Thuzigazi would provide reasonable security as its	This site would provide reasonable security as its			

		situated at a protected quay	situated in a TNPA protected area.						
Hazards posing operational and safety risks: 1. Pollution blowing into helicopter. 2.Public crowd interference. 3. No access control during holiday seasons.	These issues are not applicable to Naval Island as it's not situated up/downwind of births were coal/aluminium/phospho is loaded. Public access is restricted as its located within a secure TNPA area.	These issues are not applicable to Thuzigazi as its not situated up/downwind of births were coal/aluminium/phospho is loaded. Public access is restricted as its located within a secure TNPA area.	These issues are not applicable to Thuzigazi as its not situated up/downwind of births were coal/aluminium/phospho is loaded. Public access is restricted as its located within a secure TNPA area.						
Operational efficiency. Port efficiency, proximity to Port control and marine pilot movement.	This site is very close to Port Control which will benefit efficiency.	This site is very close to Port Control which will benefit efficiency.	This site is very close to Port Control which will benefit efficiency.						
Air traffic restrictions: 1.Instrument Meteorological Conditions (IMC). 2. Scheduled traffic being prioritised. 3.Crossing of the extended centre line.	As Naval Island is well to the East of the extended centerline helicopter operations will not be affected by scheduled and IF traffic	This site is well to the East of the extended centerline, helicopter operations will not be affected by scheduled and IF traffic	This site is well to the East of the extended centerline, helicopter operations will not be affected by scheduled and IF traffic						
Navigation at night. (Easy to stay in port area where there is navigational lighting, over land there is dark patches wherever there is forest or lakes)	Naval Island has significant cultural lighting around it increasing safety for night operations	This site has significant cultural lighting around it increasing safety for night operations	This site has significant cultural lighting around it increasing safety for night operations						
Capex Requirements	Additional infrastructure required - 5km new MV electrical supply -Perimeter Fencing -	Additional infrastructure required	Additional infrastructure required -Relocation of existing High mast lighting	Additional infrastructure requirements - Rerouting of traffic	Additional infrastructure requirements - Rerouting of traffic	Additional infrastructure requirements -	Additional infrastructure requirements - New	Additional infrastructure requirements - New	Additional infrastructure requirements - New

	Septic tank .Portable water - **High Capex Cost**	- Relocation of existing High mast lighting **Medium Capex Cost**	Relocation of temporary port control buildings **High Capex Cost**	to accommodate helicopter operations away from the public **Low Capex Cost**	to accommodate helicopter operations away from the public **Low Capex Cost**	Rerouting of traffic to accommodate helicopter operations away from the public **Low Capex Cost**	Electrical connections - New sewer connection **Medium Capex Cost**	Electrical connections - New sewer connection **Medium Capex Cost**	Electrical connections - New sewer connection **Medium Capex Cost**
Opex requirements	* Higher fuel cost due to the distance between Helipad and Marine Operations - Additional security requirements due to the remote location **High Opex Cost**	* Low fuel cost due to the close proximity between Helipad and Marine Operations - No additional security requirements due to proximity to current port operations **Low Opex Cost**	* Low fuel cost due to the close proximity between Helipad and Marine Operations - No additional security requirements due to proximity to current port operations **Low Opex Cost**	* Low fuel cost due to the close proximity between Helipad and Marine Operations Additional security requirement to man road closure and close proximity to retail areas **Moderate Opex Cost**	* Low fuel cost due to the close proximity between Helipad and Marine Operations - Additional security requirement to man road closure and close proximity to retail areas **Moderate Opex Cost**	* Low fuel cost due to the close proximity between Helipad and Marine Operations - Additional security requirement to man road closure and close proximity to retail areas **Moderate Opex Cost**	* Moderate fuel cost due to the close proximity between Helipad and Marine Operations - Additional security requirement **Moderate Opex Cost**	* Moderate fuel cost due to the close proximity between Helipad and Marine Operations - Additional security requirement **Moderate Opex Cost**	* Moderate fuel cost due to the close proximity between Helipad and Marine Operations - Additional security requirement **Moderate Opex Cost**

The table below presents the alternatives discussed above.

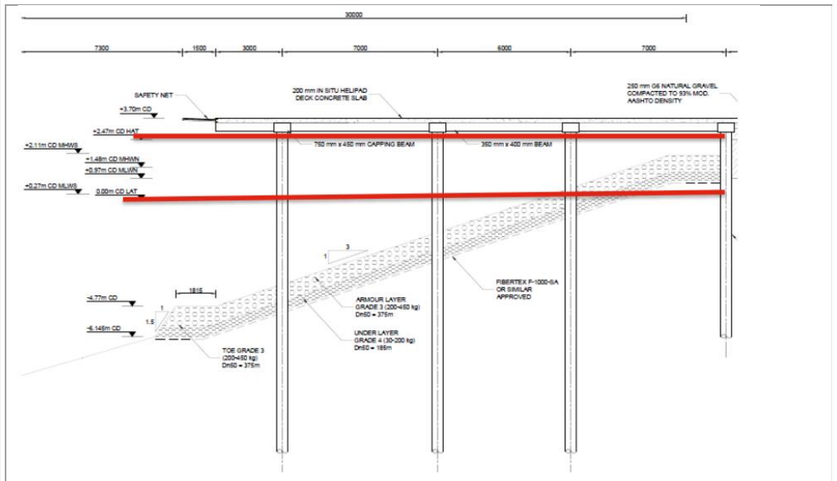
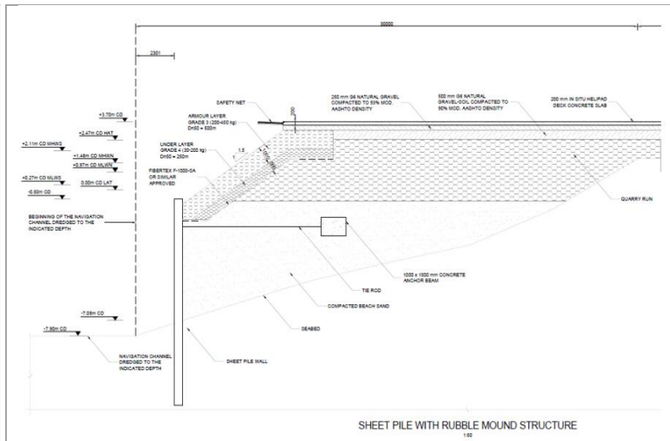
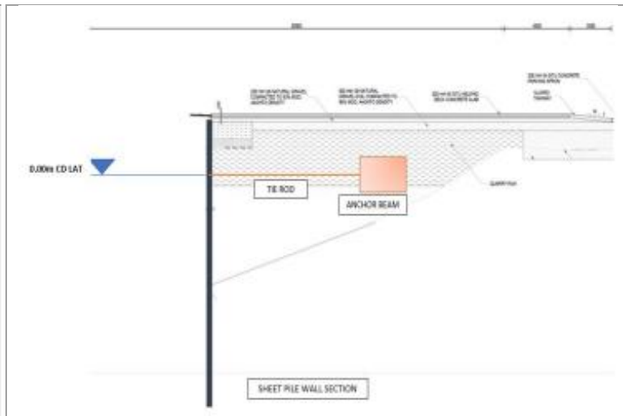
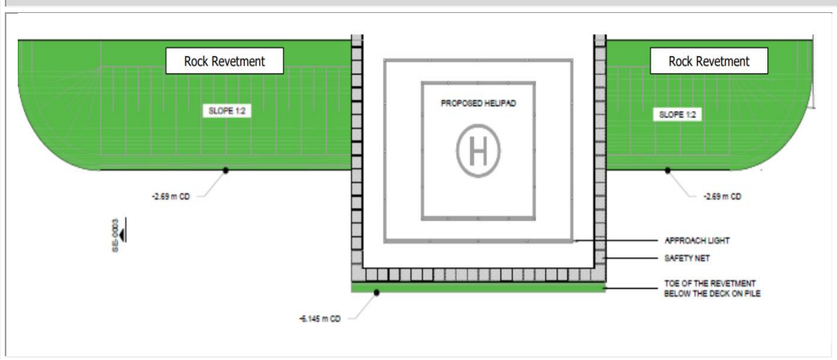
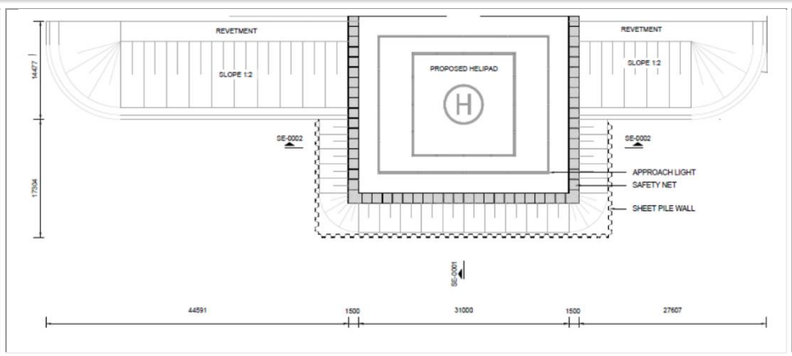
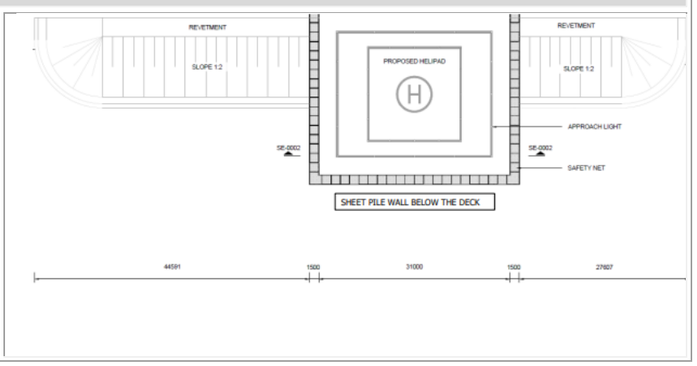
Table: Layouts of the Temporary Options Considered

				
Option 1 Naval Island	**Option 2 Thuzigazi quay**	**Option 3 TG Port Control**	**Option 4 TG Maintenance Hangar 1**	**Option 5 TG Maintenance Hangar 2**
				
Option 6 TG Behind Police Station	**Option 7 RBIDZ**	**Option 8 Employee Care centre**	**Option 9 Permit Office**	

9.3 TECHNICAL ALTERNATIVES – HELIPAD DECK ALTERNATIVES

The three alternatives considered are describe in detail in the Table below.

Table 15: Comparative analysis of the helipad deck extending over alternatives

Alternative 1 – Deck on pile	Alternative 2 - Sheet pile wall with rubble mound	Alternative 3 Sheet pile wall
Description		
• 31m x 26m Reinforced concrete deck supported by beams resting on bored piles • Approximately 7.3m from the navigational channel • Rock revetment below the deck required to prevent soil erosion due to wave action	• Sheet pile wall (AZ sheets) with sloped rubble mound structure supporting the helipad deck • Anchor block laterally supporting the sheet pile wall • Approximately 2.3m from the navigational channel • Sheet pile wall will be driven to approximately -15m CD having a cope level of -0.50m CD	• Sheet pile wall (AZ sheets) supported laterally by anchor block • Approximately 7.3m from the navigational channel • Sheet pile wall will be driven to a depth of approximately -20m CD with a cope level of approximately 3.70m CD. • Anodes will be required for protection against corrosion
Deck on Pile Structure	**Proposed Sheet pile wall with rubble mound Structure**	**Proposed Sheet Pile Mound Structure**
		
Facility Illustration (Layout)		
		

CONSTRUCTION METHOD		
○ **Prepare the slope for the revetment below the deck on pile including the toe** ○ Remove the existing amour rock. ○ Cut / fill and compaction of the prepared area to form a required slope of 1:3 ○ Prepare the slope of the toe of the revetment. ○ **Auger all the piles to the required depths:** ○ Drive in the frame (encasing) to the required depth of the pile. ○ Remove the excess sand material inside the frame. ○ Insert the required reinforcement ○ Pouring concrete ○ Once concrete is dry the encasing above the land surface will be removed. ○ **Lay the geotextile, underlayer and armour layer of the revetment** ○ Lay a geotextile on the sand surface for installation of the armored rock. This may be executed ○ Place layers of the armor rock to form the required revetment. ○ Place precast capping beams connecting the augured piles. Cast in-situ deck slabs supported by the capping beams.	• Drive permanent AZ sheet piles for form a wall like structure, sheet piles to be driven to a required depth. • Backfill and compaction inside the sheet pile wall to the level where the anchor beam will be installed. • Install new anchors with anchor beam, the anchor beams will be attached on the sheet pile wall as indicated on the drawing. • Backfill and compaction the remaining area above the anchor beam. • Prepare slope for rubble mound structure • Place the geotextile, underlayer and armor layer of the rubble mound • Trim the permanent sheet pile wall to a level of -0.50m CD or at the founding level of the amour rock section. • Install a cast in-situ deck on top of the sheet pile wall and amour rock foundation. •	• Drive permanent AZ sheet piles for form a wall like structure, sheet piles to be driven to a required depth. • Backfill and compact inside the sheet pile wall to the level where the anchor beam will be installed. • Install new anchors with anchor beam, the anchor beams will be attached on the sheet pile wall as indicated on the drawing. • Backfill and compact the remaining area above the anchor beam. • Install a cast in-situ deck on top of the sheet pile wall foundation. •
ESTUARINE IMPACTS		
• The identified impacts include the following: ○ Mobilisation of sediments and suspended solids caused by construction of helipad foundations Hydroacoustic impacts of pile driving on fish and marine mammals. ○ Loss of natural inter- and subtidal habitat caused by the construction of the foundation of the helipad. ○ Loss of artificial rock habitat caused by the construction of the foundation of the helipad. ○ Impairment of water quality caused by spills and leaks of hydrocarbons from vehicles and machinery working in close proximity to the estuary. • Impacts identified for the construction and operational phases of the project are low with mitigation.	• The identified impacts include the following: ○ Mobilisation of sediments and suspended solids caused by construction of helipad foundations Hydroacoustic impacts of pile driving on fish and marine mammals. ○ Loss of natural inter- and subtidal habitat caused by the construction of the foundation of the helipad. ○ Loss of artificial rock habitat caused by the construction of the foundation of the helipad. ○ Impairment of water quality caused by spills and leaks of hydrocarbons from vehicles and machinery working in close proximity to the estuary. • Impacts identified for the construction and operational phases remain medium with mitigation, while the loss of natural inter- and subtidal habitat caused by the construction of the foundation of the helipad is high and remains high with mitigation. • Options 2 and 3 both result in the complete infilling of subtidal and intertidal habitat and a higher likelihood of hydrodynamic impacts associated with deflection of waves of tides from vertical sheet pile walls.	

• Based on the intensity of the impact Option 1 is preferred and recommended. According to the estuarine specialist (Confluent, 2022), the most significant impact resulting from Option 1 will be the transformation of a small area of intertidal and subtidal soft sand habitat (approximately 390 m^2) into artificial rock habitat.	

9.3.1.1 No-go alternative

Under GN R.326, consideration must be given to the option not to act, which an alternative is usually considered when the proposed development is envisaged to have significant negative environmental impacts that mitigation measures cannot ameliorate effectively. The assessment of this option requires a comparison between the options of proceeding with the proposed project with that of not proceeding with the proposed project. Proceeding with the proposed project attracts potential economic benefits and potential negative environmental and social impacts. Not proceeding with the proposed project leaves the status quo.

In terms of the No-Go Alternative, the upgrade of the existing helipad and other infrastructure would not be expanded in support of the expansion of port of Richards Bay. Transnet would continue to be under pressure to operate a helicopter service for the transportation of Marine Pilots as part of the pilotage services.

According to the Aviation insourcing strategy, the current infrastructure facilities are not adequate to accommodate additional helicopter, equipment, and personnel for rendering maintenance and operational services. Moreover, the shared offices and ablution facilities are not adequate to house these numbers of personnel. No significant benefits associated with the No-Go Alternative have been identified. No environmental risk factors were determined which should prevent the proposed upgrade of the Helipad and associated infrastructure at the Port of Richards Bay. Should the project not continue, there would be no economic benefits i.e., extended employment for local communities. The Port of Richards Bay is already a socioeconomic anchor within the immediate communities and more so for the country; therefore, the no-go option will hinder the opportunity for growth and efficiency.

10 DETAILS OF THE PUBLIC PARTICIPATION PROCESS UNDERTAKEN IN TERMS OF REGULATION 41 OF THE REGULATIONS, INCLUDING COPIES OF THE SUPPORTING DOCUMENTS AND INPUTS;

The NEMA EIA Regulations require that during the EIA process, the Organs of State together with Interested and Affected Parties (I&APs) be informed of the application and allowed to comment on the application.

Public Participation Process (PPP) is any process that involves the public in problem-solving and decision-making; it forms an integral part of the BAR and EIA process. The PPP provides I&APs with an opportunity to provide comments and raise issues of concern or to make suggestions that may result in enhanced benefits for the project.

The primary purpose of the PPP report is as follows:

- To outline the PPP that was undertaken;
- To synthesise the comments and issues raised by the key stakeholders, I&APs; and
- To ensure that the EIA process fully address the issues and concerns raised.

Chapter 6, Regulation 39 through 44 of the 2014 EIA Regulations stipulates the manner in which the PPP should be conducted as well as the minimum requirements for a compliant process. These requirements include but not limited to:

Fixing a notice board at or on the fence of-

(i) The site where the activity to which the application relates is or is to be undertaken; and
(ii) A place conspicuous to the public at the boundary of the site.

Giving written notice to-

- The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
- The owners or persons in control of that land occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
- The municipal councillor of the ward in which the site and alternative site is situated and any organisation of rate payers that represent the community in the area;
- The municipality which has jurisdiction in the area;
- Any organ of state having jurisdiction in respect of any aspect of the activity; and
- Any other party as required by the competent authority.

Placing an advertisement in-

One of the local newspapers within or around the proposed site.

10.1 PUBLIC PARTICIPATION PRINCIPLES

The principle of Public Participation holds that those who are affected by a decision have the right to be involved in the decision-making process (i.e., the public's contribution will influence the decision). One of the primary objectives of conducting the PPP is to provide Interested and Affected Parties with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meet the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.
- Is as inclusive and transparent as possible, it must be conducted in line with the requirements of Regulation 39 through 44 of the EIA Regulations as amended.

10.2 APPROACH AND METHODOLOGY

The Public Participation approach adopted in this process is in line with the process contemplated in Regulation 39 through 44 of the EIA Regulations as amended, in terms of NEMA, which provides that I&APs must be notified about the proposed project.

10.2.1 PRE-APPLICATION CONSULTATION

Nsovo requested a pre-application meeting with the DFFE On 5 May 2022, and on 6 June 2022, the DFFE responded indicating that based on the information provided, it would not be necessary to hold the Pre-application meeting. In addition, the DFFE indicated that Nsovo may proceed with the process of lodging the application form for the proposed upgrade. Refer to **Appendix D1** for the proof of correspondence with the DFFE.

Considering the location of the proposed development, Nsovo consulted the DFFE Oceans and Coasts to request guidance on their requirements of a project of this nature. A meeting was held on 7 June 2022 with the DFFE Oceans and Coasts, and the purpose of the meeting was to present the proposed development to the Department and seek guidance. Minutes of the meeting are attached as **Appendix D2**. The Draft Basic Assessment Report sought to address the issues raised by the Department and it will be made available to them for review and comment.

Based on the scope of work provided, indicating that there will be dewatering involved and activity 21 (j) under the National Water Act, 36 of 1998 will be triggered, Nsovo engaged the Department of Water and Sanitation to seek guidance and further lodged the requisite application. A pre-application meeting was held on the 09th of June 2022 and the minutes of the meeting are attached as **Appendix D3**. On the 08th of July 2022 Nsovo received feedback from the DWS indicating that there a WUL will not be required for the proposed development. Letter attached as **Appendix D4**.

Further engagements will be held with the Civil Aviation Authority to seek guidance and the report will be presented to them for review and comment.

10.2.2 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&APs) identified include pre-identified stakeholders (government department), landowners and the general public. Notification and request for comments will be submitted to the following key stakeholders:

- National Department of Forestry, Fisheries and Environment;
- KwaZulu-Natal Department Economic Development, Tourism and Environmental Affairs
- KwaZulu-Natal Department of Water and Sanitation;

- KwaZulu-Natal Department of Transport and Public Works;
- Transnet National Ports Authority;
- Richards Bay Industrial Development Zone (RBIDZ)
- South African Civil Aviation Authority;
- South African Heritage Resource Agency;
- Amafa/Heritage KwaZulu-Natal;
- Wildlife and Environmental Society of South Africa;
- Ezemvelo KwaZulu-Natal Wildlife;
- International Union for Conservation of Nature (IUCN);
- City of uMhlathuze;
- King Cetshwayo District Municipality
- Civil Aviation Authority

Other key stakeholders will include adjacent landowners and owners of the recreational facilities within and around the Port. The notifications will be sent to stakeholders and I&APS via emails to inform them of the availability of the draft BAR for 30 days review and comments period, proof of the notification will be submitted with the final BAR.

10.2.3 PUBLIC PARTICIPATION DATABASE

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 326, the public participation practitioner must keep a register of I&APs. In fulfilment of this requirement, a register will be compiled and details of I&APs including their comments will be updated throughout the project cycle.

10.2.4 SITE NOTICES

The A2 size notices will be fixed at different conspicuous locations within and around the proposed development study area, and the identified locations include but are not limited to the TNPA's permit office, City of uMhlathuze, Richards Bay Public Library, (nearest town from the proposed site), Richards Bay Industrial Development Zone (RBIDZ), boundary of the property as well as other public amenities. Photographic evidence will be included in the final BAR.

10.2.5 DISTRIBUTION OF NOTICES TO SURROUNDING LAND OWNERS / OCCUPIERS

Notification letters will be posted via registered mail to stakeholders, whereas site notices in English and isiZulu will be hand delivered to landowners/occupiers. These notifications will be informing stakeholders and the public of the proposed project as well as allowing them an opportunity to register as I&AP and also to comment or raise any issues pertaining to the proposed project.

10.2.6 PLACEMENT OF AN ADVERTISEMENT IN THE LOCAL NEWSPAPER

A Zulu and English advertisement will be placed on the Zululand Observer Newspaper to inform I&APs of the availability of the BA Report, and public meetings. A 30-day period would be allowed for the public to register as I&APs, submit their comments, issues and concerns. Proof of newspaper advertisement will be included in the final BAR.

10.2.7 PLACEMENT OF THE DRAFT BA REPORT FOR COMMENTS

The Draft BA Report will be placed for review and comment at the Richards Bay Public Library from the 24th January 2023 to the 24th February 2023 and Nsovo website at www.nsovo.co.za for 30 days. A link of the report will be made available upon request to all stakeholders and I&APs, and this will be shared via email, SMS, or WhatsApp. The Interested and Affected Parties (I&APs) will be notified of the availability of the draft BA Report for review and comment through newspaper advertisement. Email proof of notification of identified stakeholders will be included in the final BAR.

10.2.8 PUBLIC MEETINGS

Public and focus group meetings will be scheduled and details of the meeting would be advertised on the Zululand Observer Newspaper. A virtual public meeting has been scheduled for the 16th February 2023 and the details have been advertised.

10.3 A SUMMARY OF 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

Comments, issues and concerns raised together with the responses provided by the EAP will be included in the final BAR. Thus far, the Draft BAR has addresses issues by the DFFE Oceans and Coasts and should the issues not be fully addressed, further engagements will be held, and the issues will be addressed in the final BAR and EMPr.

11 DESCRIPTION OF THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE AND CULTURAL ASPECTS

This section outlines parts of the socio-economic and biophysical environment that could be affected by the proposed development. Using the project description, and knowledge of the existing environment, potential interactions between the project and the environment are identified below. The potential effects of the project on the human environment, socio-economic conditions, physical and cultural resources are included.

11.1 SOCIO-ECONOMIC DESCRIPTION

This section presents the socio-economic aspects focusing on the Province and Municipalities within which the proposed study area is located.

11.1.1 PROVINCIAL DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development is within the KwaZulu-Natal province, which is located in the south-east of South Africa, along the Indian Ocean. It borders the Eastern Cape, Free State and Mpumalanga provinces of South Africa as well as neighbouring countries namely: Lesotho, Swaziland and Mozambique. As highlighted in the IDP, the province stretches from the lush subtropical east coast washed by the warm Indian Ocean to the sweeping savannah in the east and the majestic Drakensberg Mountain Range in the west.

The KwaZulu-Natal province covers an area of 94 361km² and is the third smallest in South Africa. It has a population of 11 065 240, making it the second most heavily populated province in the country of South Africa. The capital is Pietermaritzburg while the largest city is Durban. Other major cities and towns include Richards Bay, Port Shepstone, Newcastle, Estcourt, Ladysmith, and Richmond. The province's manufacturing sector is the largest in terms of contribution to GDP. Richards Bay is the centre of operations for South Africa's aluminium industry. The Richards Bay Coal Terminal is instrumental in securing the country's position as the second-largest exporter of steam coal in the world.

The province has undergone rapid industrialisation owing to its abundant water supply and labour resources. Agriculture is also central to the economy. The sugar cane plantations along the coastal belt are the mainstay of KwaZulu-Natal's agriculture. The coastal belt is also a large producer of subtropical fruit, while the farmers inland concentrate on vegetable, dairy and stock farming. Another source of income is forestry in the areas around Vryheid, Eshowe, Richmond, Harding and Ngome. KwaZulu-Natal comprises of eThekwini Metropolitan Municipality, 10 district municipalities and 43 local municipalities. See Figure 10 below

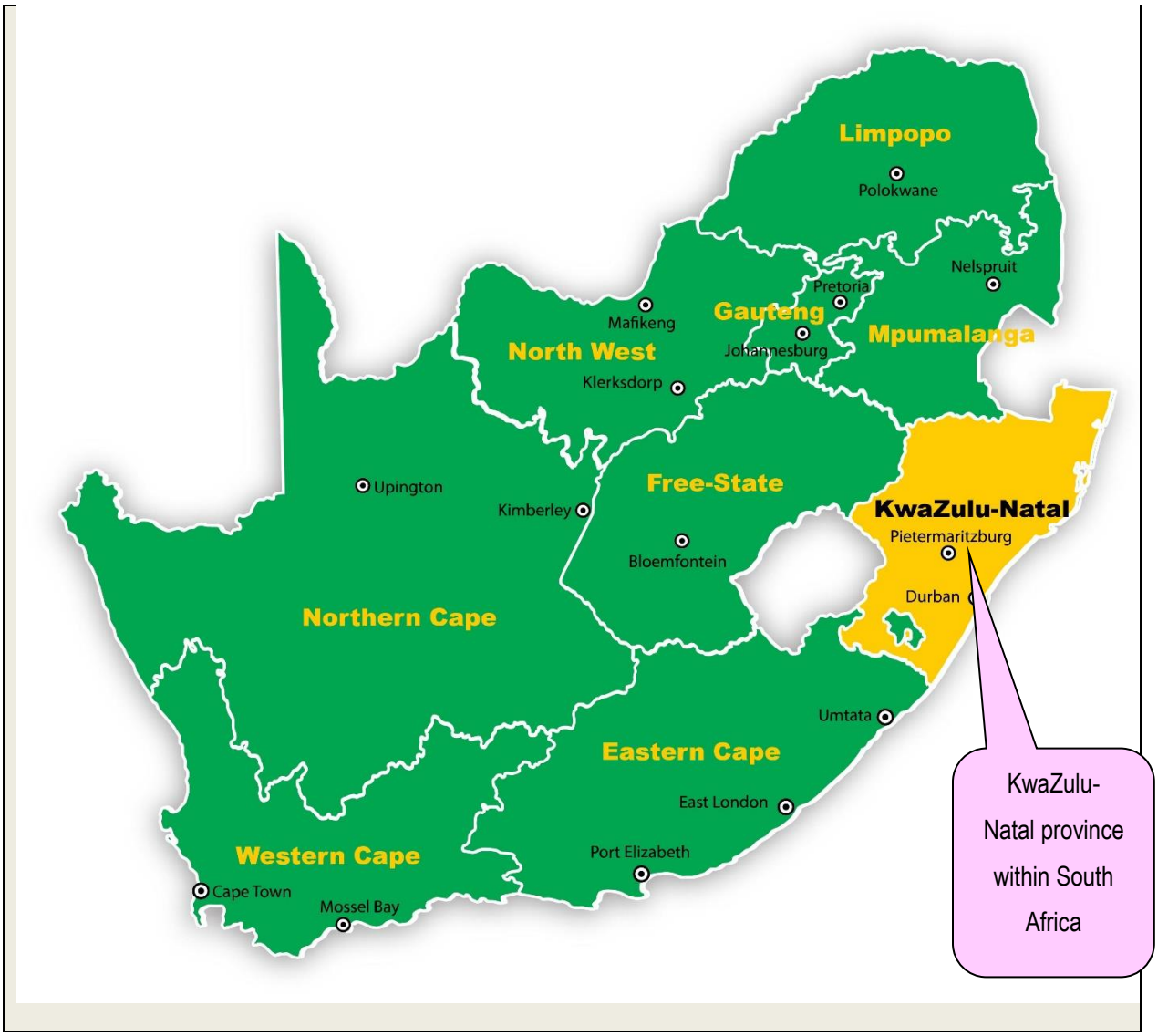


Figure 8: Map of South Africa showing the provinces (Source: www.odm.org.za).

11.1.1.1 District Municipality within which the study area is located

The King Cetshwayo District Municipality is a Category C municipality and is located in the north-eastern region of the KwaZulu-Natal Province. It covers the area from the uMfolozi River in the north, to KwaGingindlovu in the south, and inland to Nkandla. The district is home to five local municipalities: City of uMhlathuze, uMlalazi, Mthonjaneni, Nkandla and uMfolozi.

The N2 highway links the district to other significant economic centres, such as Durban and Johannesburg. It also offers a direct route to Maputo in Mozambique. The development of the Richards Bay Industrial Development Zone is boosting economic activity and attracting international investors.

Main sectors include Manufacturing (40.9%), mining (15.2%), community services (11.9%), finance (8.7%), transport (8.5%), trade (6.5%), agriculture (5.3%), construction (2.1%) (www.municipalities.co.za)

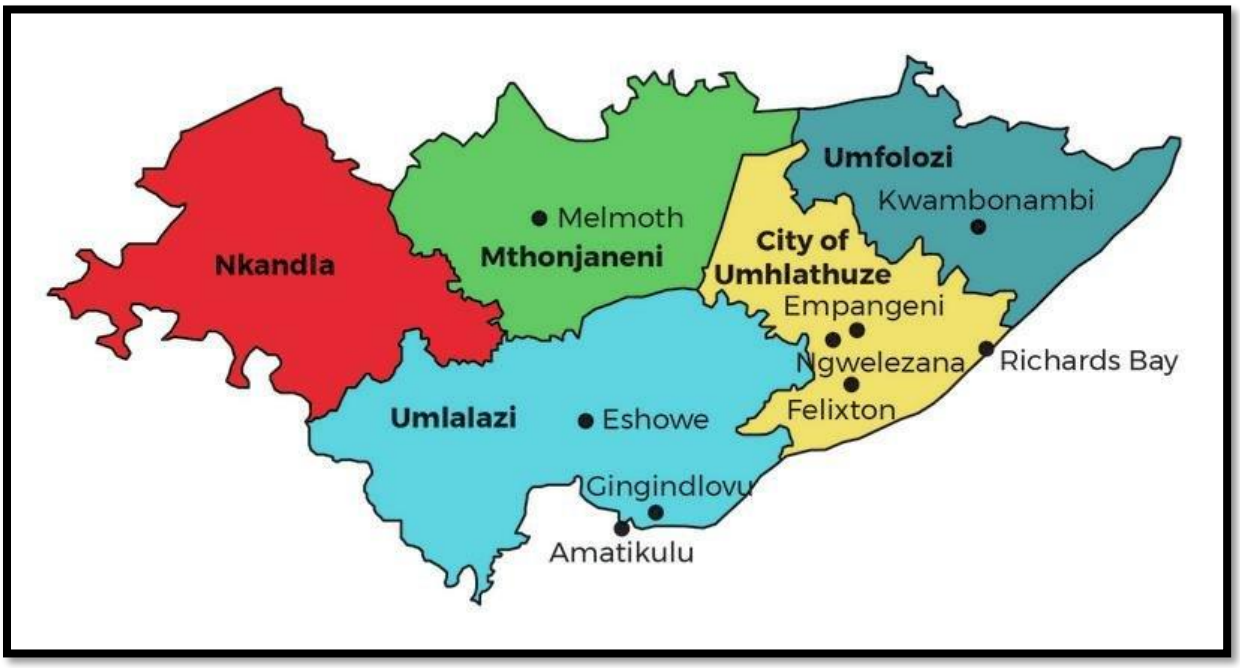


Figure 9: Photograph shows the map of Local Municipalities in King Cetshwayo District Municipality

11.1.1.2 Local Municipality within which the proposed study area is located

The City of uMhlathuze (KZ 282) is situated on the north-east coast of the province of KwaZulu-Natal, approximately 180 kms north-east of Durban. The uMhlathuze area covers 796m^2 incorporating Richards Bay, Empangeni, eSikhawini, Ngwelezane, eNseleni, Felixton and Vulindlela, as well as the rural areas under Amakhosi namely, Dube, Mkhwananzi, Khoza, Mbuyazi and Zungu. The population is estimated at 325 000 of which 50% is rural and 50% urban. The city borders a coastline that spans approximately 45km's in length of which nearly 80% of it is in its natural state. The N2 highway traverses uMhlathuze in a north-east direction towards the Swaziland border and south-west towards Durban.

The City of uMhlathuze has an estimated 349 576 total population and about 82 972 households. This makes the average household size 4.2 persons per household. The age category with the highest population is between the ages of 20-24 placing huge demands for social and economic opportunities. Youth (15-35 years) makes up 41.6% (137 622) of the people of uMhlathuze. The age group 65 years and above, 8 840 (2.7%) depends on social grants for sustenance.

11.2 CLIMATIC CONDITION OF THE PROPOSED AREA

Richards Bay has a warm to hot and humid subtropical climate, with warm moist summers. Average daily maximum temperatures range from 29°C in January to 23°C in July. The Mean Annual Precipitation (MAP) is 1 228 mm and most of the rainfall occurs in the summer months (from October to March). 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.

Tropical cyclones and middle-latitude systems have resulted in extreme rainfall events on several occasions and pose a risk to infrastructure within Richards Bay. However, middle latitude frontal system can interact with the sub-tropical circulation to cause severe squall lines of thunderstorms that produce torrential rainfall. Winter rainfall generally occurs in association with middle-latitude frontal weather systems (EMF for the Richards Bay Port and Industrial Development Zone Area – Status Quo Report (October 2009). 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.

11.2.1 CLIMATE CHANGE

Scientific opinion suggests that continued emissions due to human activities of greenhouse gases, principally carbon dioxide and methane, may bring about significant and long-term changes to the functioning of the earth's atmosphere. Of great uncertainty still are the possible impacts and damage attributable to such climate change, although indications are that their scale could be significant. According to the White Paper on Energy, South Africa is responsible for 1,6% of global greenhouse gas emissions and the country's energy sector is the single largest source of greenhouse gas emissions in Africa, being dependent on coal for more than 75% of the country's primary energy needs during 1997. This level of emissions is also mainly as a result of the high level of coal use by the electricity generation and synthetic fuels industries, and the high level of industrialisation producing high energy content products. In order to fulfil the national energy policy of making clean, affordable, and appropriate energy available to all sectors of the population, a balanced least-cost mix of energy supply is promoted. Although the country is faced with obligations to reduce its greenhouse gas emissions in the near future, international governance of this problem is an evolving area.

According to Kelbe (2010) rainfall and evaporation are the main source and sink of water and are described in terms of the long-term climate and the local weather systems in order to provide an understanding of the controlling factors and probable future issues. According to the DFFE Oceans and Coast Coastal Viewer, the coastal vulnerability risk index for the property confirms that the proposed site falls within a high coastal vulnerability risk for estuary flooding and erosion risk. Subsequently, a Climate Change and Coastal Vulnerability Risk Assessment was recommended to provide further recommendations on the engineering designs that would be best suited to accommodate the climate change risks and constraints associated with this site.

Accordingly, the climate change impact study was conducted to address the climate change risk in relation to the proposed project. The study was undertaken by Simon Gear of Kijani Green in November 2022 where he highlighted that it is clear that building in close proximity to the waterline will expose the project to risks associated with increased rainfall, increased flood events and increased sea level. The following was highlighted:

- Temperature
- Rainfall
- Extreme Rainfall events
- Sea level rise indicate an increase

It is therefore recommended that the engineers closely interrogate the summary provided in Section 6 of this report and adjust their designs accordingly to mitigate this risk and concluded that there is no impact of the project on global climate change identified.

11.3 TERRESTRIAL BIODIVERSITY

The primary study area is characterised by the Kwa Mbonambi hygrophilous grassland vegetation that covers 75% of the site.

The study area has recently been demarcated as priority conservation land, as it contained remnants of a highly threatened and endemic terrestrial ecosystem referred to as Kwambonambi Hygrophilous Grassland (KHG) (Goodman 2007). However, Mucina & Rutherford (2006) make no mention of such a vegetation unit, which suggests that it has been included within another vegetation unit. Two of the plant communities identified from the Richards Bay site are distinctively different, despite previously being lumped together by different authorities as either Kwambonambi Grassland or Maputaland Woody Grassland.

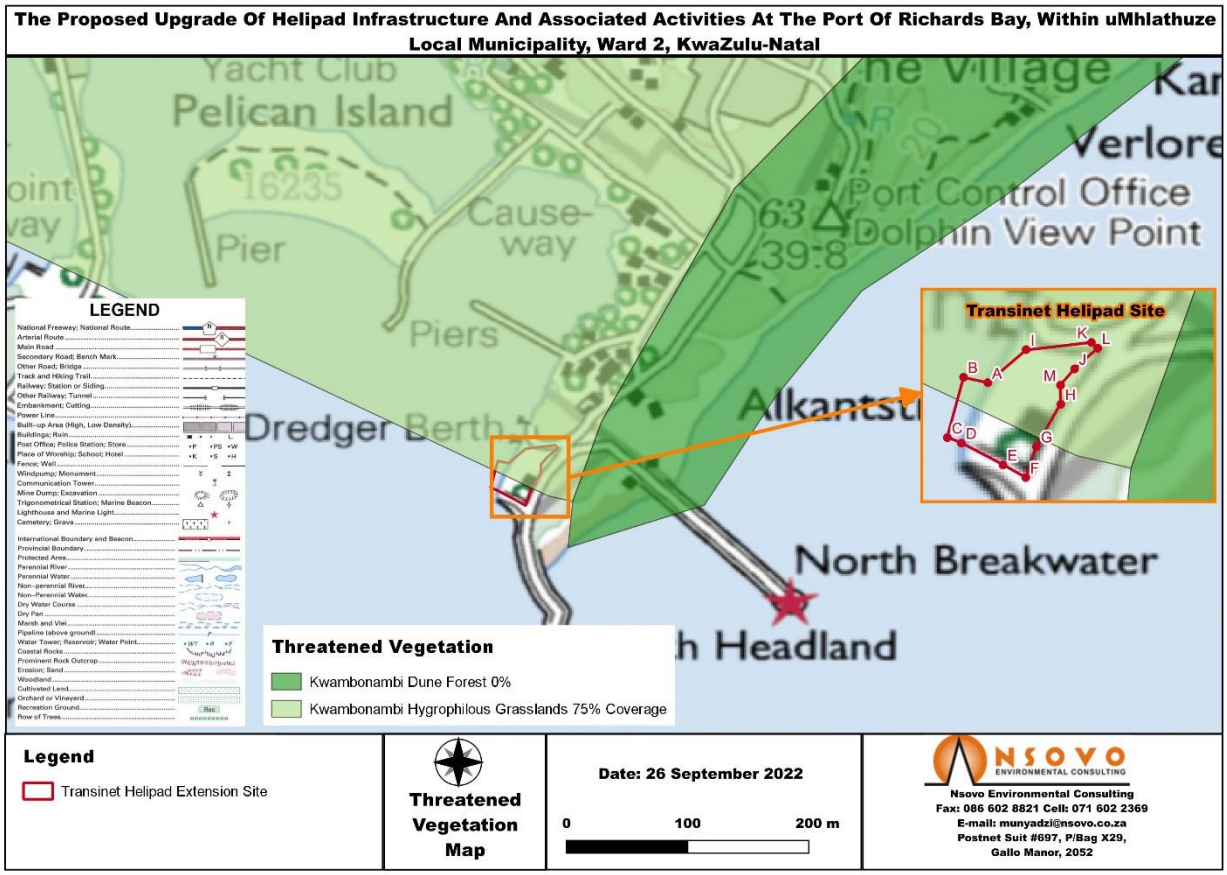


Figure 10: Biodiversity Map of the Study Area

Four biomes, namely, Forest, Indian Ocean Coastal Belt, Azonal Vegetation and Waterbodies are present within the region. The vegetation that dominates the Region are associated with the Indian Ocean Coastal Belt biomes, notably the Maputaland Coastal Belt also referred to as the Kwambonambi Grassland, which makes up ±75%. Forest vegetation makes up a much smaller (9%) and comprises mostly of Northern Coastal Forest (5%) and Swamp Forest (3%). Aquatic habitats in the form of Subtropical Freshwater Wetlands and Freshwater Lakes make up the remaining 10%.

The general vegetation across the Port of Richard Bay is dominated by alien vegetation and pioneer / primary successional vegetation species. The mangrove areas are dominated by white mangrove (*Avicennia marina*) interspersed with black mangrove (*Bruguiera gymnorrhiza*) and red mangrove (*Rhizophora mucronata*) individuals. The canopy of the trees that line the edges of the site along the harbour side are dominated by *Casuarina equisetifolia* and Acacia karroo trees. While the understory, apart from patches of alien vegetation such as Lantana camara and *Chromolaena odorata*, is predominantly indigenous and dominated by pioneer species such as Grewia occidentalis, Psydrax obovata and a number of Rhoicissus spp. There are also several vines that are well established within the more indigenous stands of thicket, these include *Secamone alpini*, *Cynanchum ellipticum*, *Sarcostemma viminale* and *Rhoicissus tomentosa* (Sivest, 2016).

The terrestrial assessment undertaken by CRUZ-E in May focused on three key areas earmarked for the proposed development, i.e., the administrative office site, the temporary relocation site and the helipad deck.

At the proposed development site, the terrestrial (including avifauna) component identified three mammals, some 15 species of birds, and a number of butterfly species were observed as present on or near the site. From a botanical perspective, the bulk of the trees, shrubs, and other plants on the site were recorded and identified. It is expected that expansion of the helipad may not significantly increase the current impact.

The temporary helipad site to be used for some 24-plus months is shown in Plate A. Plate B is a photo of the area designated for the administrative buildings and staff quarters whilst Plate C is of the proposed take-off and landing zone for the helicopters. Based on the information provided, the proposed utilization of the zones identified as shown in Plate A, and the layout of the land, no environmentally related issues are anticipated with the actual utilisation of this site.

However, a known Ornithological 'Hot Spot' exists close to the site. Figure 4, taken from Position A shown in Plate A shows the site at high tide. It is used as a feeding ground primarily by migrant waders from the Northern Hemisphere as well as a roosting site for terns and gulls. Figure 5 shows the area during low tide when the intertidal Sand Flats, where the birds feed, are exposed. This is probably the second or third most important ornithological site within the harbour and due to this, it is recommended that a 'No Fly' Zone be implemented across the area shown within the red boundary line in Plate D.

The Specialist highlighted that other than the implementation of a '**No Fly' Zone** as indicated in Plate E no environmental issues are anticipated with the temporary use of the identified site as the Heliport during the expansion of the existing facility.

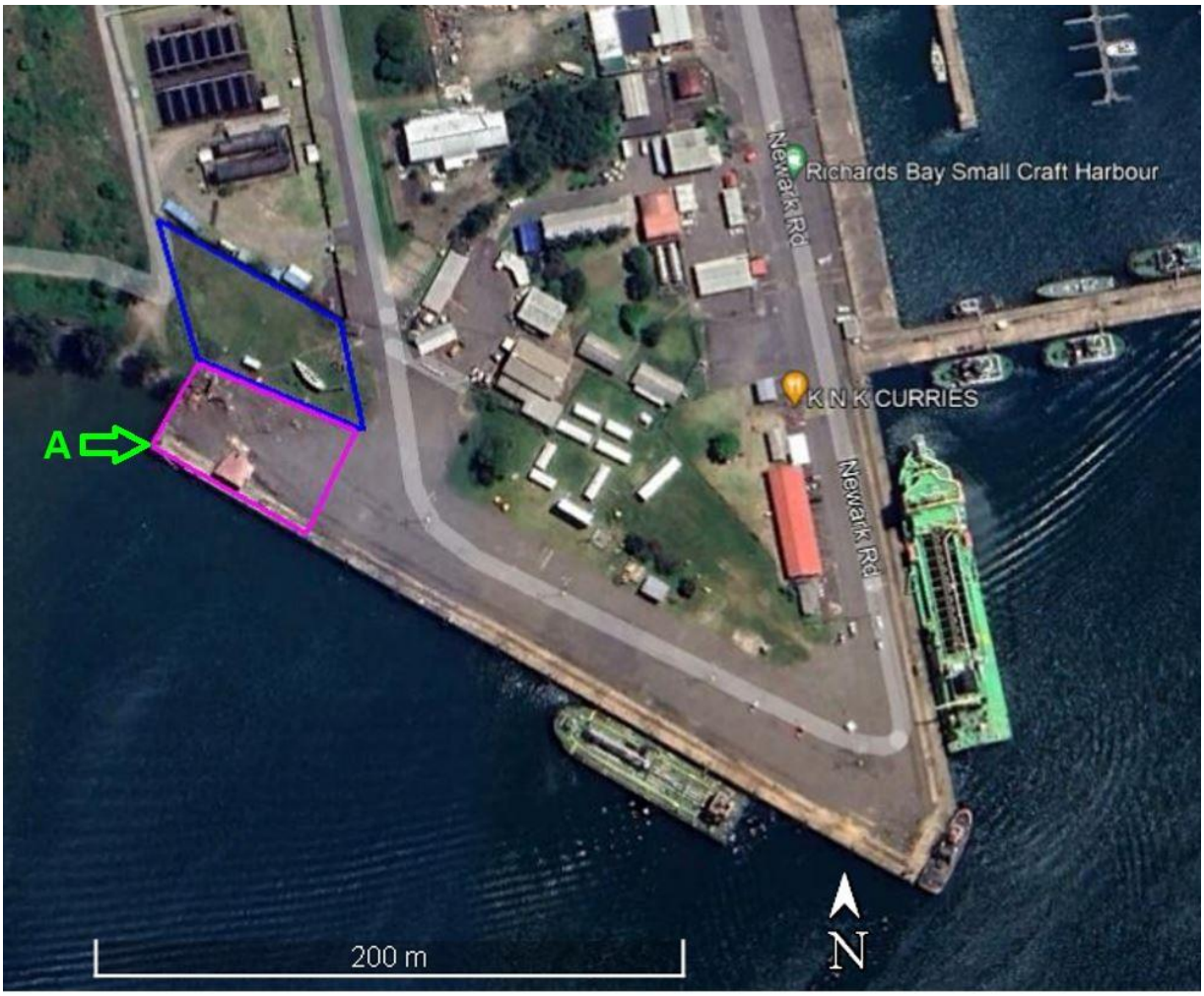


Plate A: prefabricated administrative buildings and staff quarters, Pink = Area for take-off and landing of the helicopters and **A** = Point from which Photo in Figure 4 was taken (CRUZ-E, 2022)

Plate B: Photo of the area where the administrative buildings and staff quarters will be located (CRUZ-E, 2022)

PLATE C: Photo of the area from which the helicopters will take off and land (CRUZ-E, 2022)

PLATE D: Photo taken from **Site A** shown on Figure 1 look across to the identified Ornithological 'Hot Spot'. **Note:** The photo was taken at High Tide and as such the intertidal Sand Flats are covered with water (CRUZ-E, 2022)

PLATE E: Position of the known Ornithological 'Hot Spot' in relation to the proposed Temporary Heliport site (Area bounded in Red = Recommended 'No Fly' Zone). **Note:** The photo was taken at Low Tide clearly showing the intertidal Sand Flats associated with the site (CRUZ-E, 2022) .

11.3.1 HELIPAD DECK (HELICOPTER LANDING AND TAKE-OFF PLATFORM)

The proposed new layout of the Heliport provided by Transnet (PLATE F) indicates the position of the new Landing Platform which extends over the water by some 15 m, and this will only be about 6 m from the edge of the Ports Navigation Channel. The construction of the landing platform in the proposed position will require marine pilling to be undertaken (PLATE F). In addition, it is proposed that the substrate along the shoreline will be overlain by a Fibretex layer with two Armoured layers each of different grades on top of this. Such activities have been identified as triggers as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended. The area to be affected is part of the intertidal zone of the estuarine water body.

Although the specialist recommended that a biodiversity assessment be undertaken, this recommendation has been fully addressed by referencing recent studies undertaken for the Port expansion project. The studies focussed on the Port in its entirety, and this included the intertidal zone and estuary, and the outcomes of those studies are included herein.

Subsequently, the specialist confirmed that based on the fact that the area to be impacted is relatively small it is likely that a detailed desktop assessment would provide sufficient information for the DFFE to decide.

PLATE F: Proposed layout off the new Heliport provided by Transnet (Blue = Landing Platform which extends over the water, Green [and under Blue] = area to be covered with a Fibretex layer and two Armour Layers). **Note:** Landing Platform extends over the water by 15 m and the outer extremity is only 6 m from the edge of the Navigation Channel l(CRUZ-E, 2022).

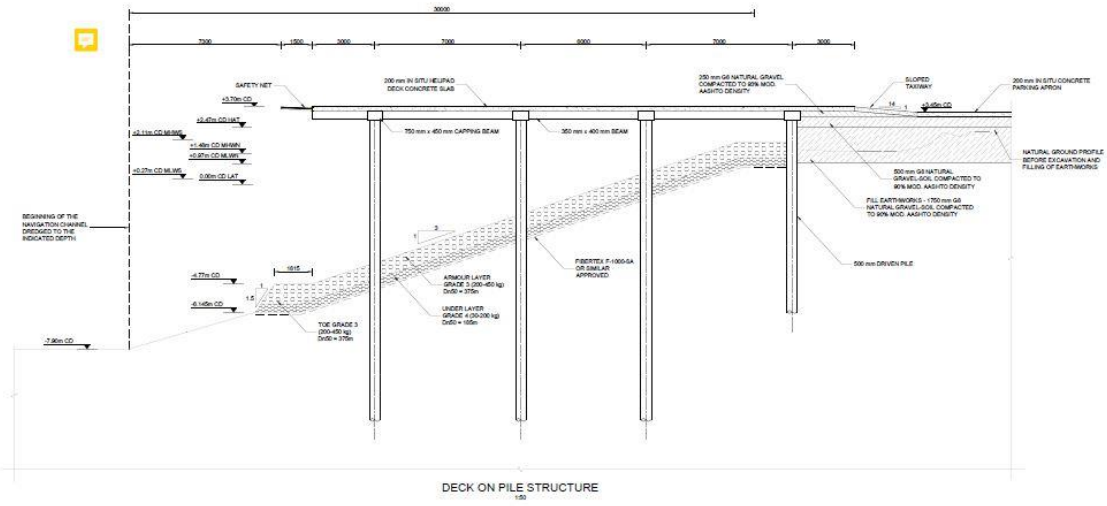


PLATE G: Diagram showing the proposed piling, fibertexing and armouring of the substrate that will be required to secure the Helicopter Landing Platform in position. **Note:** Such activities are Triggers in terms of Activities as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.

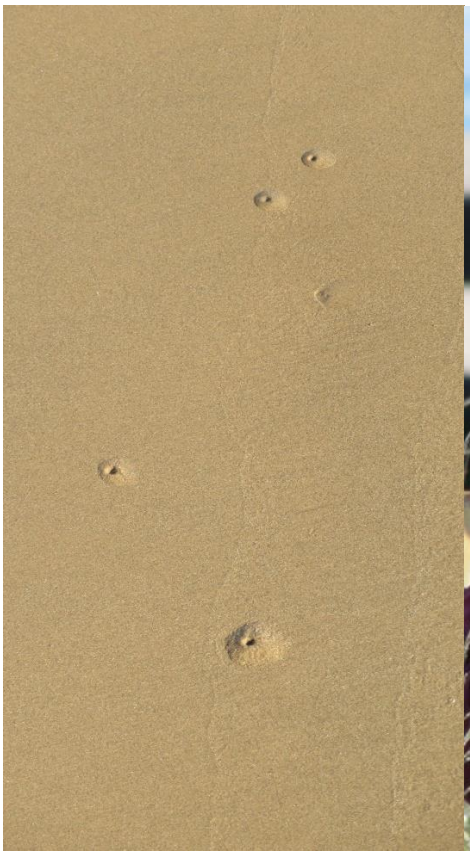


PLATE H Top two photos, Intertidal Sand Flats exposed as Low Tide approaches. Lower two photos *Callianassa* burrows exposed on the falling tide and a successful catch on the beach adjacent to the Heliport. **Note:** The latter two photos are indicative of the area being an active and functional estuarine zone (CRUZ-E, 2022).

11.4 HYDROLOGY

To inform the planning of any development, there is a need to understand the hydrology of the site and region at large. Kelbe (2010) indicates that while rainfall and evaporation are the main source and sink, the transport and storage of the water is controlled by the geology and geomorphology of the environment. The geological formations determine the characteristics of the aquifers and the hydraulic functions of the groundwater system.

The proposed site is within a Port and surrounded by an estuary. An estuary is thus defined as a partially enclosed coastal body of brackish water with one or more rivers or streams flowing into it, and with a free connection to the open sea. Accordingly, estuaries form a transition zone between river environments and maritime environments as they subject both to marine influences such as tides, waves, and the influx of saline water, and to fluvial influences such as flows of freshwater and sediment. The mixing of seawater and freshwater provides high levels of nutrients both in the water column and in sediment, making estuaries among the most productive natural habitats in the world. Figure below provides details on the streams feeding the harbour, while the hydrology map also provided below gives more insight into the hydrology of the study area.

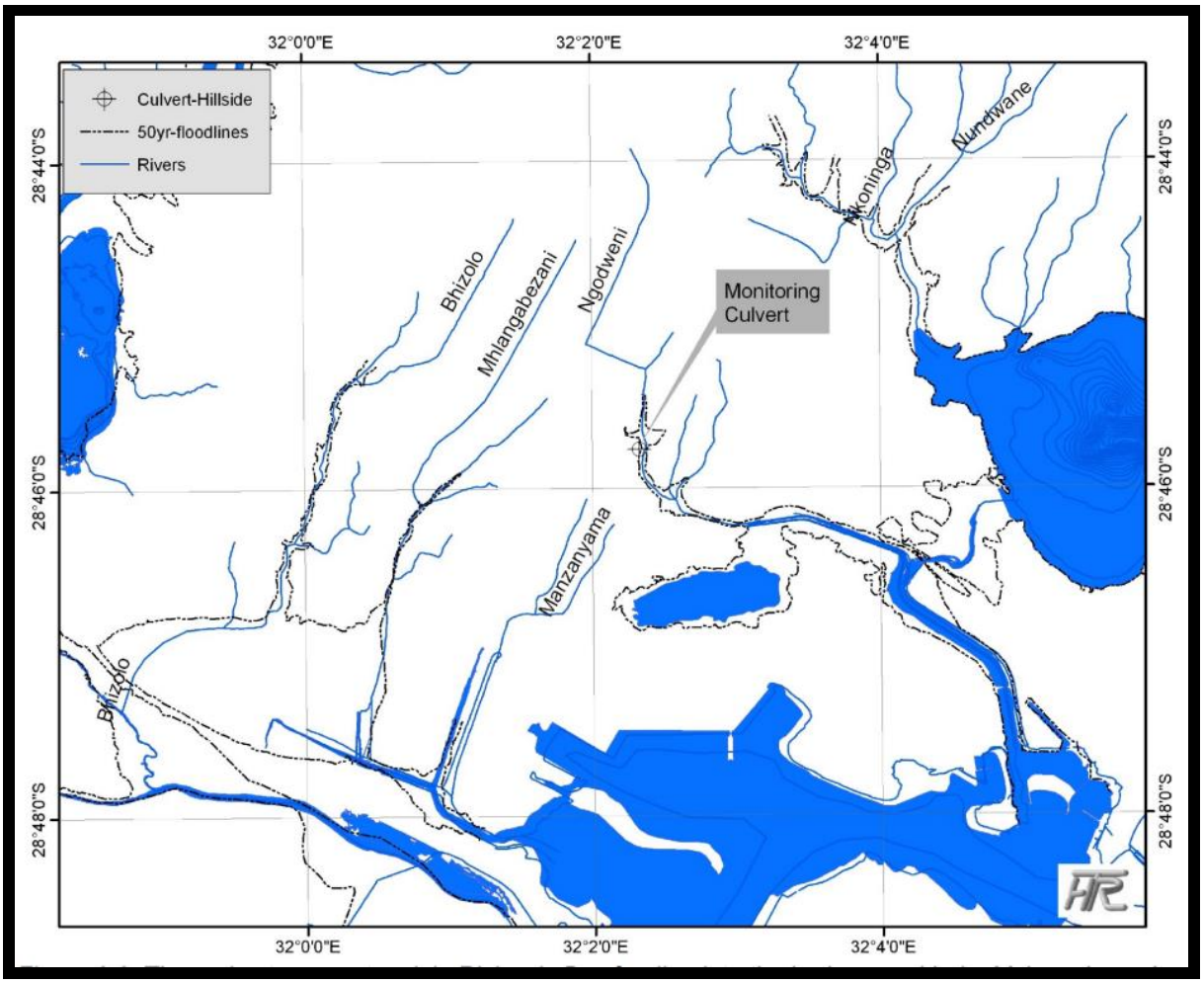


Figure 11: The main stream network in Richards Bay feeding into the harbour and Lake Mzingazi canal (Kent, 2010)

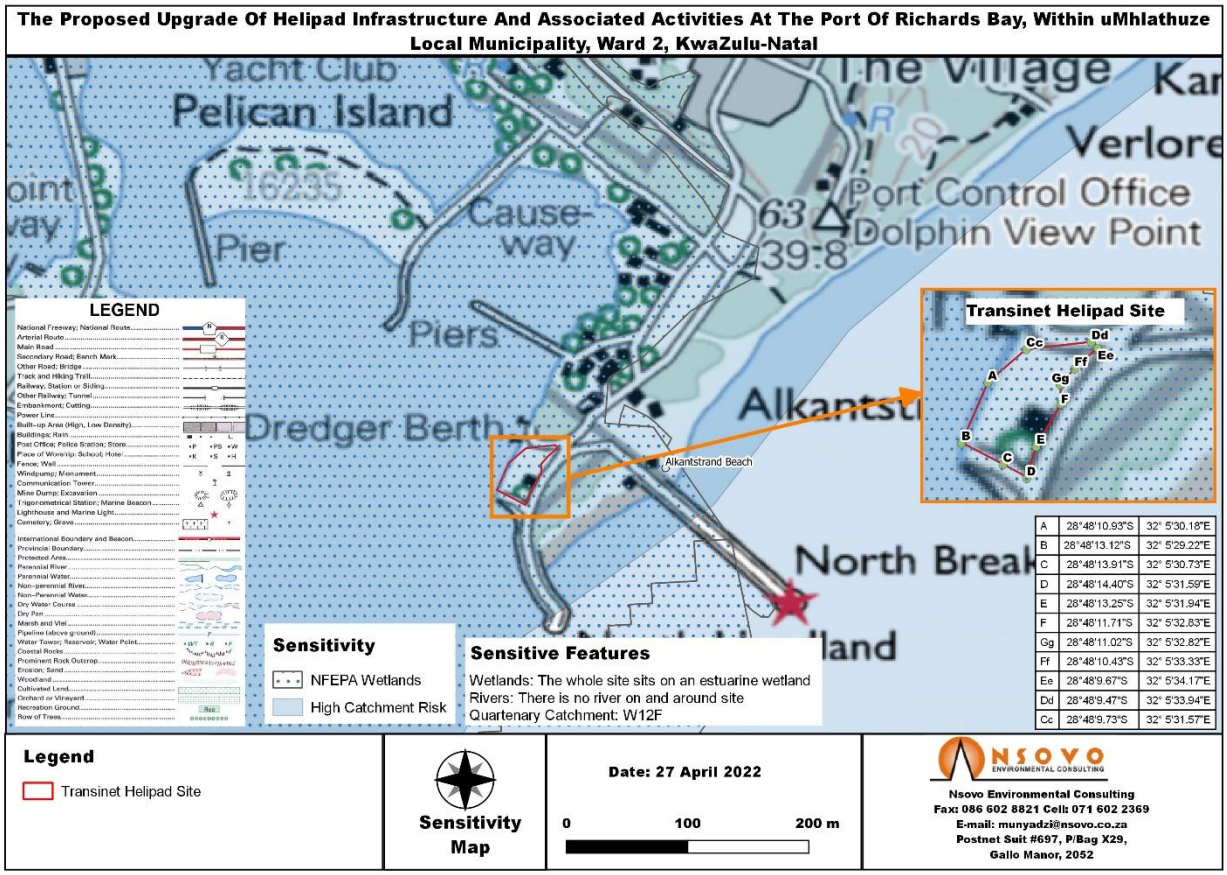


Figure 12: Hydrology Map of the Primary Study Area

The map on Figure 12 above confirms that the primary study area is located on an estuarine wetland which is also considered to be a high catchment risk area. The sensitivity and vulnerability of the site to both erosion and flooding was confirmed by the DFFE Oceans and Coast.

11.5 GEOMORPHOLOGY AND SOILS

The geomorphology of the study area has been created by fluvial systems that have formed a large flood plain that is the center of focus of much of the development in Richards Bay but has severe constraints that are limiting development. Furthermore, the geomorphological features have been formed by floods and wind, consequently any development that modifies these features could have dire consequences for flood and erosion control (Kent, 2010), ,this is also evident from the recent floods experienced in the tertiary study area in April/May 2022. It must also be noted that some of the geological formations are rich in minerals that are being mined but are prone to erosion and instability that imposes constraints on developments.

The soils of the area are very permeable and almost all rainfall infiltrates into the groundwater where it is temporarily stored before being discharged into the streams, lakes, and wetlands. Consequently, the streams are generally perennial and seldom stop flowing even in drought conditions. This creates a large underground storage reservoir that consistently sustains the coastal lakes which form the main water supply resources of the area. In addition, according to Kent (2010) any form of abstraction from this underground aquifer will reduce the flow into the surface resources and lower the water table which will impact on the terrestrial ecology. Consequently, there is a need for careful management and monitoring of the local aquifers, particularly in regard to abstraction and pollution.

The primary aquifer is 20-30 m thick with the water table at or close to the topographical surface in most areas with the exception of the dune ridges. Many parts of the study area were wetlands before the harbour development and drainage canals were constructed to control the water table in many parts of Richards Bay CBD and Industrial areas.

Accordingly, the project team indicated that the aquifer volume is calculated as a relationship between the aquifer thickness, area of the aquifer, and the porosity of the materials within the aquifer. The following equation is usually used:

VT = A*d*n

Where:

- VT is the total pore volume (m3)
- A is the areal extent of the aquifer (m2)
- d is the unsaturated thickness; and
- n is the average total porosity which equals the ratio of void spaces within a total volume of material

Subsequently to calculate VT, one would need the above parameters. At this stage of the project, the porosity (n) of the material could be estimated from the literature based on the type of material intersected below the helipad. The thickness of the unsaturated zone (d) can be obtained from the borehole information by calculating the difference between the depth of the water table and the existing ground level wherein the areal extent (A) would be the area covered by the helipad.

The project will consider the calculation of both the potential and actual (saturated zone) quantity. The latter can be calculated from the borehole information depending on the material intersected at depth i.e., shale/granite. This implies that the volume will change based on both the porosity and thickness of the materials intersected.

It is also noted that due to proximity of the site to the sea, the hydraulic conductivity would be higher, and this would also be determined by the soil type. Subsequently the estimated dewatering figures are 130 litres per day based on low hydraulic pressure at 2.5m depth, it must be noted that the pressure increases with depth.

The quantity of water to be de-watered/pumped out during excavation will be a function of the total depth of the excavation below the water table as well as the areal extent of the excavation (e.g., length X width footprint), meaning it will differ from one foundation/excavation to another. The total quantity of water will be the sum total for all the required excavations. Detailed calculation of the dewatering is provided with formulas in **Appendix C3.**

It is recommended that the requisite pump test be undertaken to determine the actual quantities before construction commences. The discharge method provided to allow for guidance must also be confirmed and method statement approved. Should permits be required, Transnet must ensure that they are in place before commencement.

11.6 AIR QUALITY AND POLLUTION

According to the study conducted by Sivest in 2018, the area incorporates various forms of commercial, light, and heavy industrial activities including coal terminals and port activities, aluminium smelters, a kraft process paper mill, a phosphoric acid fertilizer plant, a mineral refining plant and a number of smaller chemical and mechanical processors. A primary source is the materials handling i.e., load and offload at the terminals. However, there are few sources of air pollutants within the immediate proposed area. The motor vehicles along the regional roads, result in elevated ambient concentrations of particulates and Nitrogen Oxides (NO_2) at times. Based on engagement with authorities the SIA (2018) indicated that the emissions of greatest concern in the Richards Bay area are SO2 and HF, both of which are not expected to increase as a direct result of the port or the proposed development. Sources identified in the immediate vicinity of the study area and proposed development area have been listed below:

- Vehicle Exhaust Gases;
- Gaseous fumes from other transportation modes such as trains, vessels and helicopters
- PM10 as a result of Loading and Offloading Raw Materials of vessels within the port;
- Material Handling (Loading, and Tipping); and
- Other fugitive dust sources such as wind erosion of exposed areas.

Several studies addressing air quality in the Richards Bay Area, and more so within the Port have been done in recent years, and such sources have been assessed and referenced. An additional air quality study to specifically address the impact emanating from the proposed development is not expected to provide results different from what has already been identified. The current helipad facility is already included in the studies undertaken as it is part of the Port, and the proposed expansion will result in a negligible impact as the additional sources of pollution will be the additional

helicopter and the diesel refueling facility while dust is expected from the demotion and construction activities but short term. It is therefore recommended that mitigation measures be included in the EMPr.

11.7 HERITAGE AND ARCHAEOLOGY

The main aim of the heritage Impact Assessment was to evaluate potential heritage resources that may be found within the proposed development, as well as to determine if there is any hamartia that may prevent the proposed upgrade of the Helipad and associated infrastructure. Subsequently, the Phase 1 Archaeological and Cultural Heritage Impact Assessment undertaken in May 2022 for the proposed upgrade identified no significant cultural or archaeological impacts envisaged on the footprint of the proposed area. However, the specialist indicated that though there are no significant archaeological materials identified on the footprint of the proposed site; several structures scattered across the proposed area where noted. These structures are however of low significance since they are less than 60 years old and do not possess any social or aesthetic value.

Much as the primary study area is not sensitive from a heritage point of view, the further study indicated that the secondary study area, i.e., the larger City of uMhlathuze is rich in heritage resources. There are approximately a hundred and twenty-five archaeological heritage sites recorded in the wider area belonging to the Stone Age, Iron Age and Historical Period. The Stone Age is the period in human history when stone materials were used to produce tools. In South Africa, the Stone Age can be divided into three periods, Early (More than 2 million years ago - 250 000 years Ago), Middle (250 000 years ago – 25 000 years ago) and Late (25 000 years ago - AD 200). It is, however, important to note that dates only provide a broad framework for interpretation. This area is home to three known phases of the Stone Age. The Iron Age is the name given to the period of human history when metal was used to produce artifacts. In South Africa, it can be divided in two separate phases. Early (AD 400 - AD 1025) and Late (AD 1025 - AD 1830). Although there are no known Early Iron Age sites in the area, there are several Late Iron Age sites in the wider area (Bergh 1999: 7 - 8). The specialist Report is attached as **Appendix C1**.

11.8 WATER RESOURCES/ESTUARY

Richards Bay is a marine-dominated embayment with a deep wide mouth, large tidal prism, and limited freshwater input via inflowing canals (Weerts 2002; DEA 2017). Estuarine bays are the major areas along South Africa's coastline that can support open intertidal mud flats, sandbanks, and mangrove habitats. Historically, the existing Richards Bay estuary and the adjacent uMhlathuze estuary to the south were single estuarine bay. During the 1970's, the southern third of the Bay was separated off through the construction of a 4km long berm (Begg 1978; City of uMhlathuze 2010; DEA 2017) and set aside for formal conservation purposes allowing port development to continue in the bay in isolation from what became known as "The Sanctuary" area.

The classification as an estuarine bay remains (Whitfield 2000; Whitfield & Baliwe 2013), although a large open connection with the sea is now maintained by breakwaters. It is one of two estuarine bays in KwaZulu- Natal and only three in South Africa (together with Durban Bay and Knysna). Richards Bay is therefore significant in terms of its zonal type of rarity at a local, regional, and national scale, despite significant habitat loss and modification as a result of ongoing harbour development (Turpie & Clark 2007; City of uMhlathuze 2010; DEA 2017).

Since 1976 the Port of Richards Bay has become South Africa's most modern and largest cargo handling port. Historical data suggest that the bay continues to function as an estuary of high biodiversity value supporting intertidal and shallow subtidal mudflats and sandbanks, deep water basins and channels, reed and mangrove swamps alongside traditional port infrastructure. The bay continues to support representative examples of almost all estuarine habitats found in South Africa's subtropical estuaries are (Vivier & Cyrus 2009a; Forbes, Demetriades & Cyrus 1996; Weerts 2002).

The site assessment undertaken as part of the Basic Assessment identified from an aquatic perspective, three small Ephemeral pans with a seep line extending down towards the bay and species associated with them were recorded.

11.9 BIODIVERSITY

Estuarine bays are the major areas along South Africa's coastline that can support open intertidal mud flats, sandbanks, and mangrove habitats. Although these habitats are relatively small features, they typically support a high diversity and biomass of invertebrate fauna as well as high primary productivity in terms of benthic microalgae. These provide the basis of productivity at higher tropic levels that add to the biodiversity in the estuary.

11.9.1 MANGROVES

According to Marine and Estuarine Research (May 2013) Mangroves only occur in South Africa in estuaries that are a sheltered marine environment. The mangrove species that occur with the Richards Bay and Mhlathuze estuaries are the white mangrove *Avicennia marina*, the black mangrove *Bruguiera gymnorrhiza* and the red mangrove *Rhizophora mucronata.* The distribution and abundance of mangroves has changed significantly since construction of the port started in 1970 with major removal in the western area of the port, and subsequent (re)colonization of some areas (MER 2013). The largest individual *B. gymnorrhiza* and *R. mucronata* were found in the port at the 54ha eChwebeni Reserve Heritage Site adjacent to the coal terminal – a remnant mangrove forest that may be the oldest known in Africa (Rajkaran & Adams 2011; van Niekerk & Turpie 2012).

Mangrove habitats consist of more than just trees; the fauna associated with mangroves, particularly the invertebrates, is richer in mature stands which are characterised by large trees. The broader significance of the mangrove habitat is

therefore linked to mature stands such as those within the eChwebeni Reserve Heritage Site. In addition to the true mangrove species already mentioned, the fern *Acrostichum aureum*, and tree Hibiscus tiliaceus are mangrove-associates that do occur within and on the landward margin of the mangroves.

11.9.2 SALT MARSH

Salt marsh communities in Richards Bay previously supported *Sarcocornia natalensis, Juncus kraussii, Sporobolus virginicus, Paspalum vaginatum* and herbs such as *Apium graveolens,* as well as *Salicornia pachystachya*. Surveys undertaken in 1998 indicated that salt marsh habitat was reported to be on a trajectory of decline. This vegetation type is however, not found within the proposed study area.

11.9.3 SWAMP FOREST

Swamp forests dominated by *Barringtonia racemosa*, *Hibiscus tiliaceus* and *Ficus trichopoda* occur in small dense stands along rivers, drainage channels, and the upper portions of the bay. Urban development in the bay and surrounding environment has severely impacted on these communities.

In the Richards Bay area, the swamp forest *Barringtonia racemosa - Ficus tricopoda* community which forms small dense stands along rivers, drainage channels, Lake Mzingazi and the upper portions of the estuary. This community is severely impacted by urban development in the Richards Bay and surrounding area. Some human settlements that have been developed on the borders of the small remaining stands of this community resulting in a decrease in the swamp forest area (Burger 2008). Slash and burn cultivation, which has increased the size of canopy gaps allowing invasion by other woody species has also had an impact.

Both the mangroves and the swamp forest communities, which occur within and around the Richards Bay estuary, are individually recognised as sensitive floral communities of conservation significance. Twenty-six national forest types occur in South Africa, including three azonal types that occur in small or linear locations, like riverine forests and mangrove forests. There are a variety of threats to the forests, causing loss or deterioration of forest habitats and consequently loss of biodiversity as well. Some forest types and forest patches are under greater threat than others. During the past century, the forests near the coast (such as KwaZulu-Natal Swamp Forest and Coastal Forest) have been under severe pressure due to the expansion of farmland and development. This pressure, both from legal and illegal developments, is the cause for great concern from a forest conservation perspective. This vegetation type is however, not found within the proposed study area.

11.10 MARINE ECOLOGY

The original Richards Bay Estuary was divided into two distinct sections by means of a 4km berm wall to form the harbor area and the sanctuary area; and the Mhlathuze River was canalized, diverting the natural flow into the sanctuary estuary. These two estuarine entities still remain as an ecological unit, and it has strong ecological linkages with the floodplain (DAERD, 2011). There are a number of sensitive habitats within the Port of Richards Bay (CSIR 1996 in ACER (Africa) 2008), namely:

- Subtidal Mud flats;
- Sand flats;
- Freshwater environment;
- Mangroves;
- Reed swamps; and
- Undeveloped terrestrial; habitats.

Sensitive Habitats within the Port of Richards Bay area north of the area identified as post-harbour mangroves (dark blue) and separated from the mudflats (brown) by the sandpit.

11.11 SENSORY ASPECTS

11.11.1 NOISE

In terms of the Noise Regulations a noise disturbance is created when the prevailing ambient noise level is exceeded by 7.0dBA or more. Noise is part of our daily exposure to different sources which is part of daily living and some of these physical attributes which may at times be part of the ambient levels that people get used to without noticing the higher levels. Two aspects are important when considering potential impacts of a project:

- The increase in the noise levels; and
- The overall noise levels which will be created by the rail yard activities.

There will be an upwards shift in the immediate environmental noise levels during the construction phase on a temporary basis and a more permanent basis during the operational phase in the vicinity expansion activities. The noise increase will be experienced at the primary study; however, it is not expected to exceed the prevailing ambient noise levels during the construction, operational and decommissioning phases as it will be below the threshold value of 7.0dBA.

11.11.2 VISUAL ASPECTS

Visual appreciation or dislike is subjective and thus what is aesthetically pleasing to some can be displeasing to others. The visual analysis of a landscape the impact of new developments and structures tends to be complicated, and it is evident from previous experience that when dealing with reaction to landscape changes, a large diversity of opinion

exists. In this regard, it is imperative that the applicant be sensitive from a visual impact perspective to the requirements of the local people, notably the fishing and other recreational communities. The proposed development will serve the same purpose that the current on is serving, just at an improved capacity and with improved aesthetics.

As indicated above the study area is primarily industrial, however, it is expected that the identified sensitive receptors (recreation guest) may be impacted during the construction phase. Industrial activities are the key land uses and contributes significantly to the visual degradation of parts of the study area. Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource and value it differently. They will be affected because of alterations to their views due to the construction phase of the proposed development.

The visual receptors in this study are:

- Port Users;
- Visitors at the recreational facilities; and
- Motorists.

The primary study area is industrial. Therefore, the population include Port employees who work both day and night shift as well as guest to the recreation and fishing establishments. Population density within the primary study area is low, moderate in the farming/village communities and higher population in the towns. The people using the recreational facilities may experience a low degree of visual intrusion particularly during construction, while the operational phase will result in a more aesthetically pleasing facility compared to the current. The primary study area is considered to have a low tourism potential, mostly because its predominantly industrial. This is contrary to the secondary and tertiary study areas that are tourism-rich and active. However, the proposed development will not have an impact on the secondary and tertiary study areas as they are far removed from the site.

12 THE METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES;

The assessment of impacts is based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment will consider impacts arising from the proposed activities of the development both before and after the implementation of appropriate mitigation measures. The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity) and probability. From these criteria, a significance rating is obtained, the method and formula is described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in the Table 16 below will be used to conduct the impact assessment. The nature of each impact will be assessed and described in relation to the extent, duration, intensity, significance and probability of occurrence attached to it.

Table 16: Methodology used in determining the significance of potential environmental impacts

Status of Impact

The impacts are assessed as either having a:

negative effect (i.e., at a `cost' to the environment),

positive effect (i.e., a `benefit' to the environment), or

Neutral effect on the environment.

Extent of the Impact

(**1**) Site (site only),

(**2**) Local (site boundary and immediate surrounds),

(**3**) Regional (within the City of Johannesburg),

(**4**) National, or

(**5**) International.

Duration of the Impact

The length that the impact will last for is described as either:

(**1**) immediate (<1 year)

(**2**) short term (1-5 years),

(**3**) medium term (5-15 years),

(**4**) long term (ceases after the operational life span of the project),

(**5**) Permanent.

Magnitude of the Impact

The intensity or severity of the impacts is indicated as either:

(**0**) none,

(**2**) Minor,

(**4**) Low,

(**6**) Moderate (environmental functions altered but continue),

(**8**) High (environmental functions temporarily cease), or

(**10**) Very high / Unsure (environmental functions permanently cease).

Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

(**0**) None (the impact will not occur),

(**1**) improbable (probability very low due to design or experience)

(**2**) low probability (unlikely to occur),

(**3**) medium probability (distinct probability that the impact will occur),

(**4**) high probability (most likely to occur), or

(5) Definite.

Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating 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 ratings are given below

(**<30**) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),

(**30-60**) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(**>60**) high (i.e., where the impact must have an influence on the decision process to develop in the area).

13 DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section describes the potential impacts that the proposed development may pose on the receiving environment. Impacts associated with the relevant environmental components within the study area as identified, have been assessed based on the consultant's opinion in consideration of the site and previous experience on similar undertakings as well as consideration of specialist studies undertaken.

13.1 SUMMARY POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED

Potential environmental impacts are described in Table 17below. This is not an exhaustive list but insight into the potential impacts associated with the proposed development. It must be noted that more potential impacts may be identified during the conclusion of public participation and any such impacts will be assessed in more detail.

Table 17: Potential Environmental Impact Identified

Issue	Nature	Description
Employment	Positive-No mitigation required	The proposed development will result in opportunities for the skilled and semi-skilled personnel in the local community during the construction as well as operational phases. This impact will be positive and provincial in extent.
Air Pollution	Neutral	Potential air pollutant during the construction of the following activities would include an increase in nuisance dust fall rates: • Site establishment of construction phase facilities; • Stripping and stockpiling of soil resources and earthworks; • Collection, storage, and removal of construction related waste; • Construction of all infrastructure required for the operations; and • Operation of mechanical equipment. Given the nature and magnitude of the proposed development, it is anticipated that the impact will be local in extent and short term before mitigation. Mitigation measures such as dust suppression can reduce the impact to become site specific.

Issue	Nature	Description
Terrestrial Biodiversity	Negative	Potential negative impacts on terrestrial biodiversity that may be expected during the construction phase include: • Loss of vegetation although minimal; and • Loss of ecological processes associated with the loss of vegetation.
Freshwater Biodiversity	Negative	The negative impacts associated with the proposed development include: • A loss of ecological processes associated with the loss of intact vegetation will occur, however there are few ecologically important species, and no species of conservation concern are present on the site. • There will be an almost total loss of habitat for both terrestrial fauna and avifauna from the site during the duration of the project. • A total loss current non-perennial freshwater habitat on the site, although the aquatic (freshwater) biodiversity assessment indicated that their area of habitat is extremely small, is only present due to the undulating nature of the site when it was levelled and that only three species (all of which are common) are present.
Visual Impact	Negative	The visual impact of an object in the landscape decreases quickly as the distance between the observer and the object increases. The visual impact at 1km is a quarter of the impact viewed from 500m; and the visual impact at 2km is one eighth of the impact viewed from 500m. Therefore, objects appear insignificant in any landscape beyond 5km. The visibility of the proposed infrastructure would be a function of several factors, including landform, vegetation, views and visibility, genius loci (or sense of place), visual quality, existing and future land use, landscape character and scale.

Issue	Nature	Description
		Local variations in topography and man-made structures could cause local obstruction of views in certain parts of the view shed. The visual impact will be medium to low during construction. During the operational phase it may be neutral positive low because the helipad has been existing in that location and the proposed development aims to improve the infrastructure, which may make it more aesthetically pleasing to some viewers for the duration of its operational phase. This could be considered in some way as a positive visual impact.
Marine Biodiversity	Negative	The negative impacts associated with the proposed development include: • An increased risk of changes to the turbidity regime which would result in concomitant impacts to the biotic environment, in particular benthic invertebrates and fish and increased contamination by heavy metals. • Dredging would create an impact through an increase in turbidity as well as a possible disturbance in the flow dynamics of the area. • The overall result of the loss of these ecological functions would translate to downgraded water quality in the harbour, with increased risk of a trajectory towards eutrophication (CSIR, 2008).
Noise and vibration	Negative	In South Africa, the assessment of noise levels in the environment is governed by the South African Bureau of Standards (SABS) Noise Standard 0103 – 'The measurement and rating of environmental noise with respect to annoyance and to speech communication' (SABS 1994). Additional SABS standards cover the measurement of noise over different distances from the source (SABS 0357 – 'The calculation of sound propagation by the Concave method'), and standards for different sectors (e.g., industry).

Issue	Nature	Description
		• The proposed development will increase the noise within the study area due to an increase in the number of helicopters. The parties to be affected are within the primary and secondary study areas and particularly those residing in the residential areas close to the small craft harbour and the marine organisms in the Port. • Noise generated during construction activities will include (e.g., earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, drilling, grinding etc.,). • Foraging seabirds and cetaceans are expected to avoid the sound source should it reach levels sufficient to cause discomfort. As a precautionary measure, mobile equipment, vehicles, and power generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is 'insignificant.'
Waste	Negative	Naturally, the inhabitation of the land will result in the accumulation of various forms of waste in the area. The aesthetic value of the area would decrease if such waste were not collected and disposed of appropriately. Waste material will be generated during the decommissioning and construction phase. Such waste may accumulate from the workers campsite or from litter left around the work area by the construction staff. Other waste substances may accumulate from cement bags amongst other construction material. The impact of waste is definite and will last for the duration of the construction phase as well as the operational phase, although reduced.

Issue	Nature	Description
		South Africa has laws against littering, both on land and in the coastal zone; however, these laws are seldom rigorously enforced. Objects which are particularly detrimental to marine fauna include plastic bags and bottles, pieces of rope and small plastic particles. Large numbers of marine organisms are killed or injured daily by becoming entangled in debris or because of the ingestion of small plastic particles (Wallace 1985, Gregory 2009, Wright et al. 2013). If allowed to enter the ocean, solid waste may be transported by currents for long distances out to sea and around the coast. Thus, unlike fuel or sewage contamination, the extent of the damage caused by solid waste is potentially large. The impact of floating or submerged solid materials on marine life (especially seabirds, cetaceans, and fish) can be lethal and can affect rare and endangered species. The problem of litter entering the marine environment has escalated dramatically in recent decades, with an ever-increasing proportion of litter consisting of non-biodegradable plastic materials. To reduce this, all domestic and general waste generated must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that construction waste is managed. Staff must be regularly reminded about the detrimental impacts of pollution on marine species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented. This impact is rated as 'medium' without mitigation and is reduced to 'low' by implementing the actions outlined Soil Erosion Negative movement of heavy machinery across the land as well as vegetation clearance may cause destabilisation of soils which then become susceptible to erosion. Continuous movement of vehicles over the land during the construction phase may leave it susceptible to erosion.

Issue	Nature	Description
Soil	Negative	The proposed development is anticipated to contribute to loss of topsoil as a result of erosion and contamination of soil by dust and hydrocarbons due to excavation activities. Soil compaction caused by heavy vehicles and machinery is also anticipated to have a negative impact on the soil, which may also exacerbate erosion.
Heritage	Neutral	The Phase I Archaeological and Cultural-Heritage Impact Assessment study for the proposed development has revealed that there are no archaeological or site of historical significance within the footprint of the proposed development. The specialist further highlighted that several structures scarred across the proposed area where noted. These structures are however of low significance since they are less than 60 years old and does not possess any social or aesthetic value.
Hazardous substances	Negative	The risk of spillage of a variety of hazardous substances may occur during the use of heavy machinery, construction vehicles and construction vessels. For example, spillage may occur because of fuel leaks, refueling, or collision. Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the marine environment. This impact can be mitigated successfully if the contractor implements a rigorous environmental management and control plan to limit ecological risks from accidents. All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the marine environment is prohibited, while accidental spillage must be prevented, contained, and reported immediately. After mitigation, the impact of accidental spillage is 'very low.'
Social Impact Assessment	Neutral	The following impacts can be expected during construction: • It is likely that there will be an increase in the number of vehicles making use of public roads, in particular heavy-duty vehicles.

Issue	Nature	Description
		• The increase in heavy duty vehicles will place increased pressure on the existing road infrastructure. If not suitably dealt with damage to the road infrastructure may reduce overall road safety for all road users in the area. • An increase in criminal activity is often associated with large developments and/or projects where there is likely to be an in-migration of construction workers, job seekers and criminal opportunists. During construction, diverse services will be required which can be fulfilled by local service providers. Examples of such services include security, fencing, accommodation, earth moving, refuse removal, transport, etc. The appointment of local service providers will lead to further employment for the local population and, thus, put a greater amount of money into the local economy
Surface and Groundwater Pollution	Neutral	The impact on water quality, if any, could be sedimentation, decrease in quality and contamination of surface water and groundwater. This could result from fuel spillages, sewer systems, liquid waste, etc. An increased volume of storm water runoff, peak discharges, and frequency and severity of flooding is therefore often characteristic of transformed catchment. In addition, ground water will be removed during the construction of the helipad. The impact on water is site specific but can be local or regional if proper measures are not put in place. Stormwater management plan must be prepared and implemented. This proposed development site is situated within a marine environment. Water that may be found during excavations is expected to be marine/salt water and therefore no impacts to fresh water resources is expected. Based on the above, with the information currently at hand, no approvals required from the Department of Water and Sanitation has been identified and written confirmation to this effect is awaited.

Issue	Nature	Description
Alien Invasive Plants	Negative	The introduction of seed on-site through building materials and construction vehicles can impact hydrology by reducing the quantity of water entering the sea and outcompete natural vegetation, decreasing the natural biodiversity.
Traffic	Negative	During the construction phase, increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further, unmanaged construction vehicles may decrease road safety for other road users. The uncontrolled movement of construction vehicles may result in disproportionate impacts on the environment through vegetation and habitat destruction.
Climate Change	Negative	The proposed site falls within a high coastal vulnerability risk for estuary flooding and erosion risk. The possible climate change risk may not be prevalent during the construction phase; however, this risk remains a possibility in the long term, i.e., during the operational phase and the possible impacts will be significant. With mitigation measures in place as proposed the risk would be medium -low in significance for the operational phase.

The following section presents the impacts and the significance as rated by the specialists as well as the EAP. The Tables below highlight the significance of the identified impacts for both the construction and operational phases of the proposed development.

The ratings are assessed with and without mitigation and color coded as follows to indicate the significance:

High	**>60**
Medium	**>30 - 60**
Low	**<30**

13.2 A SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES;

13.2.1 IMPACTS ON ECOLOGICAL ENVIRONMENT

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern during the construction phase.							
Construction Closure Phase							
Flora	No	Negative	3 (Local)	2 (Medium term)	4 (Low)	5 (Definite)	45 (Medium)
	Yes	Negative	1 (Local)	1 (Short term)	4 (Low)	5 (Definite)	30 (Low)
Loss of ecological processes associated with the loss of intact vegetation, ecologically important species, and species of conservation concern.							
Construction Phase							
	No	Negative	2 (Local)	2 (Medium term)	4(Low)	5 (Definite)	40 (Medium)
	Yes	Negative	2 (Local)	1 (Short term)	2 (Minor)	5 (Definite)	25 (Low)
Mitigation Measures							
• Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation type of the affected area (ensure to keep top soil separate). • Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and • Rubble and waste are not to be dumped in natural areas							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Loss of vegetation, including intact vegetation, ecologically important species, and species of conservation concern during the construction phase.							
Construction Closure Phase							
Flora	No	Negative	3 (Local)	2 (Medium term)	4 (Low)	5 (Definite)	45 (Medium)
	Yes	Negative	1 (Local)	1 (Short term)	4 (Low)	5 (Definite)	30 (Low)
Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern.							
Construction Phase							
	No	Negative	2 (Local)	2 (Medium term)	4(Low)	5 (Definite)	40 (Medium)
	Yes	Negative	2 (Local)	1 (Short term)	2 (Minor)	5 (Definite)	25 (Low)
Mitigation Measures							
• Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation type of the affected area (ensure to keep top soil separate). • Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and • Rubble and waste is not to be dumped in natural areas							

13.2.2 IMPACT ON ESTUARY

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Construction Phase							
• All three options proposed would result in the mobilisation of sediment and suspended solids into the water column during driving of piles and sheet piles. • Driving the piles and sheet piles into the sediment will generate noise that will possibly disturb fish and marine mammals. • Construction activities must however be carefully planned so as to minimise the duration of pile- and sheet-driving. • Loss of natural inter- and subtidal habitat caused by the construction of the foundation of the helipad. • Impairment of water quality caused by spills and leaks of hydrocarbons from vehicles and machinery working in close proximity to the estuary.						
	No	Negative	2 (Local)	2(Immediate)	4 (Low)	4 (Medium probable)	32 (Medium)
	Yes	Negative	2 (Local)	2 (Immediate)	4 (Low)	3 (Medium probable)	24 (Low)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Mitigation Measures							
• If possible, schedule works when tides, currents and waves will be most favourable for minimising disturbance and spread of sediments and disturbed materials. • Construction activities must however be carefully planned so as to minimise the duration of pile- and sheet-driving. • An emergency spill response plan must be provided and approved in case of spills (or accidents that may cause spills) of fuel or oil or other contaminants from equipment/machinery onto land or into the estuary; • All machinery should be readily serviced and inspected for leaks. Machinery needing repairs should not be used for construction at the site until repaired and fully operational; • Any work or maintenance on the machinery should be done far away from the watercourse, preferably in a work yard or on a concrete surface; • Refueling of the machinery must take place away from the watercourse and on a concrete surface to prevent seepage						
Operational Phase							
• The location of the helipad within the estuary poses a risk to water quality in the event of spills of hydrocarbons (fuel and oil) during refueling or routine maintenance or due to wash-off of residues from the deck into the estuary. • Increased noise levels that will affect the fish and marine mammals							
	No	Negative	2 (Local)	2 (Long term)	4(Low)	4 (High)	32 (Medium)
Mitigation Measures							
• Drainage from the helipad must include fuel and oil separators to prevent spills or runoff of hydrocarbons into the estuary; and • An emergency spill response plan must be provided and approved in case of spills (or accidents that may cause spills) of fuel or oil or other contaminants into the estuary. • Review take-off and landing procedures with a view to minimising the proximity of the helicopter to the water surface.							

13.2.3 MARINE BIODIVERSITY

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
All three options proposed would result in impacts on the intertidal environment of the site. It is highly likely that the entire area under the helipad platform will be permanently lost.							
The Anchoring of the hanger apron would result in localised increases in turbidity and habitat loss during the construction.							
	No	Negative	2 (Local)	1(Immediate)	4 (Low)	5 (Definite)	40 (Medium)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
	Yes	Negative	2 (Local)	1 (Immediate)	4 (Low)	5 (Definite)	35 (Medium)
Habitat loss due to dredging							
	No	Negative	2 (Local)	2 (Long term)	4(Low)	4 (High)	32 (Medium)
Mitigation Measures							
• The dredging management plan must be implemented • Immediate rehabilitation of any areas disturbed as a result of construction activities. • Use the least-impact techniques such as the clamshell dredger							

13.2.4 IMPACT ON WATER AND SEDIMENTS QUALITY

Issue	Corrective measures	Impact rating criteria					
		Nature	Extent	Duration	Magnitude	Probability	Significance
The construction of the helipad would require the use of heavy plant and potentially hazardous substances such as concrete. These activities therefore pose a risk to water and sediment quality.							
	No	Negative	2 (Local)	2(Immediate term)	4 (Low)	4(High)	32 (Medium)
	Yes	Negative	1 (Site)	1(Immediate term)	4 (Low)	3 (Medium)	18 (Low)
Mitigation Measures							
• A spill contingency plan must be developed to ensure that best practice remediation is immediately affected in the event of an incident. • The components of the deck should be pre-cast and floated to the proposed site for positioning. This would avoid unnecessary risks associated with handling hazardous substances at the proposed site • Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation type of the affected area (ensure to keep top soil separate).							

13.2.5 IMPACT ON HERITAGE

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
No archaeological sites, burial grounds or isolated artefacts were identified on site. However, it must be noted that these may be found underground, although highly unlikely.							
Construction Phase							
	No	Negative	1(Site)	2(Short term)	4 (Low)	2(Low)	14 (Low)
	Yes	Negative	1 (Site)	2(Short term)	2 (Minor)	1 (Improbable)	5 (Low)
Mitigation Measures							
• Should any archaeological material be unearthed accidentally during construction (e.g., excavation), SAHRA or a professional archaeologist must be informed immediately and construction activities be stopped within a radius of at least 10m of such indicator. • The afore-mentioned area should then be demarcated by a danger tape. • The Environmental officer and the contractor must protect the site from publicity (i.e., media) until a mutual agreement is reached. • If human remains are encountered, the South African Police Services must be notified immediately. • Before construction commences, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The preconstruction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction: • Flaked stone tools, bone tools and loose pieces of flaked stone; • Ash and charcoal; • Bones and shell fragments; • Artefacts (e.g., beads or hearths); and • Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling							

13.2.6 NOISE IMPACTS

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise will be generated by the demolition and construction activities (e.g., earthmoving vehicles, service vehicles, generators drilling etc.). It is expected that this noise may have an impact on marine organisms, however, it is expected that the noise levels will be of low significance with proper mitigation. Furthermore, only one helicopter will be added to the two that are already operating, it is not expected that the increase in noise will exceed the requirements. Therefore, with and without mitigation, during both the construction and operational phases, the noise impact is expected to be low and manageable, particularly considering the industrial nature of the site.							
Noise	No	Positive	2(Local)	1 (Local)	4 (Low)	3 (Medium)	21 (Low)
	Yes	Negative	2 (Local)	1 (Immediate)	2 (Minor)	2 (Low)	10 (Low)
Mitigation Measures							
• Ensure that all construction equipment is well serviced as per the manufacturer's manual throughout the construction phase. • The requirements of the Noise Control Regulations of 20 November 1998 must be adhered to.							

13.2.7 SOCIAL IMPACTS

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• Influx of people cause a disturbance in the existing social order							
Construction and Operational Phases							
Influx of people	No	Negative	3 (Regional)	4 (Long term)	6 (Moderate)	4 (high)	52 (High)
	Yes	Negative	1 (Site)	4 (Long term)	4 (Low)	3 (Medium)	27 (Low)
Mitigation Measures							
• Initiating the education campaign among the local community (in partnership with the community members already active in the area) focusing on alcohol abuse, drug abuse, HIV/AIDS, Sexually Transmitted Diseases etc. prior the start of construction and maintaining these throughout the project's duration.							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• The applicant and the contractor should implement an HIV/AIDS awareness programme for all workers at the outset of the construction phase. • Arrangements must be made to enable workers from outside the area to return home over the weekends/at regular intervals. This would reduce the risk posed by non-local construction workers to local family structures and social networks. • Make condoms freely available to employees and all contractor workers. • Introduce alcohol testing on a daily basis for construction workers. • Developing a Code of Conduct for all employees related to the project, which includes no tolerance of activities such as alcohol and drug abuse. • Recruitment should be done following a transparent approach and adequately communicated in the area to limit the chances of people staying for longer period in hope of finding a job.							
Employment opportunities and skills Development.							
Construction and Operational Phase							
	No	Positive	3	2	8	4	52 (Medium)
	No	N/A	N/A	N/A	N/A	N/A	N/A
Mitigation Measures							
• Implement a 'locals first' policy with regard to labour needs. This can be incorporated into a Workforce Recruitment Policy. The Workforce Recruitment Policy should include: o A clear definition of who is considered to be local residents; known as the Project Affected People (PAP). The purpose of demarcating the PAP is to develop a criterion of characteristics considered to identify a given job seeker as a PAP. Once this criterion is known; all subsequent job seekers can be screened against it in order to determine whether they receive preference for employment. o A database of local residents and their relevant skills and experience; o The selection criteria for allocating jobs; o Reserve employment, where practically possible, for local residents; and o Should be contractually binding. • Where possible, subcontract to local construction companies. • Consultation with local authorities is essential so as to manage job creation expectations and ensure that all eligible workers in the primary study area are informed of the opportunities. • Contracts ensuring that on the-job training is included and enforced as a condition for the development of this project.							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
• To improve the chances of skills development during the construction phase, contractors are encouraged to provide learnerships and encourage further knowledge sharing. • To ensure that skills are adequately acquired, additional training programmes need to be held during the construction phase to prepare the identified community members to be employed at the next phase, i.e., the operational phase. • Developers should be open to local recruitment processes and be willing to offer some skills transfer during this phase of the project to ensure the maximum utilisation local labour. • Employ labour intensive construction methods, where economically feasible and technically possible. • Establish a local skills desk to identify the skills set of the local residents available for the construction and operational phases of the project.							

13.2.8 CLIMATE CHANGE

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
It is clear that building so close to the waterline will expose the project to risks associated with increased rainfall, increased flood events and increased sea level. There is no impact of the project on global climate change identified.							
Climate change	**No**	**Neutral**	5	4	0	4	**36 (Medium)**
	Yes	Neutral	5	4	0	4	**36 =Medium**
Corrective Actions	• It is recommended that the engineers responsible select the design best suited to withstand rising sea levels and an increased likelihood of flood events.						

13.2.9 WASTE IMPACTS

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Various waste streams (general and hazardous) are expected to be generated and could impact the marine environment. A large number of marine organisms are killed or injured daily by becoming entangled in debris or because of the ingestion of foreign particles. Waste is expected from the demolition activities, inhibition of site by contractors and during operations. This impact is rated as medium' without mitigation and is reduced to 'low' with proper mitigation.							
Construction Phase							
	No	Negative	2 (Local)	4(Long term)	6 (Moderate)	3 (Medium)	36 (Medium)
	Yes	Negative	1 (Site)	3 (Medium term)	4 (Low)	2 (Low)	16(Low)
Mitigation Measures							
• Inform all staff about sensitive marine species and the responsible disposal of construction waste. • Suitable handling and disposal protocols must be clearly explained and sign boarded. • All domestic and general waste generated must be disposed of in an appropriate registered waste disposal facility. • All reasonable measures must be implemented to ensure there is no littering and that construction waste is adequately managed. • Staff must be regularly reminded about the detrimental impacts of pollution on marine species and suitable handling and disposal protocols must be clearly explained and sign boarded. • The 'reduce, reuse, recycle' policy must be implemented where possible							

13.3 GENERAL CUMULATIVE IMPACTS

Cumulative impacts in relation to an activity, means the past, present, and reasonably near future impacts of an activity, considered together with the impacts of activities associated with that activity, which may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities (DEA, 2014 EIA Regulations). The most important concept related to a cumulative impact is that of an acceptable level of change to an environment. A cumulative impact only becomes relevant when the impact of the proposed development will lead directly to the sum of impacts of all developments causing an acceptable level of change to be exceeded in the surrounding area. If the impact of the development being assessed does not cause that level to be exceeded, then the cumulative impact associated with that development is not significant. The cumulative

impacts significance rating was defined according to the predicted impacts before and after mitigation measures as recommended by the specialists. The cumulative impacts significance rating was taken into consideration when preparing the motivation for the need and desirability of the proposed development.

This section provides cumulative impacts ratings associated with the proposed project which include the waste generation, socio-economic, traffic, noise and vibration. It also outlines the mitigation measures of each rated cumulative impacts as follows:

13.3.1 SOCIO-ECONOMIC IMPACT

The proposed containment of project will be undertaken within the Port of Richards Bay and it will ensure that Transnet's helipad and the associated infrastructure are operated smoothly and with better capacity.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Socio-economic	No	Positive	4 (National)	5 (Permanent)	8 (High)	5 (Definite)	85=High
Corrective Actions	• No mitigation measures required since is a positive impact.						

13.3.2 TRAFFIC IMPACT

During the construction phase, increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further unmanaged construction vehicles may decrease road safety for other road users and uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction. The traffic impacts ratings and mitigation measures associated with the proposed project are presented in the table below as follows.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	No	Negative	1(Site)	2(Short-term)	4(Low)	3(Medium)	21 = Low
	Yes	Negative	1(Site)	2(Short-term)	2(Minor)	2(Low)	10 = Low
Corrective Actions	• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads where possible; • Existing access roads must be used; and • Delivery vehicles must comply with all traffic laws and bylaws.						

13.3.3 NOISE

The proposed development there will increase the number of helicopters within the Port, which will change the flight frequency and possible add to the abutting noise levels. The proposed construction activities will not have a relatively minimal impact compared to the operational phase impact which is expected to be long term. These activities are likely to increase the amount of noise being generated by the port. The directly affected parties to be affected are within the primary and secondary study areas and particularly those residing in the residential areas close to the small craft harbour as well as businesses based at the Tuzi Gazi Water Front. However, the SIA report undertaken in 2015 indicated that during discussions with the owner of the Tuzi Gazi Water Front it was noted that there was little concern over noise created by the port citing water front development of such a nature as being characterised by a certain level of noise (Hughes. R., pers. comm., 2015). In addition, a specialist noise impact assessment was conducted for the proposed project which notes that there is a low significance of noise impact during the operational phase of the project (De Jager, 2014). Similarly, the proposed project will have an impact of low significance during the construction and operational phases. However, the operational noise impact will be long-term while construction will be short-term and negligible.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise	No	Negative	2 (Local)	2(Long Term)	4(Low)	3(Medium)	24 = Low
	Yes	Negative	1(Site)	2(Long Term)	2(Minor)	2(Low)	10 = Low
Corrective Actions	• Ensure that all construction equipment is well serviced as per the manufacturer's manual throughout the construction phase. • The requirements of the Noise Control Regulations of 20 November 1998 must be adhered to.						

13.3.4 CLIMATE CHANGE

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Climate change	No	Neutral	5	4	0	4	36 (Medium)
	Yes	Neutral	5	4	0	4	36 =Medium
Corrective Actions	• The engineers responsible select the design best suited to withstand rising sea levels and an increased likelihood of flood events.						

13.3.5 HERITAGE

No cumulative impacts were applicable in this study, as no heritage resources were identified. In this investigation, the impacts on heritage features, sites, or materials were rated low or negligible, with mitigation measures provided by a watch-and-brief approach. Furthermore, no archaeological resources are falling within the Project area. Site monitoring may be necessary during construction phase of the development

14 UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP

During the draft and final BAR phase of the proposed development, the EAP will take into consideration the requirements stipulated in the EIA Regulation of December 2014 as amended, as well as other relevant Acts and Regulations. The EAP hereby confirms that with the information available at the time of preparing this report, the following has been considered:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and Interested and Affected Parties (I&APs); and
- Any information provided by the EAP to the Interested and Affected Parties and any responses by the EAP to comments or inputs made by I&AP.

Refer to **Appendix E** for the Declaration of the EAP.

15 ENVIRONMENTAL IMPACT STATEMENT

The Port of Richards Bay is one of the major industrial ports and is of high economic, recreational, and ecological importance. To date, development within the Port has significantly altered the physical structure and hydrodynamics, whilst industrial developments and town expansion have negatively impacted ecosystem health. The proposed development site is already moderately disturbed by the existing helipad and associated infrastructure, shipping, pollution, and other activities.

Both positive and negative environmental impacts were assessed, ranging from habitat loss to operational effects. The identified impacts are considered to be low to high in significance without mitigation and can be reduced to low by implementing the proposed mitigation measures. Some negative impacts were rated as ‘high’ without mitigation, however; high-significance impacts with a positive status were identified for the operational phase.

16 IMPACT MANAGEMENT MEASURES IDENTIFIED FROM SPECIALIST REPORTS

Specialist studies were identified and recommended for this project, and they include the following:

- Aquatic Freshwater Biodiversity;
- Terrestrial Biodiversity;
- Estuarine Impact Assessment;
- Climate Change Impact Assessment; and
- Heritage Impact Assessment.

Mitigation measures, proposed by the specialists include the following:

- Should any archaeological material be unearthed accidentally during construction (e.g., excavation), SAHRA or a professional archaeologist must be informed immediately, and construction activities be stopped within a radius of at least 10m of such indicator.
- The aforementioned area should then be demarcated by a danger tape.
- The Environmental officer and the contractor must protect the site from publicity (i.e., media) until a mutual agreement is reached.
- If human remains are encountered, the South African Police Services must be notified immediately.
- Before construction commences, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The preconstruction training should include limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological sites that may be found during construction:
    - Flaked stone tools, bone tools, and loose pieces of flaked stone;
    - Ash and charcoal;
    - Bones and shell fragments;
    - Artefacts (e.g., beads or hearths); and
    - Packed stones that might be uncounted underground and might indicate a grave or collapse stone walling.

17 ASSUMPTIONS AND LIMITATIONS

It is assumed that the technical data supplied by the client was correct and valid at the time of compilation of specialist studies and the Draft Basic Assessment Report. Furthermore, it is assumed that the alternatives presented by the client are feasible.

17.1.1 PUBLIC PARTICIPATION PROCESS

Likely, some I&APs were not reached. However, an effort was made as part of the process to advertise on local media as well as placing notices at noticeable places within the communities.

17.1.2 LITERATURE REVIEWS IS VIEWED AS CORRECT

The compilation of the reports was based on various literature reviews and specialist input which were viewed as correct at the time. However, it is acknowledged that there might be some gaps in knowledge with regard to the literature reviewed although conceited efforts were made to attain as much information as possible.

17.1.3 HERITAGE STUDY

The Phase 1 HIA may have missed heritage resources in the project area, as some heritage structures may be situated below the surface and may only be exposed once development commences.

18 FATAL FLAWS

No fatal flaws or highly significant impacts were identified that would necessitate substantial redesign or termination of the project. Potential negative impacts have been identified and where the impacts were detrimental to the environment, alternatives were proposed together with mitigation measures. The Technical Methodologies considered for the helipad have been assessed by specialists and the preference is rated accordingly; however, it remains the primary project risk if not managed.

19 CONCLUSIONS AND RECOMMENDATIONS

The proposed development entails upgrading the existing infrastructure within an operational Port, as such; no site alternatives have been identified as this would defeat the purpose of the project.

Four design alternatives have been considered for the proposed upgrade and Alternative 1 - Concept design Massing Layout Option 1A & B is the preferred Alternative because of the following reasons:

- The existing parking and security kiosk is in a decent condition and is preferred to be retained and re-used.
- The buildings and structures proposed on the layout ensures optimal operational flows and functional requirements.
- The helipad is a partially elevated structure and is favourable to the aviation team as it poses little or no challenges to the flight approach and take-off and landing of the helicopters.
- The position of the helipad is also favourable for the wind direction needed for the landing and take-off of the helicopters.
- The helipad is positioned in front of the hangar apron for ease of movement and limited taxi of the helicopters into and out from the hangar to the helipad. The layout of the car park adjacent to the administration building is favourable as visitors and the public visiting the administration building are restricted from walking across the hangar apron, as this could be a safety hazard.

- This layout allows for the future expansion of the site should the need arise as the infrastructure on the site may easily be extended to accommodate additional buildings, structures, and parking. The user requirement received vs the current land area available for the development has necessitated the acquirement of additional land as indicated in the various option presented.

Three Technical Alternatives have been considered and Alternative 1 – Deck on Pile is the preferred Alternative because of the following reasons:

- The deck on piles will have a relatively smaller footprint, thus less environmental impacts.
- According to the estuarine biodiversity specialist of the three proposed options, Option 1 is preferred and recommended from the perspective of minimising impacts on the estuary. The most significant impact resulting from Option 1 will be the transformation of a small area of intertidal and subtidal soft sand habitat (approximately 390 m^2) into artificial rock habitat that will be insignificant considering the extent of the greater RB estuary and that no adverse impacts to species of conservation concern or ecological processes are anticipated
- The deck on pile construction method is less complex, only involving augering piles and casting beams and slabs. It is therefore expected that it will take a shorter period to build.

Of primary concern was the possible impact on the estuarine environment, however, the specialist indicated that no adverse impacts to species of conservation concern or ecological processes are anticipated. Mitigation measures have been proposed and included in the EMPr.

Furthermore, approximately 9 sites were considered for the temporary relocation of the current helicopter operations and associated infrastructure, and Site 2 (Thuzigazi quay) is preferred because it would have the least disturbance to other existing operations in the Port. In addition, Site 2 requires less infrastructure and has lower capital and operational cost than the other feasible options.

The EMPr has been prepared and includes measures proposed to mitigate any adverse impacts of the activities and ensure that there is sufficient monitoring. Considering the mitigation measures proposed by the specialists as well as those contained in the EMPr, the EAP believes that the potential impacts posed by the proposed development can be mitigated to prevent detrimental impacts to the environment. It is therefore recommended that the DFFE considers the BAR and issue an environmental authorisation to Transnet to proceed with the upgrade of the helipad and associated infrastructure at the Port of Richards Bay.

20 REFERENCES

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