

# *Environmental Assessment Scoping Report for:*

*June 2022*

*Subdivision and subsequent rezoning of  
the Remainder of the Farm Hentiesbaai  
Townlands No 133 into 49 Portions and  
Remainder, creation of street and  
installation of bulk services, Henties  
Bay, Erongo Region.*

**APP-0010315**

Prepared for: Henties Bay Municipality

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## PROJECT DETAILS

<b>Title</b>	Environmental Scoping Report for the: <ul style="list-style-type: none"> <li>Subdivision and subsequent rezoning of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder, creation of street and installation of bulk services, Henties Bay, Erongo Region.</li> </ul>		
<b>Report Status</b>	Final		
<b>SPC Reference</b>	HEN/003		
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<b>Report date</b>	June 2022		
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## EXECUTIVE SUMMARY

### Introduction

The Henties Bay Municipality hereinafter referred to as the proponent intends to undertake the following activities:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from “Undetermined” to “Agriculture”;**
- **Rezoning of Portion 47 from “Undetermined” to “Local Authority”;**
- **Reservation of Portion 49 as “Street”;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

The above development triggers listed activities in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

As such the proponent appointed Stubenrauch Planning Consultants (SPC) to undertake an independent Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activities. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF).

### Project Description

The proponent intends to create approximately 49 portions (of which one is to be reserved as Street) in Henties Bay to be utilized primarily for Agricultural purposes. The following statutory steps must be undertaken for the intended development:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from “Undetermined” to “Agriculture”;**
- **Rezoning of Portion 47 from “Undetermined” to “Local Authority”**
- **Reservation of Portion 49 as “Street”;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

### Public Participation

Communication with Interested and Affected Parties (I&APs) about the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing descriptive information about the proposed activities was compiled and sent out to all identified and registered I&APs via email on **2 November 2021**;

- Notices were placed in the Namibian and the New Era newspapers dated **5 November 2021 and 10 November 2021**, briefly explaining the activity and its locality, inviting members of the public to register as I&APs (**Appendix B**); and
- A notice was fixed at the project site (see **Appendix A**);
- A public meeting was held in Henties Bay on 11 November 2021 (**Appendix C**).

Public consultation was carried out according to the Environmental Management Act's EIA Regulations. After the initial notification, the I&APs were given two weeks to submit their comments on the project (until **26 November 2021**). The comment period will remain open until the final scoping report is submitted to MEFT.

The Draft Scoping Report was circulated from the **13 May 2022 until 24 May 2022** so that the public could review and comment on it. No comments were received during the comment period.

### Conclusions and Recommendations

With reference to **Table 10**, none of the negative construction phase impacts were deemed to have a high significant impact on the environment. The construction impacts were assessed to a **Medium to Low (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

With reference to **Table 10**, none of the negative operational phase impacts were deemed to have a high significance impact on the environment. The operational impacts were assessed to a **Medium (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

It is recommended that this project be authorised because should the development not proceed the subject area will remain vacant and undeveloped. The local community is expected to benefit from the development as a result of the potential job opportunities during construction as well as the increased development within the area. The significance of the social impact was therefore deemed to be **Medium (positive)**.

The “no go” alternative was thus deemed to have a High (negative) impact, as all the benefits resulting from the development would not be realised.

The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this report and the EMP. If authorised, the implementation of the EMP should be included as a condition of approval.

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## LIST OF ACRONYMS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>CRR</b>	Comments and response report
<b>dB</b>	Decibels
<b>DESR</b>	Draft Environmental Scoping Report
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>EAR</b>	Environmental Assessment Report
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act
<b>EMP</b>	Environmental Management Plan
<b>FESR</b>	Final Environmental Scoping Report
<b>GTZ</b>	Gesellschaft für Technische Zusammenarbeit
<b>HIV</b>	Human Immunodeficiency Virus
<b>I&amp;AP</b>	Interested and Affected Party
<b>IUCN</b>	International Union for Conservation of Nature
<b>MET</b>	Ministry of Environment and Tourism
<b>MET: DEA</b>	Ministry of Environment and Tourism: Department of Environmental Affairs
<b>MURD</b>	Ministry of Urban and Rural Development
<b>MWTC</b>	Ministry of Works Transport and Communication
<b>NAMPAB</b>	Namibia Planning Advisory Board
<b>NPC</b>	Namibia Planning Commission
<b>PPP</b>	Public Participation Process
<b>SADC</b>	Southern African Development Community
<b>SPC</b>	Stubenrauch Planning Consultants
<b>USAID</b>	United States Agency for International Development
<b>VMMC</b>	Voluntary Medical Male Circumcision



# 1 INTRODUCTION

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## 1.1 PROJECT BACKGROUND

The Henties Bay Municipality hereinafter referred to as the proponent intends to undertake the following activities:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from ‘Undetermined’ to ‘Agriculture’;**
- **Rezoning of Portion 47 from ‘Undetermined’ to ‘Local Authority’;**
- **Reservation of Portion 49 as ‘Street’;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

The above are listed activities in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the following listed activities in **Table 1** were triggered by the proposed project:

**Table 1:** List of triggered activities identified in the EIA Regulations which apply to the proposed project

<b>Activity description and No(s):</b>	<b>Description of relevant Activity</b>	<b>The portion of the development as per the project description that relates to the applicable listed activity</b>
Activity 8.6 Water Resource Developments	Construction of industrial and domestic wastewater treatment plants and related pipeline systems.	The proposed development involves the potential construction of domestic wastewater treatment plants and related pipeline systems
Activity 10.1 (a) Infrastructure	The construction of oil, water, gas and petrochemical and other bulk supply pipelines;	The proposed project involves the installation of bulk services.
Activity 10.1 (b) Infrastructure	The construction of Public roads	The proposed project includes the construction of roads.
Activity 10.2 (a) Infrastructure	The route determination of roads and design of associated physical	The proposed project includes the route determination of roads.

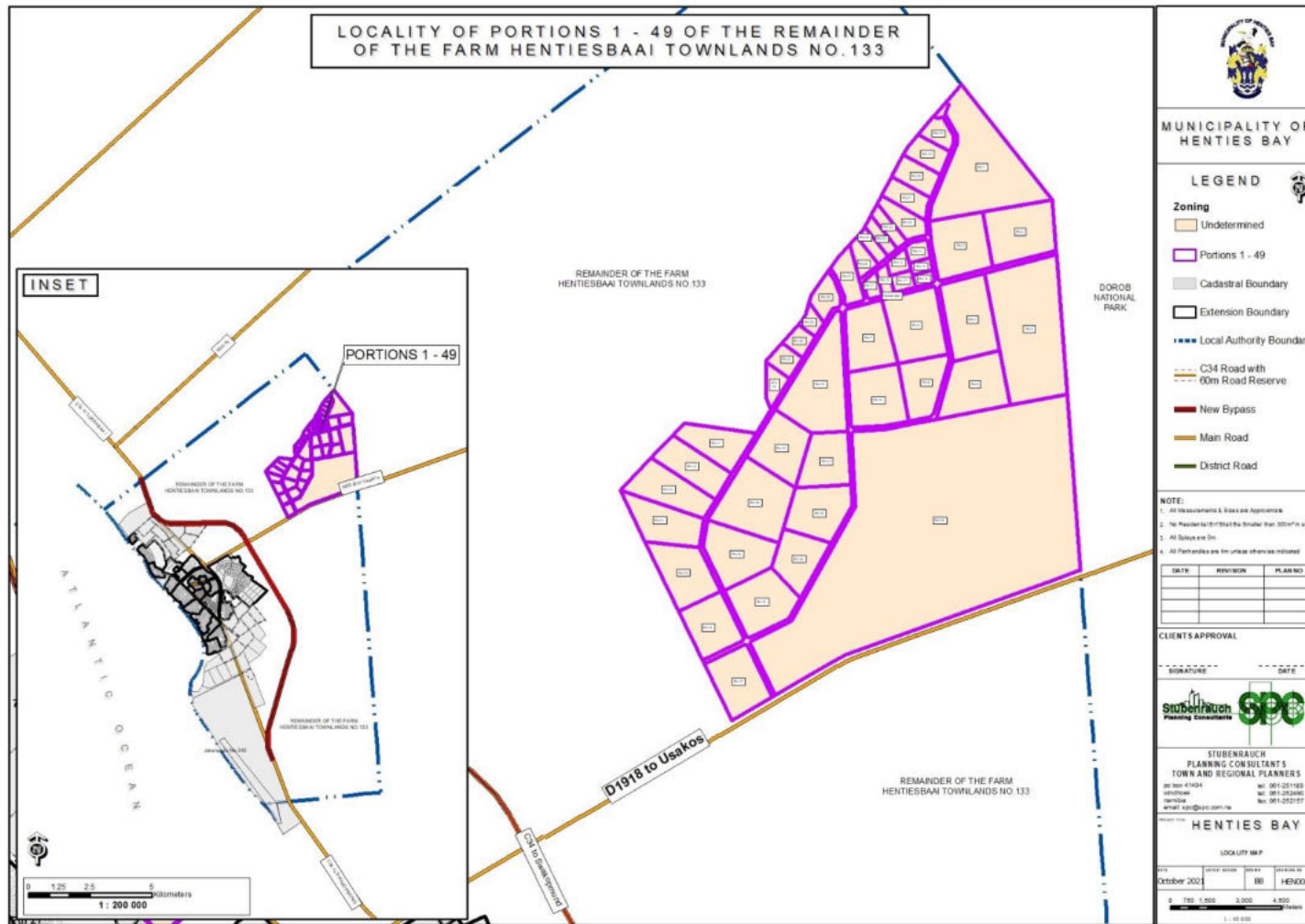
Activity description and No(s):	Description of relevant Activity	The portion of the development as per the project description that relates to the applicable listed activity
	infrastructure where –it is a public road	

The above activities will be discussed in more detail in Chapter 4. The proponent appointed Stubenrauch Planning Consultants (SPC) to undertake an independent Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activities. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA).

The process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) and the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EIA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the intended activities. The EIA process would also serve to provide an opportunity for the public and key stakeholders to provide comments and participate in the process.

**1.2 PROJECT LOCATION**

The proposed site is planned to be developed on the Remainder of the Farm Hentiesbaai Townlands No 133, to the north of the D1918 road leading to Usakos and up to the southern embankment of the Omaruru River. The Hentiesbaai Townlands boundary (with the Dorob National Park) forms the eastern boundary of the intended development. Please refer to below locality map (**Figure 1**).



**Figure 1:** Locality of Portions 1 to 49 of the Remainder of the Farm Hentiesbaai Townlands No 133

### 1.3 TERMS OF REFERENCE AND SCOPE OF PROJECT

The scope of this project is limited to conducting an environmental impact assessment and applying for an Environmental Clearance Certificate for the following as indicated in section 1.1 above:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from ‘Undetermined’ to ‘Agriculture’;**
- **Rezoning of Portion 47 from ‘Undetermined’ to ‘Local Authority’;**
- **Reservation of Portion 49 as ‘Street’;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

### 1.4 ASSUMPTIONS AND LIMITATIONS

In undertaking this investigation and compiling the Environmental Scoping Report, the following assumptions and limitations apply:

- Assumes the information provided by the proponent is accurate and discloses all information available.
- The limitation that no alternative except for the preferred layout plans and the ‘no-go’ option was considered during this assessment. The unique character and appeal of Henties Bay were however taken into consideration with the design perspective. Various layout alternatives were initially considered by the proponent, also taking terrain and environmental constraints into account, thus the current design plans being the most feasible result.

### 1.5 CONTENT OF ENVIRONMENTAL ASSESSMENT REPORT

Section 8 of the gazetted EIA Regulations requires specific content to be addressed in a Scoping / Environmental Assessment Report. **Table 2** below is an extract from the EMA and highlights the required contents of a Scoping / Environmental Assessment Report whilst assisting the reader to find the relevant section in the report.

**Table 2:** Contents of the Scoping / Environmental Assessment Report

Section	Description	Section of FESR/ Annexure
8 (a)	The curriculum vitae of the EAPs who prepared the report;	Refer to <b>Annexure D</b>
8 (b)	A description of the proposed activity;	Refer to Chapter 4
8 (c)	A description of the site on which the activity is to be undertaken and the location of the activity on the site;	Refer to Chapter 3

Section	Description	Section of FESR/ Annexure
8 (d)	A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Refer to Chapter 3
8 (e)	An identification of laws and guidelines that have been considered in the preparation of the scoping report;	Refer to Chapter 2
8 (f)	Details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including	Refer to Chapter 5
	(i) the steps that were taken to notify potentially interested and affected parties of the proposed application	Refer to Chapter 5
	(ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;	Refer to <b>Annexures A and B</b> for site notices and advertisements respectively.
	(iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application;	Refer to <b>Annexure C</b>
	(iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	Refer to <b>Annexure C</b>
8 (g)	A description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the	Refer to Chapter 4

Section	Description	Section of FESR/ Annexure
	community that may be affected by the activity;	
8 (h)	A description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Refer to Chapter 7
8 (i)	terms of reference for the detailed assessment;	NB – Assessment of impacts are included in this EA Report
8 (j)	An environmental management plan	Refer to <b>Annexure E</b>

## 2 LEGAL FRAMEWORK

### 2.1 LEGISLATION RELEVANT TO THE PROPOSED DEVELOPMENT

There are multiple legal instruments that regulate and have a bearing on good environmental management in Namibia. **Table 3** below provides a summary of the legal instruments considered to be relevant to this development and the environmental assessment process.

**Table 3:** Legislation applicable to the proposed development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.”  Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources.	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that.  Section 3 details the principle of Environmental Management	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate.  GN 30 provides the regulations governing the environmental assessment (EA) process.	<b>Activity 8.6 Water Resource Developments</b> <b>Activity 10.1 (a) Infrastructure</b> <b>Activity 10.1 (b) Infrastructure</b> <b>Activity 10.2 (a) Infrastructure</b>
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The project should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the development does not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during construction and operation of the development.
The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS	MET has recently developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when migrant construction workers interact with local communities.
Urban and Regional Planning Act 5 of 2018	The Act provides to consolidate the laws relating to urban and regional planning; to provide for a legal framework for spatial planning in Namibia; to provide for principles and standards of spatial planning; to establish the urban and regional planning board; to decentralise certain matters relating to spatial planning; to provide for the preparation, approval and review of the national spatial development framework, regional structure plans and urban structure plans; to provide for the preparation, approval, review and amendment of zoning schemes; to provide for the establishment of townships; to provide for the alteration of boundaries of approved townships, to provide for the disestablishment of approved townships; to provide for the change of name of approved townships; to provide for the subdivision and consolidation of land; to provide for the alteration,	The subdivision and consolidation of land as well as the establishment of townships is to be done in accordance with the act.



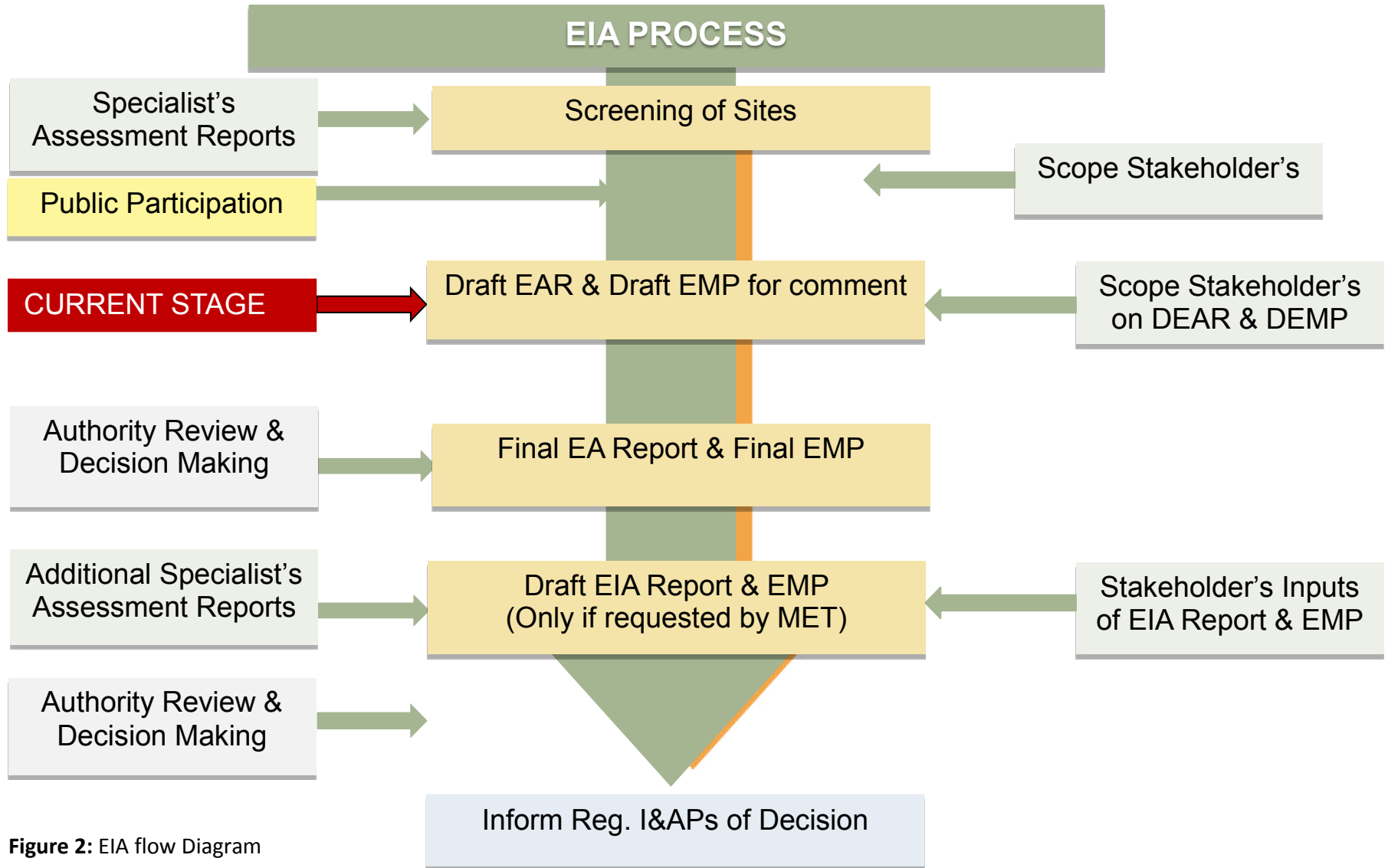
LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	suspension and deletion of conditions relating to land; and to provide for incidental matters.	
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council.	The development must comply with provisions of the Local Authorities Act.
Labour Act no. 11 of 2007	Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment.	Given the employment opportunities presented by the development, compliance with the labour law is essential.
National Heritage Act No. 27 of 2004	The Act is aimed at protecting, conserving and registering places and objects of heritage significance.	All protected heritage resources (e.g. human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Roads Ordinance 17 of 1972	<ul style="list-style-type: none"> <li>• Section 3.1 deals with width of proclaimed roads and road reserve boundaries</li> <li>• Section 27.1 is concerned with the control of traffic on urban trunk and main roads</li> <li>• Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads</li> <li>• Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads.</li> </ul>	Adhere to all applicable provisions of the Roads Ordinance.
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted	Contractors and users of the proposed development are to comply with these legal requirements.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979).	
Nature Conservation Ordinance no. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants must be managed within the legal confines.
Water Quality Guidelines for Drinking Water and Wastewater Treatment	Details specific quantities in terms of water quality determinants, which wastewater should be treated to before being discharged into the environment (see Appendix B).	These guidelines are to be applied when dealing with water and waste treatment
Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	This EIA considers this term of Environment.
Water Resources Management Act No. 11 of 2013	Part 12 deals with the control and protection of groundwater  Part 13 deals with water pollution control	The pollution of water resources should be avoided during construction and operation of the development. Should water need to be abstracted, a water abstraction permit will be required from the Ministry of Water, Agriculture and Land Reform.
Forest Act 12 of 2001 and Forest Regulations of 2015	To provide for the establishment of a Forestry Council and the appointment of certain officials; to	Protected tree and plant species as per the Forest Act No 12 of 2001 and Forest Regulations of 2015 may

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	<p>consolidate the laws relating to the management and use of forests and forest produce; to provide for the protection of the environment and the control and management of forest fires; to repeal the Preservation of Bees and Honey Proclamation, 1923 (Proclamation No. 1 of 1923), Preservation of Trees and Forests Ordinance, 1952 (Ordinance No. 37 of 1952) and the Forest Act, 1968 (Act No. 72 of 1968); and to deal with incidental matters.</p>	<p>not be removed without a permit from the Department of Forestry.</p>
<p>Atmospheric Pollution Prevention Ordinance No 45 of 1965</p>	<p>Part II - control of noxious or offensive gases,  Part III - atmospheric pollution by smoke,  Part IV - dust control, and  Part V - air pollution by fumes emitted by vehicles.</p>	<p>The development should consider the provisions outlined in the act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).</p>

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Hazardous Substance Ordinance 14 of 1974	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.
Soil Conservation Act No 76 of 1969	Act to consolidate and amend the law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources	The proposed activity should ensure that soil erosion and soil pollution is avoided during construction and operation.

This EIA process will be undertaken in accordance with the EIA Regulations. A Flow Diagram (refer to **Figure 2** below) provides an outline of the EIA process to be followed.



**Figure 2:** EIA flow Diagram

### 3 ENVIRONMENTAL BASELINE DESCRIPTION

#### 3.1 SOCIAL ENVIRONMENT

##### 3.1.1 Socio-Economic Context

The statistics shown in **Table 4** below are derived from the 2011 Namibia Population and Housing Census (Namibia Statistics Agency, 2011), and presented from a local and regional perspective.

**Table 4:** Statistics of the Arandis Constituency and Erongo Region (Namibia Statistics Agency, 2011)

ARANDIS CONSTITUENCY	
ATTRIBUTE	INDICATOR
Population (Henties Bay)	4 720
Population	10 093
Females	4 852
Males	5 241
Population under 5 years	10%
Population aged 5 to 14 years	64%
Population aged 15 to 59 years	64%
Population aged 60 years and above	8%
Female: male ratio	108:100
Literacy rate of 15 years old and above	98%
People above 15 years who have never attended school	4%
People above 15 years who are currently attending school	13%
People above 15 years who have left school	80%
People aged 15 years and above who belong to the labour force	71%
Population employed	72%
Homemakers	5%
Students	49%
Retired or old age income recipients	46%
Income from pension	10%
Income from business and non-farming activities	6%
Income from farming	1%
Income from cash remittance	3%
Wages and salaries	72%
Main Language (Erongo Region)	Oshiwambo-38.8%
ERONGO REGION	
ATTRIBUTE	INDICATOR
Population	150 809
Population aged 60 years and above	6%
Population aged 5 to 14 years	17%
Population aged 15 to 59 years	64%

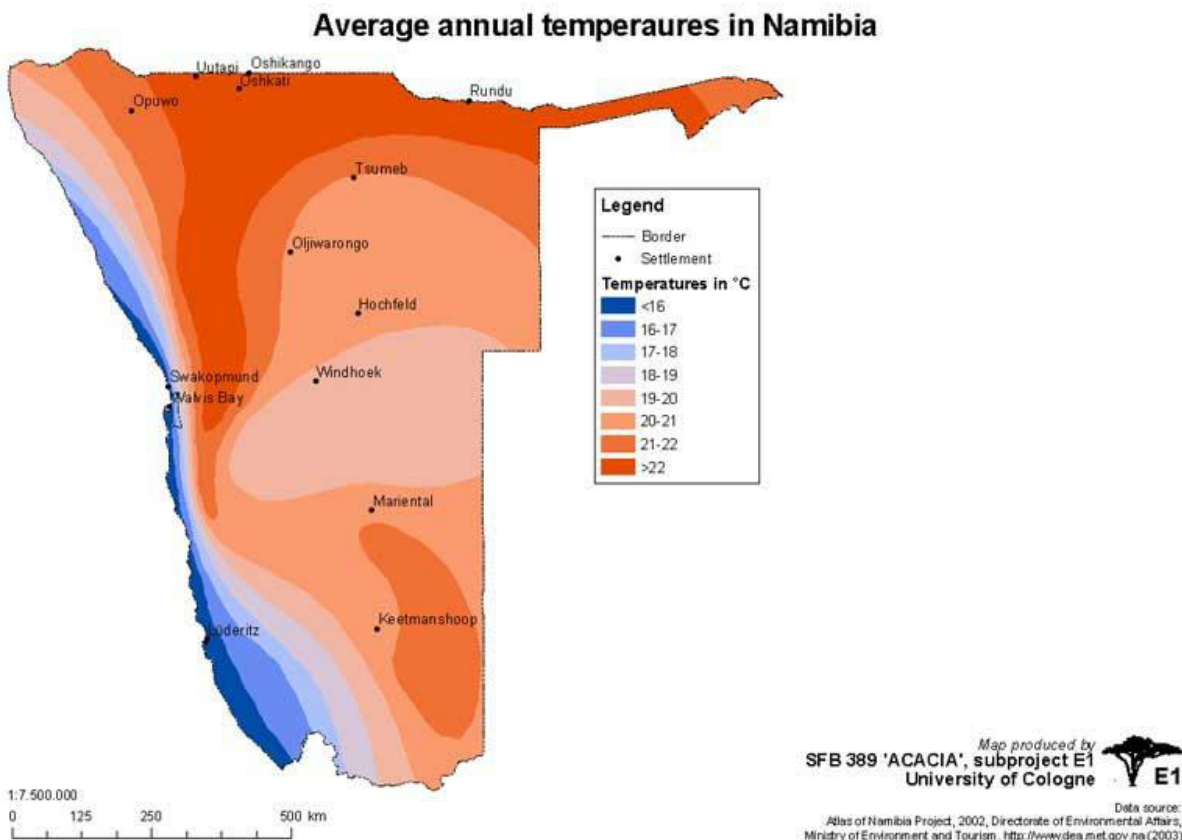
### 3.1.2 Archaeological and Heritage Context

The subject site is not known to be of any historical significance. No significant archaeological and heritage sites are known to be located within the proposed development area.

## 3.2 BIO-PHYSICAL ENVIRONMENT

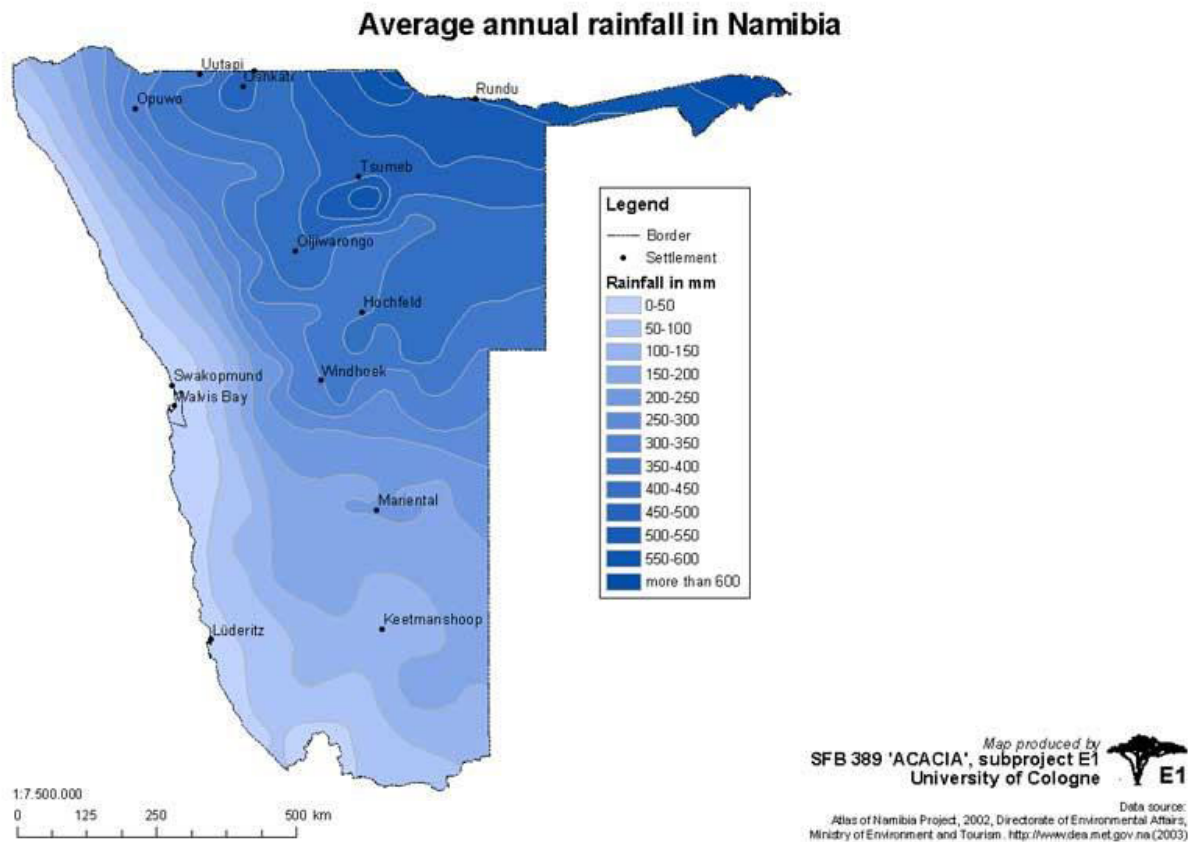
### 3.2.1 Climate

The weather along the coast of Namibia is relatively different from that inland. The coastal climate is characterised by lower rainfall, lower temperature, less radiation and sunshine, stronger winds and frequent fog (Mendelsohn, Jarvis, Roberts, *et al.*, 2002). The average annual temperature ranges between 16°C and 17°C as indicated in **Figure 3** below. The average maximum temperature for Henties Bay varies between less than 20°C and 22°C with the average minimum temperature between 8°C and 10°C.



**Figure 3:** Annual average temperature ( [http://www.uni-koeln.de/sfb389/e/e1/download/atlas\\_namibia/e1\\_download\\_climate\\_e.htm#temperature\\_annual](http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/e1_download_climate_e.htm#temperature_annual))

Along the coast rainfall is much less than further inland. Average annual rainfall for Henties Bay is less than 50 mm per year as indicated in **Figure 4** below.



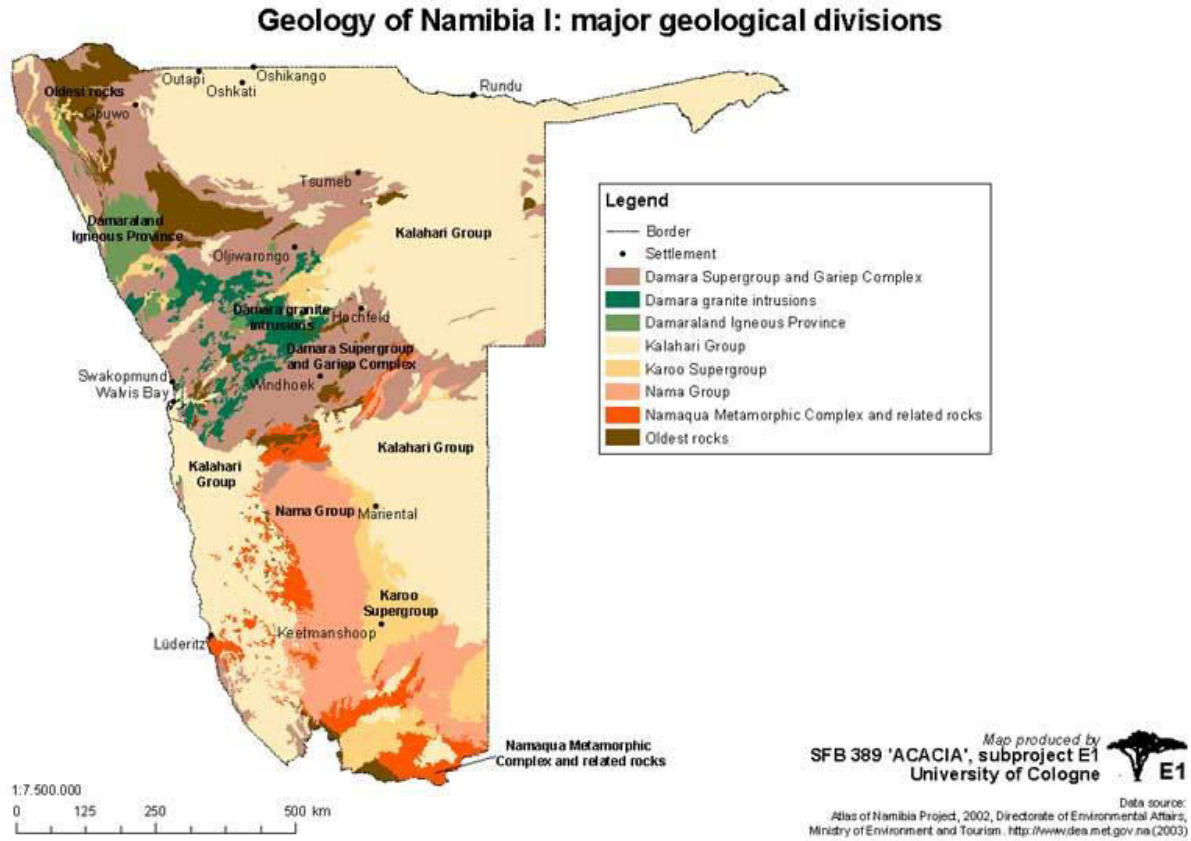
**Figure 4:** Average annual Rainfall ([http://www.uni-koeln.de/sfb389/e/e1/download/atlas\\_namibia/pics/climate/rainfall-annual.jpg](http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/climate/rainfall-annual.jpg))

### 3.2.2 Topography, Geology and Soils

The Henties Bay area is characterised by the Damara Igneous Province which dates back 137-132 million years ago as depicted in **Figure 5** below. The dominant soils in these areas include limestone and sandstones.

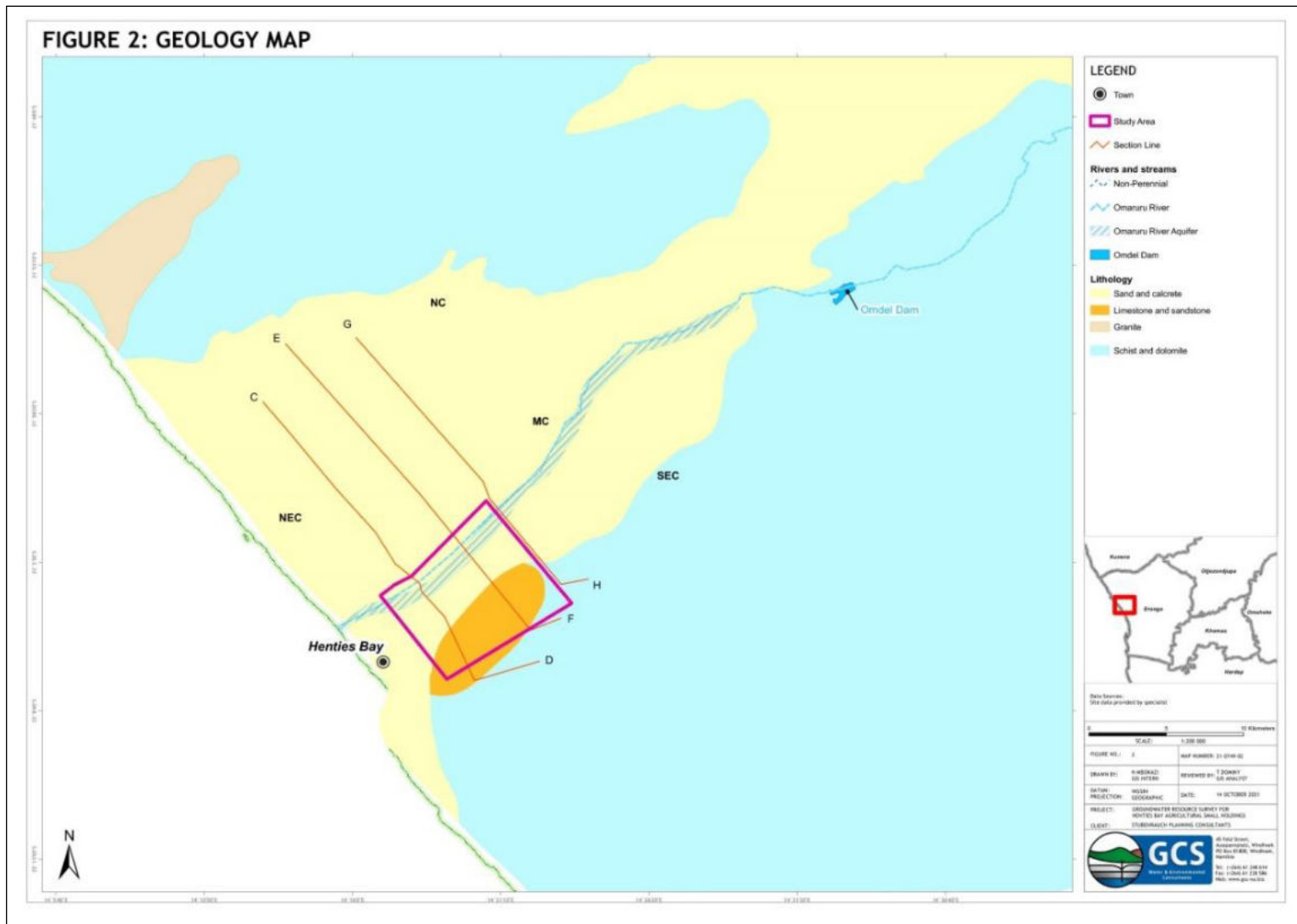
The subject site is very flat and has a gentle downward slope in a north-westerly direction. The subject area is located on the higher lying gravel plain to the south of the defined river embankment. As such the area reserved for the development does not fall within a flood prone area. The existing protection wall / berm which was constructed to protect the urban area of Henties Bay from flooding during exceptional flood occurrences which would see the Omaruru River in full flood has been respected and excluded from the development. This berm is located within the north-western area of the development and as such the development is upstream of any potential flooding.





**Figure 5:** Geology of Namibia ([http://www.uni-koeln.de/sfb389/e/e1/download/atlas\\_namibia/pics/physical/geology.jpg](http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/physical/geology.jpg))

Although the Omaruru River flows in a westward direction cutting mainly through metasedimentary and metamorphic rocks aging from the Neoproterozoic to Cretaceous, downstream the Omdel Dam, the riverbed lies on Quaternary Formation of surficial deposit such as Kalahari sands, scree, calcrete, gravel alluvium calcrete and gypcrete. The following map (**Figure 6**) depicts the geological settings of the project area.



**Figure 6:** Geology map of the subject area (GCS Water and Environment, 2021)

### 3.2.3 Hydrology and Hydrogeology

The Omaruru River (**Figure 7**) is a major hydrological feature within the Erongo Region which flows into the Omdel dam. Groundwater from the river basin has enabled water supply to the town of Henties Bay.

The Omaruru Delta River Basin consists of a multi-channel porous (Primary) aquifer system. The relief of the bedrock plays an important role in the aquifer thickness as well as the groundwater storage and its quality (GCS Water and Environment, 2021).

It is understood that the Omdel Aquifer is an alluvial aquifer consisting of four palaeochannels, namely the Main channel (MC), Northern channel (NC), Northern elevated channel (NEC) and Southern elevated channel. These palaeochannels are defined by their bedrock elevation, groundwater quality and relative position to the current flow-path of the Omaruru River whereby the MC is the only channel which bears potable groundwater. There is a total of 174 boreholes drilled in the Omdel Aquifer, of which 42 are production boreholes, mainly found in the MC, 96 boreholes are drilled for monitoring purposes, whilst 34 boreholes are reported dry, and 2 boreholes are blocked (NamWater).

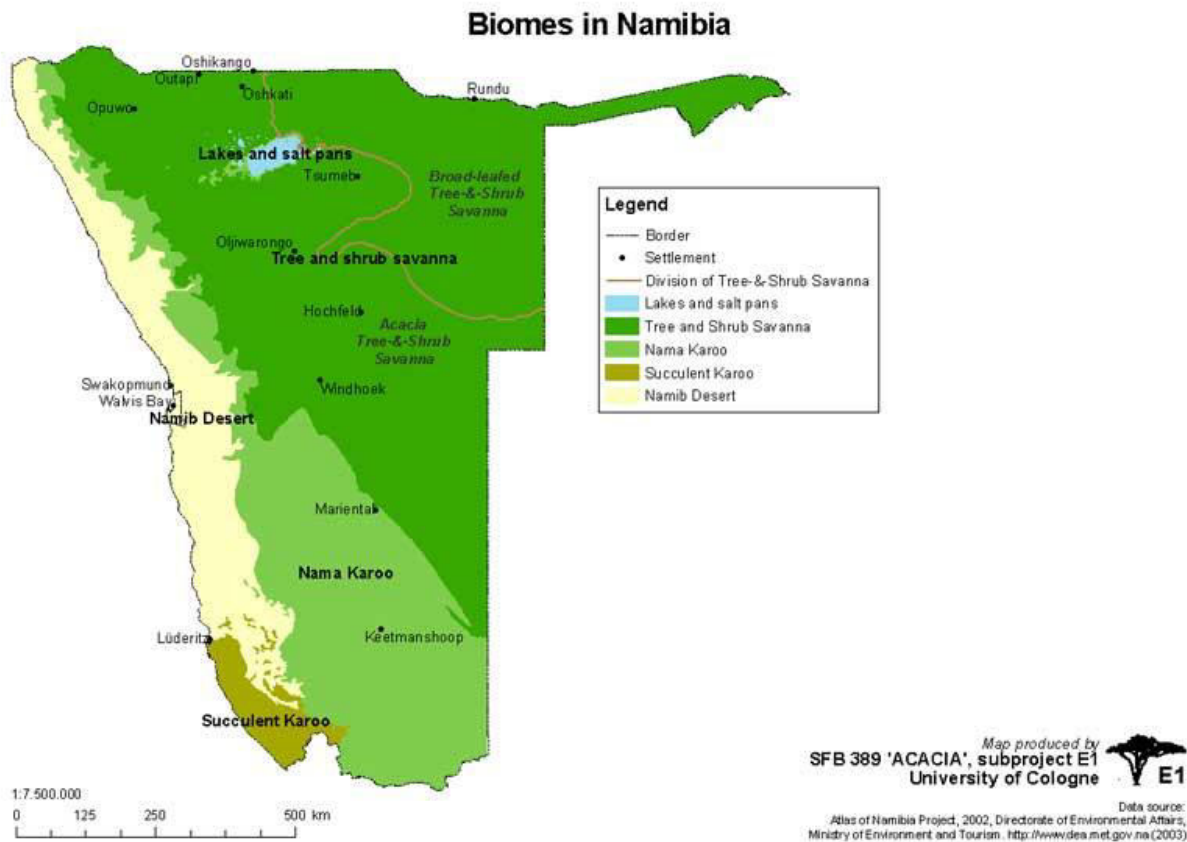
It is nevertheless assumed that this aquifer, when taken as a whole, is under stress which is indicated by the downward trend of the groundwater levels recorded in monitoring holes (DWA, 2019). However, the available groundwater volumes per compartment are not quantified and there are groundwater losses to the Atlantic Ocean.



### 3.3 TERRESTRIAL ECOLOGY

#### 3.3.1 Flora and Fauna

Henties Bay falls within the Namib Desert Biome and Central Desert vegetation type as seen in **Figure 8**. The soils in the area are Petric gypsisols and petric calcisols.



**Figure 8:** Biomes of Namibia ([http://www.uni-koeln.de/sfb389/e/e1/download/atlas\\_namibia/pics/living\\_resources/biomes.jpg](http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/living_resources/biomes.jpg))



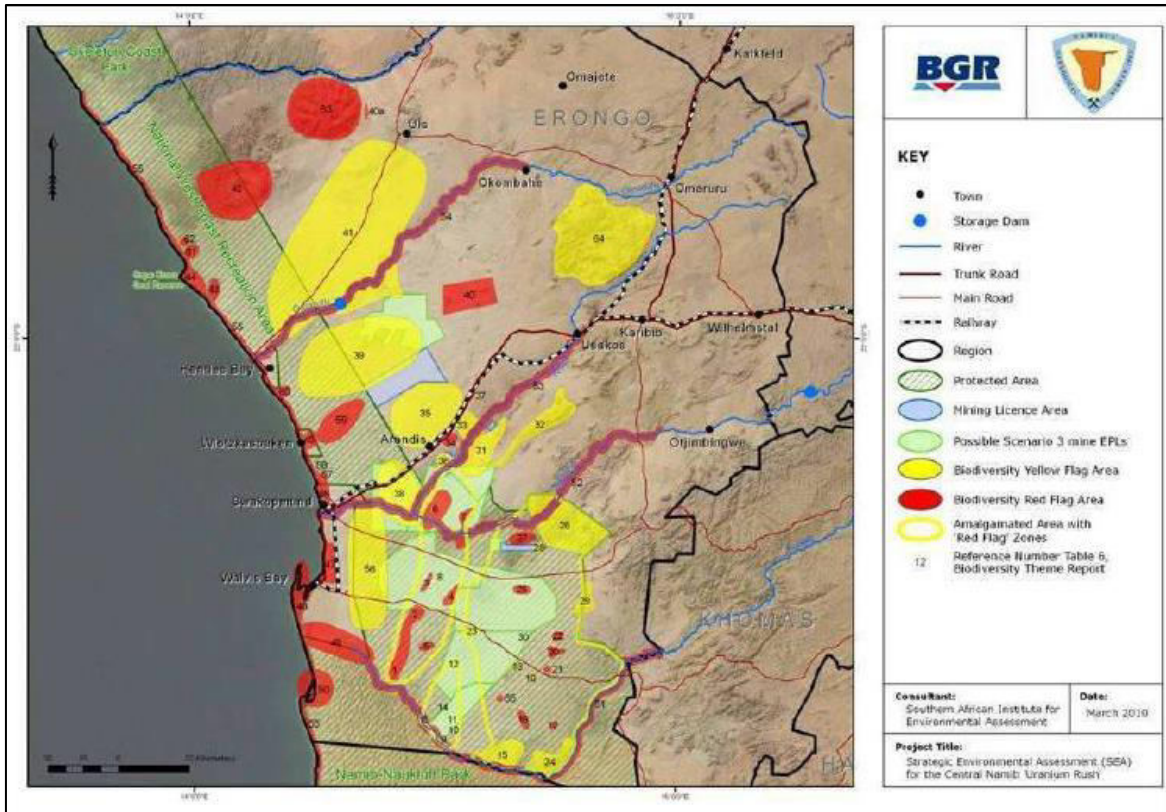
**Figure 9:** Site Photos

The central and southern areas of the site are sparsely vegetated (in terms of coastal desert environment). Some *Arthroerua leubnitziae* (pencil bush/paintbrush bush) are located on site (**Figure 9**). Some more vegetation is found within the 50 meter (m) linear strip along the southern embankment of the Omaruru River where more sandy soil conditions are found. As such the proposed development has been set back by between 50 m to 100 m from the defined upper edge of the river embankment in an attempt to preserve the natural fauna and flora of the area.

Desert fauna namely scorpions, lizards, geckos, jackals and springbok are known to occur in the subject area.

As part of the Strategic Environmental Assessment (SEA) for the Central Namib Uranium Rush (2010) areas of high biological diversity value within the Erongo Region which are sensitive to development were identified and mapped. The figure below (**Figure 10**) outlines these sensitive areas as red and yellow flag areas. From the figure it can be seen that the Omaruru River is identified as a red flag area based on its linear oasis, riparian woodland and rich wildlife (SAIEA, 2010). The boundaries of the red and yellow flag areas are not based on scientific data, but on informed opinion; and should thus be considered as indicative, as such the buffer distance around the Omaruru River is not known. Based on the SEA the proposed area does not fall within any of the sensitive areas identified but is however

located in proximity to the Omaruru River. As such a 100m to 150m buffer zone in a southerly direction as measured from the defined southern river embankment of the Omaruru River is maintained as this area is considered to be an environmentally sensitive area in terms of fauna and flora. Furthermore, this area needs to be protected from human activities which can disturb the area, inclusive of agricultural practices, sand mining or excessive vehicular use.



**Figure 10:** Yellow and Red Flag areas in the Erongo Region (SAIEA, 2010)

## 4 PROJECT DESCRIPTION

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### 4.1 PROJECT COMPONENTS

As previously outlined in Section 1.1, the proposed project involves the following activities:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from ‘Undetermined’ to ‘Agriculture’;**
- **Rezoning of Portion 47 from ‘Undetermined’ to ‘Local Authority’;**
- **Reservation of Portion 49 as ‘Street’;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

These components will be described in further detail below, in terms of their design, layout and footprint.

### 4.2 ALTERNATIVES

Alternatives are defined as: “different means of meeting the general purpose and requirements of the activity” (Environmental Management Act (Act 7 of 2007) of Namibia and its regulations (2012)). As pointed out in Section 1.4 above various layout alternatives were initially considered by the proponent, ultimately resulting in the final layouts.

#### 4.2.1 No – Go Alternative

The no-go alternative is the baseline against which all alternatives are assessed. The no-go alternative would essentially entail maintaining the current situation, whereby the subject area would remain vacant and undeveloped. Thus, the Municipality and the potential buyers of the portions will not be able to receive the benefits which may result from the construction and operational phase of the development.

#### 4.2.2 Services Infrastructure

In terms of the services that may be required for the proposed development, their alternatives are presented in **Table 5** below.

**Table 5: Alternatives considered in terms of services infrastructure**

<b>Services</b>	<b>Alternative sources under consideration</b>
<b>Water</b>	<ul style="list-style-type: none"><li>• Water to be obtained from boreholes from the Omdel Aquifer</li><li>• Water obtained from Namwater supply</li></ul>



Services	Alternative sources under consideration
	<ul style="list-style-type: none"> <li>• UNAM desalination plant</li> <li>• Private Desalination plant</li> <li>• Grey water</li> </ul>
<b>Power (electricity)</b>	Solar
<b>Sewage</b>	On-site wastewater treatment systems Septic Tank system
<b>Domestic waste</b>	Onsite waste bins, regularly emptied at the nearest landfill. Driving waste to the nearest town landfill in Henties Bay
<b>Hazardous waste</b>	Waste generated is to be transported to and disposed of at an appropriate facility in the nearest town equipped for the disposal of hazardous waste

#### 4.2.3 Irrigation Technologies

Dependent on the type of agricultural activities to be undertaken on the proposed portions the following climate resilient irrigation technologies can be considered:

- a) Drip Irrigation is the slow and even application of low-pressure water to soil and plants using plastic tubes positioned directly at the plant's root zone. A properly managed drip irrigation system loses very little water to run-off and evaporation, and the leaching of nutrients is also reduced. Drip irrigation further reduces water contact with crop leaves, stems and fruit, which is often a cause of diseases and pests. Depending on how well designed, installed, maintained, and operated it is, a drip irrigation system can be more efficient than other types of irrigation systems, such as surface irrigation or sprinkler irrigation. Drip irrigation has been successfully practiced by farmers in the Omusati Region during drought conditions.
- b) Fog harvesting technologies. Harvesting of fog water can be a simple and sustainable technology for obtaining freshwater, which has the potential of creating the much-needed irrigation water for vegetable crops in arid countries. Additional research is however required for implementation on site.
- c) Seawater greenhouse makes use of the hot temperatures generated by the greenhouse to evaporate seawater, whose humidity is then used to humidify and cool the greenhouse and also collected as freshwater for watering the crops. It would need to be determined if the temperatures at the site would be high enough to support this.

The alternatives considered for the project are summarized as follows:

- **No-go vs. continuation of the proposed project:** The no-go alternative is not considered to be the preferred option. The no-go alternative would essentially entail maintaining the current situation, whereby the subject area would remain vacant and undeveloped. Thus, the Municipality and the potential buyers of the portions will not be able to receive the benefits which may result from the construction and operational phase of the development.
- **Services Infrastructure:** Water for the proposed activity is either to be obtained via boreholes within the area, from the NamWater supply from the UNAM or a private desalination plant or potentially from grey water. A study is underway to determine the most feasible water supply option for the development. Sewage is to be treated using an on-site wastewater treatment system or septic tank system. Increased use of solar technologies is promoted within the development, where it cannot be successfully employed the use of generators would be required. Domestic and hazardous waste are to be disposed of appropriately.
- **Irrigation technologies:** Dependent on the type of agricultural activities to be undertaken on the proposed portions the following climate resilient irrigation technologies can be considered: drip irrigation, fog harvesting technologies or seawater greenhouse technologies.

### 4.3 THE PROPOSED DEVELOPMENT

#### 4.3.1 Need and Desirability

Only 1% of the total land surface of Namibia falls within the medium to high potential categories for rain-fed and irrigated crop production, which is dominant within the communal subsistence farmers (Sweet & Burke, 2006). Consequently, to feed its population, Namibia relies mainly on food imports from its neighbouring countries such as Zambia, South Africa, and Angola. Namibia's agriculture is largely dependent on rain-fed agriculture such as sorghum and maize which significantly increases the vulnerability of farming systems especially rural households to food insecurity (Mupambwa, Hausiku, Nciizah, *et al.*, 2019). If the country is to meet the food requirements for the growing population consideration should be given to agricultural activities within the desert climates along the coast of Namibia.

The Urban Integrated Spatial Framework of Henties Bay identified amongst its objectives the diversification of economic opportunities by availing land for Agricultural and other Small Medium Enterprise (SME) activities as these activities hold the potential to increase permanent employment which then results in the improvement of household income and local spending power.

The local authority is now desirous to formalise smallholdings on the Townlands which are to be sold to developers interested in developing small but intensive agriculture production and business units (Agriculture Industry) on these properties. Examples of such agricultural practices are horticulture, hydroponic or small-scale cash crop production units which will make use of modern irrigation technologies adapted to the desert environment (i.e. those successfully used in Israel) as well as fodder-banks for dairy or meat production such as cattle, sheep, pigs or chicken farming practices, inclusive of agricultural industries as defined in the Henties Bay Zoning Scheme No 15, but are to exclude non-agricultural land uses such warehousing, scrap yards, fuel depots or any other activity which is not primarily aimed at, or classified to be an agricultural practice.

It should further be noted that, as per definition of “Agricultural Land / Use” (see Henties Bay Zoning Scheme No 15) the development of residential uses on these smallholdings should be limited to only one main dwelling and that not more than five labour and staff / workers accommodation units. This restriction has the purpose to prevent peri-urban neighbourhood development which will ultimately lead to a situation where the local authority will be faced by an outcry for the provision of water, sewage or electricity services and road maintenance. As such the Council is advised to adopt a policy which will enforce a condition that no further subdivision/s or rezoning/s will be permitted within the smallholding area or then that penalty rates and taxes are to be levied on anybody using a smallholding for non-agricultural purposes.

According to **Table 6** below which is an extract of Table B of the Henties Bay Zoning Scheme No 15 the following land uses are permissible and can be supported by the Town Council.

**Table 6:** Extract of Table B: Land Use Table (Henties Bay Zoning Scheme No 15)

<b>Zone</b>	<b>Primary Use</b>	<b>Consent Use</b>	<b>Owner Consent</b>
Agriculture	Agricultural building, Dwelling Unit, Agricultural use, Nursery	Tourism, Tourist facility, Farm stall, Guest farm, Lodge, Permanent tented camp and tented lodges, Camping and caravan park, Driving school, Rest camp, Aquaculture, Service industry, Agricultural industry	Resident occupation, Home based shop

There are 47 smallholdings provided for within the proposed layout. The sizes of these smallholdings range between 1.66 hectare to 58.9 hectare where the smaller portions are located closer to the river embankment (thus along the northern boundary of the proposed development) while the larger ones are located towards the eastern and south-eastern part of the development. It is envisaged that the

smaller plots be allocated and used for the development of intensive irrigation farming practices while the larger units are to be reserved for husbandry or then extensive agricultural practices (i.e. jojoba farming, olive or date plantations) if then found to be feasible and supported by environmental considerations. The land use restrictions of the Henties Bay Zoning Scheme should be strictly enforced, inclusive of the development of only one main dwelling and not more than five (5) worker accommodation units.

It should be noted that the individual activities which will be undertaken on the portions once development will be subject to separate EIAs should they trigger listed activities as per the Environmental Management Act No 7 of 2007 and EIA Regulations of 2012.

#### 4.3.2 Description of Activity

The proponent intends to create approximately 49 portions (of which one is to be reserved as Street) in Henties Bay to be utilised primarily for Agricultural purposes.

The following statutory steps must be undertaken for the intended development:

- **Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder;**
- **Rezoning of Portions 1 to 46 from ‘Undetermined’ to ‘Agriculture’;**
- **Rezoning of Portion 47 from ‘Undetermined’ to ‘Local Authority’**
- **Reservation of Portion 49 as ‘Street’;**
- **Inclusion of new land uses (zoning) in a following amendment scheme prepared for Henties Bay.**

#### 4.3.3 The subdivision

The Remainder of the Farm Hentiesbaai Townlands No 133 is to be subdivided into 49 Portions and Remainder as depicted in **Figure 11** below.

#### 4.3.4 The rezoning

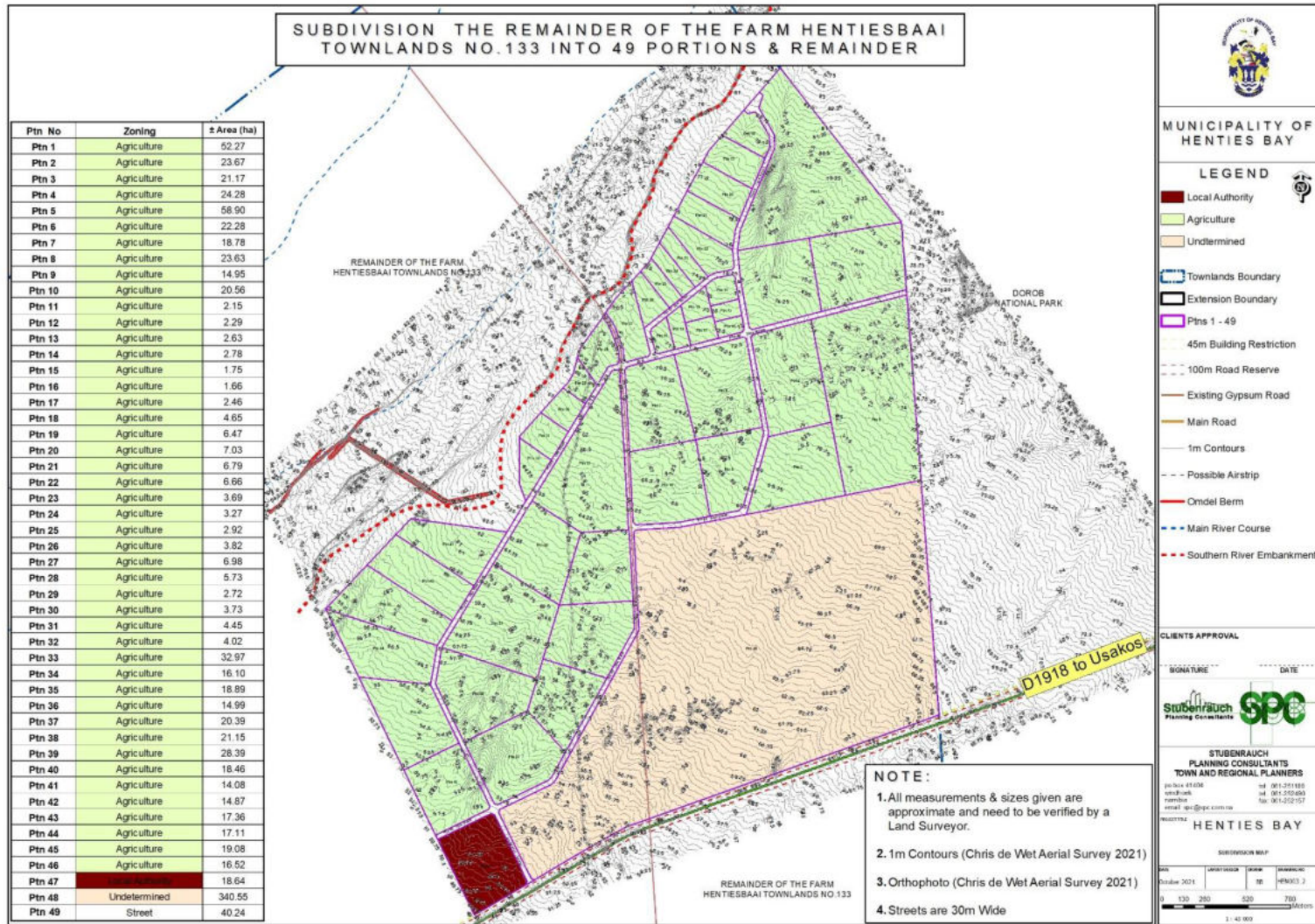
In terms of the Henties Bay Town Planning Scheme No 15, Agricultural land use refers to:

*“Arable, meadow or pastureland, market gardens, poultry and pig farms or game farms, land used for beekeeping, nursery gardens, plantations and orchards, or similar uses, and may include one main dwelling unit and labourer and staff accommodation facilities, but not more than five dwelling units; but does not include: (i) land occupied as a park together with a house thereon; or (ii) land used as a garden other than as aforesaid; or (iii) land kept or reserved for the purpose of sports, athletics or recreation or used as a racecourse; or (iv) an Agricultural Industry and feedlots, except with consent of Council”.*

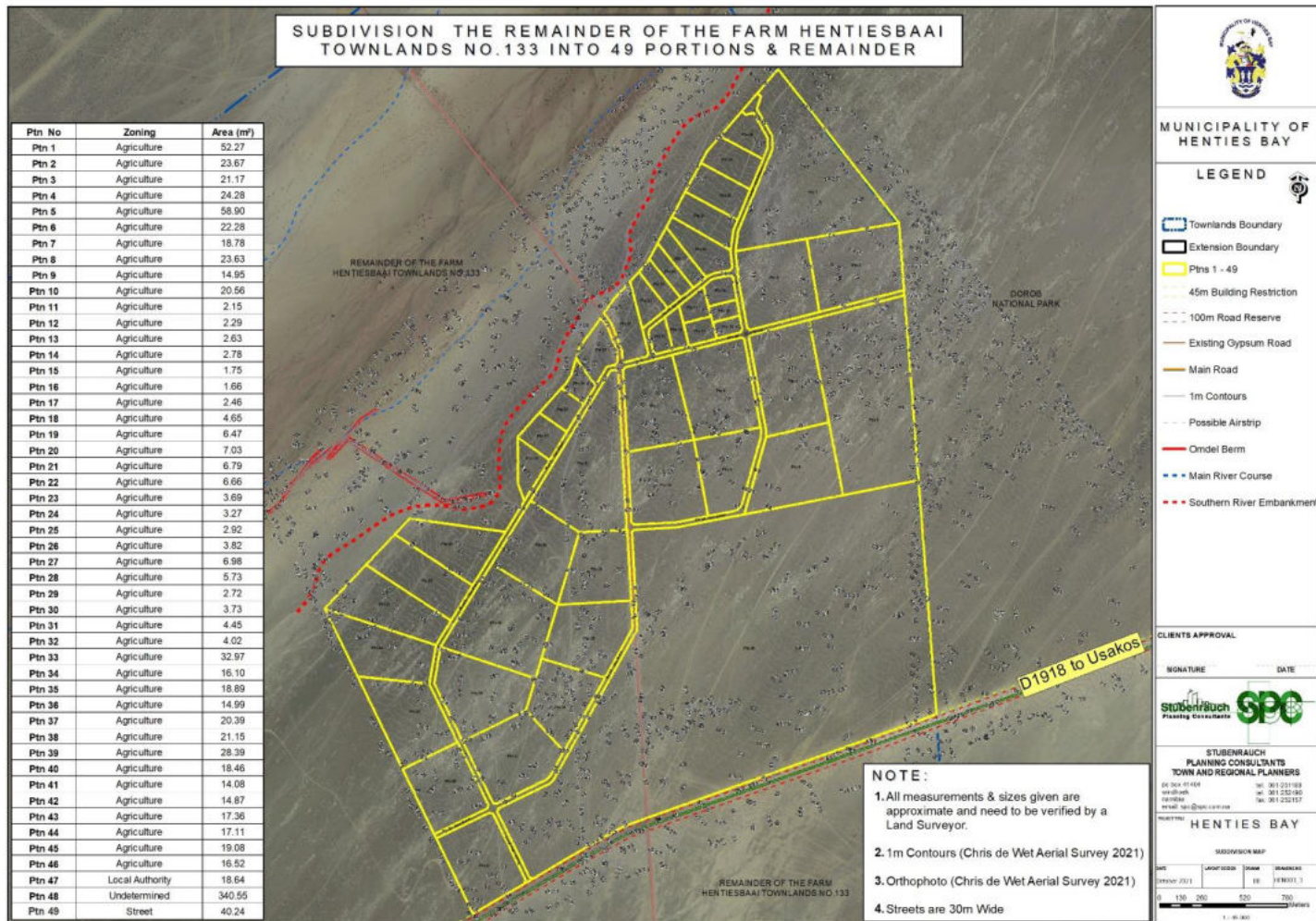
The Remainder of the Farm Hentiesbaai Townlands No 133 is zoned “Undetermined”. The land use zonings to be allocated to the new portions to be created are reflected in **Table 7** below.

**Table 7:** Land Use Zoning

<b>Portion Number</b>	<b>Zoning</b>
Portions 1 to 46	Agriculture
Portion 47	Local Authority
Portion 48	Undetermined
Portion 49	Street



**Figure 11:** Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133 into 49 Portions and Remainder



**Figure 12:** Aerial Map of the Subdivision of the Remainder of the Farm Hentiesbaai Townlands No 133

### 4.3.5 Engineering Services

Each plot owner will be responsible to provide his/her own water, sewage and electricity as per requirement of the agriculture use to be developed on the respective smallholding, the services to be provided are to be in line with the recommendations made within this environmental scoping report and environmental management plan prepared for the development and to the satisfaction of the municipal engineering department. The local authority is advised to adopt a policy for service provision, that outlines how water, sewage and electricity is to be provided to the entire area. The below outlines the options in terms of water, sewage and electricity provision to be considered.

#### 4.3.5.1 Electricity

- Solar power is proposed to be used for the intended portions.
- Each owner is to install a solar system based on their needs.

#### 4.3.5.2 Sewage

- Each owner will be responsible for managing their sewage.
- No oxidation pond or open pond system or holding system should be allowed.
- Only systems which limit the likelihood of ground and surface water pollution to be allowed.
- On-site wastewater treatment systems –
  - There are smaller wastewater treatment systems available that can be installed on each portion.
  - This has the advantage of re-use of treated effluent (watering of trees, gardens, irrigation).
  - The required permits must be obtained from the Ministry of Agriculture, Water and Land Reform (MAWLR) for wastewater treatment and re-use of effluent.
  - The development of these systems will be subject to a separate EIA.
- Septic Tank Systems
  - Septic Tank systems need to be regulated in order to reduce the impact of groundwater pollution potential.
  - The minimum portion sizes which provides a minimal reasonable protection of groundwater quality appears to be 0.2 to 0.4 hectare based on reported data, and from 0.3 to 0.4 ha, based on theory (Washington State Department of Health, 2003) (Perkins, 1984).



- These restrictions are further dependent on other factors such as restrictions in terms of groundwater protection areas, geotechnical conditions of the soils etc.
- Should septic tank systems be considered a hydrogeological assessment would need to be conducted to determine the potential for groundwater pollution.
- No septic tank or French drain is allowed within 500 meters of a private or production borehole.

#### 4.3.5.3 Waste

- The municipality will be responsible for domestic waste management.
- Hazardous waste generated on site is to be properly managed and disposed at Walvis Bay Hazardous Waste facility.

#### 4.3.5.4 Water

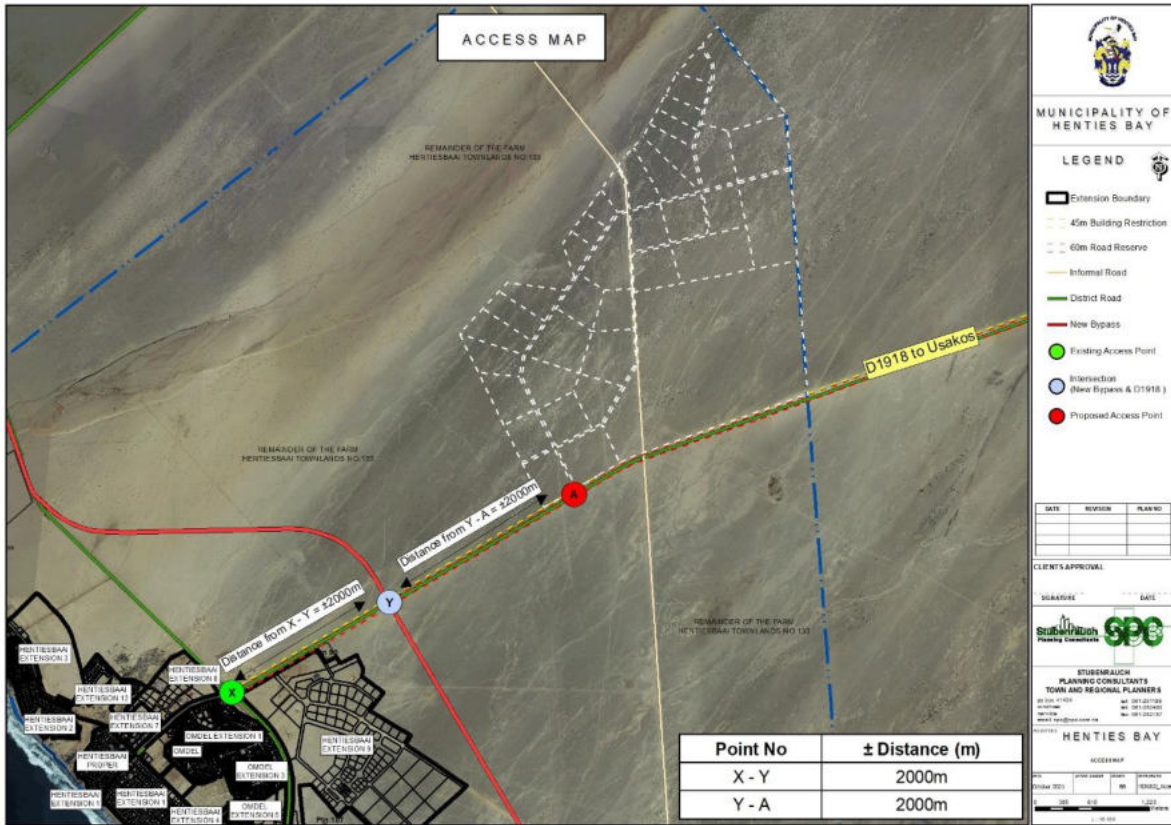
A feasibility study is underway to determine the most feasible water supply option for the proposed development. The following options are being investigated as possible water supply options:

- Possibility of obtaining water from additional boreholes subject to approval from the MAWLR.
- Supplement water distribution subject to agreement with NamWater.
- Desalinated water from the desalination plant located at the University of Namibia (UNAM) Sam Nujoma Campus, in Henties Bay.
- Desalinated water from a private desalination plant which is to be developed in Henties Bay.
- Grey water from the Henties Bay Municipality.

According to GCS Water and Environment (2022), the Henties Bay Agriculture Small Holdings Project is located in a sensitive area from a groundwater point of view. Due to the water scarcity in the area desalinated water appears to be the preferred option for water supply. However, the cost of water from desalination is expensive. The feasibility of this option would depend on the return on agriculture compared to the cost. Groundwater would be less expensive but dependent on the supply and due to the stress on the aquifer it could potentially not be developed. The option to utilise grey water would need to be discussed with the Henties Bay Municipality as currently the capacity is not known. It is thus recommended that the volumes of grey water be monitored and projections made in order to determine the possibility and availability for supply. The grey water would additionally require treatment prior to use for irrigation and thus the quality of the water needs to be assessed as well.

### 4.3.6 Access Provision

The Henties Bay Smallholding development is to obtain access from one approved access point from the D1918 road (**Figure 13**). Formal approval for this access has been applied for to the Roads Authority. The layout design respects the 100metre building restriction line and accepts that no direct access onto the D1918 road may be obtained from a smallholding created and formalised as part of this application other than from the approved access point.



**Figure 13:** Access Map

## 5 PUBLIC PARTICIPATION PROCESS

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### 5.1 PUBLIC PARTICIPATION REQUIREMENTS

In terms of Section 21 of the EIA Regulations a call for open consultation with all I&APs at defined stages of the EIA process is required. This entails participatory consultation with members of the public by providing an opportunity to comment on the proposed project. Public Participation has thus incorporated the requirements of Namibia's legislation, but also takes account of international guidelines, including Southern African Development Community (SADC) guidelines and the Namibian EIA Regulations. Public participation in this project has been undertaken to meet the specific requirements in accordance with the international best practice. Please see **Table 8** below for the activities undertaken as part of the public participation process. The I&APs were given time to comment from **5 November 2021 to 26 November 2021**.

**Table 8:** Table of Public Participation Activities

ACTIVITY	REMARKS
Placement of site notice/poster in Henties Bay	See <b>Annexure A</b>
Placing advertisements in two newspapers namely the Namibian and The New Era (5 November 2021 and 10 November 2021)	See <b>Annexure B</b>
Written notice to surrounding property owners and Interested and Affected Parties via Email (2 November 2021)	See <b>Annexure C</b>
A public meeting was held on 11 November 2021 at the Henties Bay Council Chambers in Henties Bay	See <b>Annexure C</b>

#### 5.1.1 Environmental Assessment Phase 2

The second phase of the PPP involved the lodging of the Draft Environmental Scoping Report (DESR) to all registered I&APs for comment. Registered and potential I&APs were informed of the availability of the DESR for public comment *via* a letter/email dated **13 May 2022**. An Executive Summary of the DESR was also included in the letters to the registered I&APs. I&APs had until **24 May 2022** to submit comments or raise any issues or concerns they may have with regard to the proposed project.

## 6 ASSESSMENT METHODOLOGY

*The purpose of this chapter is to describe the assessment methodology utilized in determining the significance of the construction and operational impacts of the proposed project, and where applicable the possible alternatives, on the biophysical and socio-economic environment.*

Assessment of predicted significance of impacts for a proposed development is by its nature, inherently uncertain – environmental assessment is thus an imprecise science. To deal with such uncertainty in a comparable manner, a standardised and internationally recognised methodology has been developed. Such accepted methodology is applied in this study to assess the significance of the potential environmental impacts of the proposed development, outlined as follows in **Table 9**.

**Table 9:** Impact Assessment Criteria

CRITERIA	CATEGORY
Impact	Description of the expected impact
<b>Nature</b> Describe type of effect	<b>Positive:</b> The activity will have a social / economical / environmental benefit. <b>Neutral:</b> The activity will have no effect <b>Negative:</b> The activity will have a social / economical / environmental harmful effect
<b>Extent</b> Describe the scale of the impact	<b>Site Specific:</b> Expanding only as far as the activity itself (onsite) <b>Small:</b> restricted to the site’s immediate environment within 1 km of the site (limited) <b>Medium:</b> Within 5 km of the site (local) <b>Large:</b> Beyond 5 km of the site (regional)
<b>Duration</b> Predicts the lifetime of the impact.	<b>Temporary:</b> < 1 year (not including construction) <b>Short-term:</b> 1 – 5 years <b>Medium term:</b> 5 – 15 years <b>Long-term:</b> >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) <b>Permanent:</b> Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary
<b>Intensity</b> Describe the magnitude (scale/size) of the Impact	<b>Zero:</b> Social and/or natural functions and/ or processes remain unaltered <b>Very low:</b> Affects the environment in such a way that natural and/or social functions/processes are not affected <b>Low:</b> Natural and/or social functions/processes are slightly altered

CRITERIA	CATEGORY
	<p><b>Medium:</b> Natural and/or social functions/processes are notably altered in a modified way</p> <p><b>High:</b> Natural and/or social functions/processes are severely altered and may temporarily or permanently cease</p>
<p><b>Probability of occurrence</b> Describe the probability of the Impact <u>actually</u> occurring</p>	<p><b>Improbable:</b> Not at all likely</p> <p><b>Probable:</b> Distinctive possibility</p> <p><b>Highly probable:</b> Most likely to happen</p> <p><b>Definite:</b> Impact will occur regardless of any prevention measures</p>
<p><b>Degree of Confidence in predictions</b> State the degree of confidence in predictions based on availability of information and specialist knowledge</p>	<p><b>Unsure/Low:</b> Little confidence regarding information available (&lt;40%)</p> <p><b>Probable/Med:</b> Moderate confidence regarding information available (40-80%)</p> <p><b>Definite/High:</b> Great confidence regarding information available (&gt;80%)</p>
<p><b>Significance Rating</b> The impact on each component is determined by a combination of the above criteria.</p>	<p><b>Neutral:</b> A potential concern which was found to have no impact when evaluated</p> <p><b>Very low:</b> Impacts will be site specific and temporary with no mitigation necessary.</p> <p><b>Low:</b> The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures</p> <p><b>Medium:</b> Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures.</p> <p><b>High:</b> Impacts have a high magnitude and will be experienced regionally for at least the life span of the development, or will be irreversible. The impacts could have the no-go proposition on portions of the development in spite of any mitigation measures that could be implemented.</p>

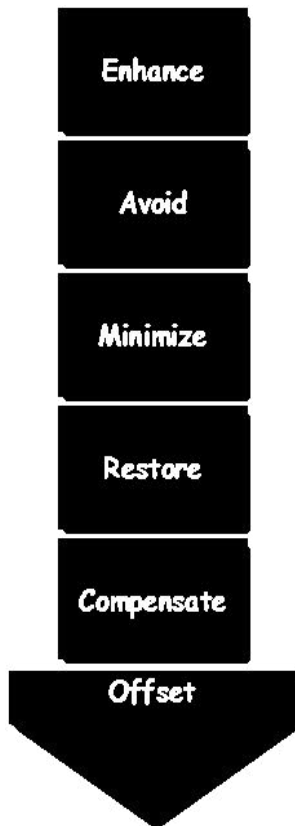
\*NOTE: Where applicable, the magnitude of the impact has to be related to the relevant standard (threshold value specified and source referenced). The magnitude of impact is based on specialist knowledge of that particular field.

For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are described. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The decision as to which combination of alternatives and mitigation measures to apply lies with the proponent, and their acceptance and approval ultimately with the relevant environmental authority.

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. Such significance is also informed by the context of the impact, i.e. the character and identity of the receptor of the impact.

### 6.1 MITIGATION MEASURES

There is a mitigation hierarchy of actions which can be undertaken to respond to any proposed project or activity (See **Figure 14** below). These cover avoidance, minimization, restoration and compensation. It is possible and considered sought after to enhance the environment by ensuring that positive gains are included in the proposed activity or project. If negative impacts occur, then the hierarchy indicates the following steps.



**Impact avoidance:** This step is most effective when applied at an early stage of project planning. It can be achieved by:

- not undertaking certain projects or elements that could result in adverse impacts;
- avoiding areas that are environmentally sensitive; and
- putting in place preventative measures to stop adverse impacts from occurring.

**Impact minimization:** This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- scaling down or relocating the proposal;
- redesigning elements of the project; and
- taking supplementary measures to manage the impacts.

**Restoration:** This step is taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised. Restoration tries to return an area to the original ecosystem that occurred before impacts. Restoration is frequently needed towards the end of a project’s life cycle but may be possible in some areas during operation.

**Figure 14:** Mitigation Hierarchy

**Impact compensation:** This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- rehabilitation of the affected site or environment, for example, by habitat enhancement;
- restoration of the affected site or environment to its previous state or better; and
- replacement of the same resource values at another location (off-set), for example, by wetland engineering to provide an equivalent area to that lost to drainage or infill.

## **7 ASSESSMENT OF POTENTIAL IMPACTS AND POSSIBLE MITIGATION MEASURES**

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### ***7.1 INTRODUCTION***

This Chapter describes the potential impacts on the biophysical and socio-economic environments, which may occur due to the proposed activities described in Chapter 4. These include potential impacts, which may arise during the operation of the proposed development (i.e. long-term impacts) as well as the potential construction related impacts (i.e. short to medium term). The assessment of potential impacts will help to inform and confirm the selection of the preferred layouts to be submitted to MEFT: DEA for consideration. In turn, MEFT: DEA's decision on the environmental acceptability of the proposed project and the setting of conditions of authorisation (should the project be authorised) will be informed by this chapter, amongst other information, contained in this EA Report.

The baseline and potential impacts that could result from the proposed development are described and assessed with potential mitigation measures recommended. Finally, comment is provided on the potential cumulative impacts which could result should this development, and others like it in the area, be approved.

### ***7.2 PLANNING AND DESIGN PHASE IMPACTS***

During the planning and design phase consideration should be given on aspects such as impacts of traffic and existing municipal infrastructure.

#### **7.2.1 Traffic Impacts**

The intended development may have an impact on traffic in the subject area as the site is currently undeveloped. Once the proposed site is developed traffic in the area is expected to increase.

#### **7.2.2 Biodiversity Impacts**

The proposed development may result in the disturbance of or direct loss of species due to site disturbance as well as habitat fragmentation. There could be a potential impact caused due to the barrier effects to animal movement and habitat fragmentation. The Omaruru River is in particular a sensitive area and as such the 100m to 150m buffer zone should be respected to ensure the protection of the fauna and flora occurring within this area. Furthermore, this area needs to be protected from human activities which can disturb the area, inclusive of agricultural practices, sand mining or excessive vehicular use.



### **7.3 CONSTRUCTION PHASE IMPACTS ON THE BIOPHYSICAL ENVIRONMENT**

The construction phase impacts are those impacts on the biophysical and socio-economic environment that would occur during the construction phase. These impacts are inherently temporary in duration but may have longer lasting effects.

#### **7.3.1 Flora and Fauna Impacts (Biodiversity)**

As the project site is undeveloped there is some vegetation present on site. The site is mostly sparsely vegetated with some *Arthraerua leubnitziae* (pencil bush/paintbrush bush) located on site. However, the subject area is bordered by the Omaruru River to the north which is lined with large shrubs and trees. It should be ensured that should any protected plant species that occur on site are not to be removed and accommodated within the proposed layout. It is anticipated that the proposed development area and associated infrastructure (e.g. water, sewage, access route, etc.) would have localised negative implications on the environment and associated fauna and flora should the proposed mitigation measures as outlined in the EMP be enforced.

#### **7.3.2 Surface and Ground Water Impacts**

The Omaruru River is a major hydrological feature within the Erongo Region which flows into the Omdel dam. The subject area is bordered by the Omaruru River to the north and the mitigation measures outlined in the EMP should be implemented to ensure that stormwater is sufficiently accommodated such that the natural flow of water is not disturbed. Surface and groundwater impacts may thus be encountered during the construction and operation phase, especially if development takes place within the rainy season. The risk of contaminating such water sources can be increased by accidental spillage of oils and fuels and any other equipment used during construction. This risk is minimised by the fact that the construction phase will be a short-term activity.

#### **7.3.3 Soil Erosion Impacts**

Given the characteristics of the proposed site, soil erosion is likely to be encountered especially if construction will take place during the rainy season, the removal of the sparse vegetation will render the soil vulnerable to erosion as they also serve the purpose of keeping the soils compacted.

### **7.4 CONSTRUCTION PHASE IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT**

#### **7.4.1 Heritage impacts**

No archaeological and heritage resources are expected to be found on the site. The project management should however be made aware of the provisions of the National Heritage Act regarding

the prompt reporting of archaeological finds. Section 3.1.2 provides an overview of the archaeological and heritage context of the town and region.

#### **7.4.2 Health, Safety and Security Impacts**

Due to the demand for construction workers during the construction of the proposed project an influx of migrant workforce who will require temporary accommodation in Henties Bay might be experienced. Experience with other construction projects in a developing-world context has shown that, where migrant construction workers have the opportunity to interact with the local community, a significant risk is created for the development of social conditions and sexual behaviors that contribute to the spread of HIV and AIDS.

In response to the threat the pandemic poses, MEFT has developed a policy on HIV and AIDS. This policy, which was developed with support from USAID, GTZ and the German Development Fund, provides for a non-discriminatory work environment and for workplace programs managed by a Ministry-wide committee. The MEFT has also recently initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.

#### **7.4.3 Traffic Impacts**

Traffic is expected to increase during the construction phase of the project in areas where construction will take place. A number of trucks and other heavy machinery will be required to deliver, handle and position construction materials as well as to remove spoil material. Not only will the increase in traffic result in associated noise impacts, it will also impact on the roads in the area.

#### **7.4.4 Noise Impacts**

Construction may result in associated noise impacts. These noise impacts will mainly be associated with construction machinery and construction vehicles. The impact is however limited mainly to the construction period only.

#### **7.4.5 Dust and Emission Impacts**

Excavation and stockpiles during the construction phase could result in dust impacts, if not managed correctly. Dust could impact negatively on the health of the nearby community if mitigation measures are not implemented. Dust impacts are primarily associated with the construction phase.

#### **7.4.6 Municipal Services**

The construction phase will result in additional people on-site, who will require provision of the following services:

- Potable water for domestic (ablution and drinking) and construction purposes.
- Temporary toilets during the construction phase.
- Solid waste management (domestic and construction waste).

These services if not managed well are likely to create an opportunity for water wastage; litter; solid and human waste pollution.

#### **7.4.7 Storage and Utilisation of Hazardous Substances**

Hazardous substances are regarded by the Hazardous Substance Ordinance (No. 14 of 1974) as those substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. During the construction period, the use and storage of these types of hazardous substances, such as shutter oil, curing compounds, types of solvents, primers and adhesives and diesel, on-site could have negative impacts on the surrounding environment if these substances spill and enter the environment.

### **7.5 OPERATIONAL PHASE IMPACTS**

The operational phase impacts are those impacts on the biophysical and socio-economic environment that would occur during the operational phase of the proposed project and are inherently long-term in duration.

#### **7.5.1 Traffic Impacts**

The intended development may have an impact on traffic in the subject area as the site is currently undeveloped. Once the proposed site is developed traffic in the area is expected to increase.

#### **7.5.2 Surface and groundwater Impacts**

Surface and groundwater impacts may be encountered during the operational activities on the site dependent on the individual activities proposed to be undertaken on each portion.

#### **7.5.3 Visual and Sense of Place Impacts**

There may be a change in visual characteristics of the site particularly as the area is currently undeveloped. The extent of this disturbance will depend on how highly the interested and affected parties valued the initial aesthetic quality of the site. The intended activities for the proposed site may alter the sense of place for residents of Henties Bay who frequent the site. However due to the nature of the activities proposed for the site, the impact is not expected to be significant.

#### 7.5.4 Noise Impacts

The operational activities may result in associated noise impacts, depending on the exact type of activities taking place on the properties. However due to the nature of the land uses proposed for the subject even it is not expected that the noise levels will be significant if managed well.

#### 7.5.5 Emission Impacts

The air quality in the area is considered to be fairly good. Additional emissions are not expected due to the land uses that are intended for the site.

#### 7.5.6 Waste generation

Operational activities may result in increased waste being generated on site. As such waste management should be conducted as per the recommendations in the EMP.

#### 7.5.7 Social Impacts

From a social perspective, the development will make available portions which can be developed for small scale agricultural activities. The community of Henties Bay are further expected to benefit from the employment opportunities that may be offered during construction and possibly by the activities taking place at the site.

### 7.6 CUMULATIVE IMPACTS

The cumulative impact of the proposed developments regarding the degradation of the project area is very difficult to rate. If all proposed mitigation measures are however in place to minimise the overall impacts then the cumulative impact can be expected to be rated as **Medium-Low (negative)** for the proposed developments.

#### 7.1 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) is contained in **Annexure E** of this report. The purpose of the EMP is to outline the type and range of mitigation measures that should be implemented during the construction and decommissioning phases of the project to ensure that negative impacts associated with the development are avoided or mitigated.

#### 7.2 SUMMARY OF POTENTIAL IMPACTS

A summary of all the potential impacts from the proposed project assessed above is included in **Table 10**. The **Tables 11 – 13** provide a summary of the mitigation measures proposed for the impacts.

While some difference in magnitude of the potential impacts would result from the proposed alternatives this difference was not considered to be significant for any of the potential impacts. As such, the table below applies to all proposed alternatives.

**Table 10:** Summary of the significance of the potential impacts

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
<b>PLANNING AND DESIGN PHASE</b>										
<b>1. Traffic Impacts</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>2. Loss of species through landscape disturbance and habitat fragmentation</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>CONSTRUCTION PHASE</b>										
<b>3. Biodiversity (Fauna and Flora)</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium-Low	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>4. Surface &amp; ground water</b>		No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
	Henties Bay Agricultural Portions	Mitigation	Local	Low	Short term	Medium - low	Probable	Certain	Reversible	Medium - Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>5. Soil erosion</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Short term	Medium - low	Probable	Certain	Reversible	Medium - low (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>6. Heritage</b>	Henties Bay Agricultural Portions	No mitigation	Local	Very low	Short term	Very low	Probable	Certain	Irreversible	Very low(-ve)
		Mitigation	Local	Negligible	Short term	Negligible	Probable	Certain	Irreversible	Negligible (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>7. Health, safety and security</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium-Low	Short term	Medium-Low	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>8. Traffic impacts</b>	Henties Bay Agricultural Portions	No mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Very low	Probable	Certain	Reversible	Very low

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>9. Noise impacts</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Short term	Medium - low	Probable	Certain	Reversible	Medium - Low (-ve)
		Mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>10. Emissions impacts</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Short term	Low	Probable	Certain	Reversible	Medium - Low (-ve)
		Mitigation	Local	Low	Short term	Very Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>11. Municipal services</b>	Henties Bay Agricultural Portions	No mitigation	Local	Low	Short term	Low	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Very low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>12. Waste</b>	Henties Bay Agricultural Portions	No mitigation	Local	Low	Short term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)



Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>13. Hazardous Substances</b>	Henties Bay Agricultural Portions	No mitigation	Local	Low	Short term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Very low	Short term	Low	Probable	Certain	Reversible	Very low (-ve)
	No go	No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
<b>OPERATIONAL PHASE</b>										
<b>1. Surface &amp; ground water</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Very-Low (-ve)
	No go	No mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>2. Traffic</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Very-Low (-ve)
	No go	No mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
<b>3. Visual &amp; sense of place</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Medium (-ve)
		Mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Medium-Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>4. Waste</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium	Medium term	Medium	Probable	Certain	Reversible	Low (-ve)
		Mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Very-Low (-ve)
	No go	No mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Low	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>5. Noise</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium-Low	Medium term	Medium-Low	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Medium term	Low	Probable	Certain	Reversible	Low (-ve)
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>6. Emissions</b>	Henties Bay Agricultural Portions	No mitigation	Local	Medium-Low	Medium term	Low	Probable	Certain	Reversible	Medium-Low (-ve)
		Mitigation	Local	Low	Medium term	Very Low	Probable	Certain	Reversible	Low (-ve)

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
	No go	No mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Medium term	Neutral	Probable	Certain	Reversible	Neutral
<b>7. Social impact</b>	Henties Bay Agricultural Portions	No mitigation	Local	High	Long term	Medium (+)	Probable	Probable	Reversible	High (+)
		Mitigation	Local	High	Long term	Medium (+)	Probable	Probable	Reversible	High (+)
	No go	No mitigation	Local	Neutral	Long term	Neutral	Probable	Probable	Reversible	Neutral
		Mitigation	Local	Neutral	Long term	Neutral	Probable	Probable	Reversible	Neutral

**Table 11:** Proposed mitigation measures for the planning and design phase

<b>PLANNING AND DESIGN PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
<b>Traffic</b>	<ul style="list-style-type: none"> <li>• Ensure that road junctions have good sightlines.</li> <li>• Provide formal road crossings at relevant areas.</li> <li>• Provide for speed reducing interventions such as speed bumps at relevant road sections.</li> </ul>
<b>Existing Service Infrastructure</b>	<ul style="list-style-type: none"> <li>• It is recommended that alternative and renewable sources of energy be explored and introduced into the proposed development to reduce dependency on the grid.</li> <li>• Solar geysers and panels should be considered to provide for general lighting and heating of water and buildings.</li> <li>• Water saving mechanisms should be considered for incorporation within the developments in order to further reduce water demands.</li> <li>• Re-use of treated wastewater should be considered wherever possible to reduce the consumption of potable water.</li> </ul>
<b>Loss of species due to landscape disturbance and habitat fragmentation</b>	<ul style="list-style-type: none"> <li>• No development to occur 100 – 150 meter in a southerly direction from the southern river embankment of the Omaruru River (adjacent to the proposed site).</li> <li>• This area needs to be free from human activities which can disturb the area, inclusive of agricultural practices, sand mining or excessive vehicular use.</li> </ul>
<b>Stormwater Management</b>	<ul style="list-style-type: none"> <li>• Remove existing structures within the flood prone areas which blocks off the natural flow of water.</li> </ul>

**Table 12:** Proposed mitigation measures for the construction phase

<b>CONSTRUCTION PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
<b>Flora and Fauna</b>	<ul style="list-style-type: none"> <li>• Adapt the proposed developments to the local environment – e.g. small adjustments to the site layout could avoid potential features such as water bodies and vegetation.</li> <li>• Prevent the destruction of protected and endemic plant species.</li> <li>• Prevent contractors from collecting wood, veld food, etc. during the construction phase.</li> <li>• Do not clear cut the entire development site, but rather keep the few individual trees/shrubs not directly affecting the developments as part of the landscaping.</li> <li>• The plants that are to be kept should be clearly marked with “danger tape” to prevent accidental removal.</li> <li>• Regular inspection of the marking tool should be carried out.</li> <li>• The very important plants should be “camped off” to prevent the unintended removal or damage to these trees.</li> <li>• Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species.</li> <li>• Transplant removed plants where possible, or plant new plants in lieu of those that have been removed.</li> <li>• Prevent the introduction of potentially invasive alien ornamental plant species such as; <i>Lantana</i>, <i>Opuntia</i>, <i>Prosopis</i>, <i>Tecoma</i>, etc.; as part of the landscaping as these species could infest the area further over time.</li> </ul>
<b>Surface and Ground Water Impacts</b>	<ul style="list-style-type: none"> <li>• It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and surface water pollution.</li> <li>• No dumping of waste products of any kind in or in close proximity to surface water bodies.</li> <li>• Heavy construction vehicles should be kept out of any surface water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks.</li> </ul>

<b>CONSTRUCTION PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
	<ul style="list-style-type: none"> <li>• Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with.</li> <li>• Drip trays must be placed underneath construction vehicles when not in use to contain all oil that might be leaking from these vehicles.</li> <li>• Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies.</li> <li>• All materials on the construction site should be properly stored.</li> <li>• Disposal of waste from the sites should be properly managed and taken to the designated landfill site.</li> <li>• Construction workers should be given ablution facilities at the construction sites that are located at least <b>30 m</b> away from any surface water and regularly serviced.</li> <li>• Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment these should be done at an area properly suited and prepared to receive and contain polluted waters.</li> </ul>
<b>Soil Erosion</b>	<ul style="list-style-type: none"> <li>• It is recommended that construction takes place outside of the rainy season in order to limit potential flooding and the runoff of loose soil causing further erosion.</li> <li>• Appropriate erosion control structures must be put in place where soil may be prone to erosion.</li> <li>• Checks must be carried out at regular intervals to identify areas where erosion is occurring.</li> <li>• Appropriate remedial actions are to be undertaken wherever erosion is evident.</li> </ul>
<b>Heritage</b>	<ul style="list-style-type: none"> <li>• The project management should be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds.</li> <li>• In the event of such finds, construction must stop, and the project management or contractors should notify the National Heritage Council of Namibia immediately.</li> </ul>
<b>Health, Safety and Security</b>	<ul style="list-style-type: none"> <li>• Construction personnel should not overnight at the site, except the security personnel.</li> <li>• Ensure that all construction personnel are properly trained depending on the nature of their work.</li> </ul>

<b>CONSTRUCTION PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
	<ul style="list-style-type: none"> <li>• Provide for a first aid kit and a properly trained person to apply first aid when necessary.</li> <li>• Restrict unauthorised access to the site and implement access control measures.</li> <li>• Clearly demarcate the construction site boundaries along with signage of “no unauthorised access”.</li> <li>• Clearly demarcate dangerous areas and no-go areas on site.</li> <li>• Staff and visitors to the site must be fully aware of all health and safety measures and emergency procedures on site.</li> <li>• The contractor must comply with all applicable occupational health and safety requirements.</li> <li>• The workforce should be provided with all necessary Personal Protective Equipment where appropriate.</li> </ul>
<b>Traffic</b>	<ul style="list-style-type: none"> <li>• Limit and control the number of access points to the site.</li> <li>• Ensure that road junctions have good sightlines.</li> <li>• Construction vehicles need to be in a road worthy condition and maintained throughout the construction phase.</li> <li>• Transport the materials in the least number of trips as possible.</li> <li>• Adhere to the speed limit.</li> <li>• Implement traffic control measures where necessary.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• No amplified music should be allowed on site.</li> <li>• Inform immediate neighbours of construction activities to commence and provide for continuous communication between the neighbours and contractor.</li> <li>• Limit construction times to acceptable daylight hours.</li> <li>• Install technology such as silencers on construction machinery if noise levels are significantly high.</li> <li>• Do not allow the use of horns as a general communication tool but use it only where necessary as a safety measure.</li> </ul>

<b>CONSTRUCTION PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
<b>Dust and Emission</b>	<ul style="list-style-type: none"> <li>• It is recommended that dust suppressants such as Dustex be applied to all the construction clearing activities to ensure at least 50% control efficiency on all the unpaved roads and reduce water usage.</li> <li>• Construction vehicles to only use designated roads.</li> <li>• During high wind conditions the contractor must make the decision to cease works until the wind has calmed down.</li> <li>• Cover any stockpiles with plastic to minimise windblown dust.</li> <li>• Provide workers with dust masks.</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>• It is recommended that waste from the temporary toilets be disposed of at an approved Wastewater Treatment Works.</li> <li>• A sufficient number of waste bins should be placed around the site for the general waste.</li> <li>• A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site.</li> <li>• Solid waste will be collected and disposed of at an appropriate local land fill or an alternative approved site, in consultation with the local authority.</li> </ul>
<b>Hazardous Substances</b>	<ul style="list-style-type: none"> <li>• Storage of the hazardous substances in a bunded area, with a volume of 120 % of the largest single storage container or 25 % of the total storage containers whichever is greater.</li> <li>• Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant.</li> </ul>



**Table 13:** Proposed mitigation measures for the operational phase

<b>OPERATIONAL PHASE IMPACTS</b>	
<b>Impact</b>	<b>Mitigation Measures</b>
<b>Surface and Ground Water</b>	<ul style="list-style-type: none"> <li>• A no-go buffer area of at least 15 m should be allocated to any water bodies in the area.</li> <li>• No dumping of waste products of any kind in or in close proximity to any surface water bodies.</li> <li>• Contaminated runoff from the various operational activities should be prevented from entering any surface or ground water bodies.</li> <li>• Ensure that surface water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.</li> <li>• Disposal of waste from the various activities should be properly managed.</li> </ul>
<b>Visual and Sense of Place</b>	<ul style="list-style-type: none"> <li>• It is recommended that more 'green' technologies be implemented within the architectural designs and building materials of the development where possible in order to minimise the visual prominence of such a development within the more natural surrounding landscape.</li> <li>• Natural colours and building materials such as wood and stone should be incorporated as well as the use of indigenous vegetation in order to help beautify the development.</li> <li>• Visual pollutants can further be prevented through mitigations (i.e. keep existing trees, introduce tall indigenous trees; keep structures unpainted and minimise large advertising billboards).</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Do not allow commercial activities that generate excessive noise levels.</li> <li>• Continuous monitoring of noise levels should be conducted to make sure the noise levels does not exceed acceptable limits.</li> <li>• No activity having a potential noise impact should be allowed after 18:00 hours if possible.</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>• Solid waste will be collected and disposed of at an appropriate local land fill or an alternative approved site, in consultation with the local authority.</li> </ul>
<b>Emissions</b>	<ul style="list-style-type: none"> <li>• Consider tarring of the internal road network.</li> <li>• Manage activities that generate emissions.</li> </ul>
<b>Social Impacts</b>	No specific mitigation measures are required, only that the local community be consulted in terms of possible job creation opportunities and must be given first priority if unspecialised job vacancies are available.

## 8 CONCLUSION

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*The purpose of this Chapter is to briefly summarise and conclude the DESR and describe the way forward.*

### 8.1 CONSTRUCTION PHASE IMPACTS

With reference to **Table 10**, none of the negative construction phase impacts were deemed to have a high significance impact on the environment. The construction impacts were assessed to a **Medium to Low (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

### 8.2 OPERATIONAL PHASE

The most significant operational phase impact **medium (positive)** is the social impact. This is as a result of the potential job opportunities during construction as well the increased development within the area. Furthermore, the community of Henties Bay are further expected to benefit from the new accommodation facility due to it providing additional amenities which may not be readily available in the town.

### 8.3 LEVEL OF CONFIDENCE IN ASSESSMENT

With reference to the information available at the project planning cycle, the confidence in the environmental assessment undertaken is regarded as being acceptable for the decision-making, specifically in terms of the environmental impacts and risks. The Environmental Assessment Practitioner believes that the information contained within this FESR is adequate to allow MEFT: DEA to be able to determine the environmental acceptability of the proposed project.

It is acknowledged that the project details will evolve during the detailed design and construction phases. However, these are unlikely to change the overall environmental acceptability of the proposed project and any significant deviation from what was assessed in this FESR should be subject to further assessment. If this was to occur, an amendment to the Environmental Authorisation may be required in which case the prescribed process would be followed.

### 8.4 MITIGATION MEASURES

With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction and operational phase impacts is likely to be reduced to a **Low (negative)**. **It is further extremely important to include an Environmental Control Officer (ECO)**

**on site during the construction phase of the proposed project to ensure that all the mitigation measures discussed in this report and the EMP are enforced.**

It is noted that where appropriate, these mitigation measures and any others identified by MEFT: DEA could be enforced as Conditions of Approval in the Environmental Authorisation, should MEFT: DEA issue a positive Environmental Authorisation.

### **8.5 OPINION WITH RESPECT TO THE ENVIRONMENTAL AUTHORISATION**

Regulation 15(j) of the EMA, requires *that the EAP include an opinion as to whether the listed activity must be authorised and if the opinion is that it must be authorised, any condition that must be made in respect of that authorisation.*

It is recommended that this project be authorised because should the development not proceed the subject area will remain vacant and undeveloped. The local community is expected to benefit from the development as a result of the potential job opportunities during construction as well as the increased development within the area. The significance of the social impact was therefore deemed to be **Medium (positive)**.

The “no go” alternative on the other hand was deemed to have a **High (negative)** impact, as all the social benefits resulting from the development would not be realised.

The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this report and the EMP. If authorised, the implementation of an EMP should be included as a condition of approval.

### **8.6 WAY FORWARD**

The FESR is herewith submitted to MEFT: DEA for consideration and decision making. If MEFT: DEA approves or requests additional information / studies all registered I&APs and stakeholders will be kept informed of progress throughout the assessment process.

## 9 REFERENCES

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