ORANJEMUND TOWN COUNCIL

ENVIRONMENTAL SCOPING (INCLUDING IMPACT ASSESSMENT) REPORT FOR THE PROPOSED UPGRADING AND CONSTRUCTION OF THE ORANJEMUND AIRPORT ACCESS ROAD OFF THE MR118 ROAD AND TWO (2) BORROW PITS

ORANJEMUND, //KARAS REGION, NAMIBIA

DECEMBER 2025

Prepared For:

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On behalf of:

Oranjemund Town Council

P.O Box 10,

Oranjemund, Namibia

DOCUMENT CONTROL	
REPORT TITLE	ENVIRONMENTAL SCOPING (INCLUDING IMPACT ASSESSMENT) REPORT FOR THE PROPOSED UPGRADING AND CONSTRUCTION OF THE ORANJEMUND AIRPORT ACCESS ROAD OFF THE MR118 ROAD AND TWO (2) BORROW PITS
I.N.K PROJECT NO	YP2401
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PROJECT MANAGER AND REPORT AUTHOR	IMMANUEL N. KATALI
DATE OF REPORT COMPILATION	DECEMBER 2025
CURRENT REVISION	FINAL

ENVIRONMENTAL CONSULTANT'S EXPERTISE

I.N.K Enviro Consultants cc is the independent firm of environmental consultants that has been appointed by Oranjemund Town Council to conduct and manage the EIA process.

Immanuel N. Katali, an Environmental Assessment Practitioner, possesses a Bachelor of Arts (Honours) in Geography, Environmental Studies, and Sociology, and is currently pursuing a Master of Philosophy in Sustainable and Environmental Health Studies at Africa Research University (ARU). With a decade of relevant experience in conducting and overseeing Environmental and Social Impact Assessments (ESIAs) as well as Environmental Compliance and Monitoring Audits in Namibia, Immanuel is recognized as a certified Environmental Assessment Practitioner by the Environmental Assessment Professionals Association of Namibia (EAPAN).

DECLARATION OF INDEPENDENCE AND DISCLAIMER

I.N.K Enviro Consultants cc herewith declare that this report represents an independent assessment of the proposed upgrading and construction of the Oranjemund airport access road and associated borrow pits, on the request of Oranjemund Town Council. The Environmental Consultant has prepared this report based on an agreed scope of work and acts in all professional manner as an Independent Environmental Consultant to Oranjemund Town Council and exercises all reasonable skill and care in the provision of its environmental professional services and in a manner consistent with the level of expertise exercised by members of the environmental profession.

The information, statements and commentary contained in this report have been prepared by I.N.K Enviro Consultants cc from information provided by Oranjemund Town Council, public participation process conducted by Urban Green Sustainability Consulatnts and a Site Visit. I.N.K Enviro Consultants cc does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the party that provided the information, or any conclusions reached. I.N.K Enviro Consultants cc has based this report on information received or obtained, on the basis that such information is accurate and, where it is represented to I.N.K Enviro Consultants cc as such, complete. I.N.K Enviro Consultants cc is not responsible and will not be held liable to any other person or organization for any loss or damage suffered by any other person or organization arising from matters dealt with or conclusions expressed in this report. This report is the sole property of the Oranjemund Town Council and must not be altered or added to without the prior consent of the Oranjemund Town Council.

EXECUTIVE SUMMARY

Project Background

The Oranjemund Town Council (OTC) has been grappling with significant challenges in sustaining their gravel and surfaced road network, primarily due to inadequate funding. This shortfall has led to a deterioration of their road infrastructure, raising potential safety concerns for road users. In response to this funding deficiency, the OTC sought financial assistance from the Road Fund Administration, which was subsequently sanctioned under the Memorandum of Agreement (MOA). Among the roads requiring immediate repairs is the access road leading to Oranjemund Airport, branching off from the MR118 road.

Project Need and Desirability

The OTC has faced challenges in generating sufficient revenue to uphold their road infrastructure, leading to the progressive decline of various routes both within the town and throughout the adjacent townlands. The condition of certain roads has deteriorated to a degree that poses significant safety risks for road users; one such road is the access route from the MR118 to Oranjemund Airport. Safe and efficient access to and from Oranjemund Airport is regarded as a vital gateway, and therefore, the enhancement of this road will substantially contribute to the broader socio-economic development of Oranjemund Town.

Public Participation Process

The public participation process for the proposed project is conducted to ensure that all persons and/or organisations that may be affected by, or interested in the proposed project, were informed of the project and could register their views and concerns. By consulting with relevant authorities and I&APs, the range of environmental issues to be considered in this Report has been given specific context and focus.

General Assumptions and Limitations

The key assumption and limitation of this EIA Report are detailed below.

- It is assumed that the information provided relating to the project activities is accurate and that the project will be implemented and operated as described.

Project Alternatives

Even though the proposed activity may result in potential negative environmental and social impacts which are discussed in detail in Sections 7 & 8 of this report, it can be concluded that proceeding with this proposed project will have benefits at the local, which will result in significant improvement of the Airport access road's traffic and road capabilities and enhance the town's status and potential to cater for vehicles traveling through this road.

Assessment Approach and Methodology

Both the criteria used to assess the impacts and the method of determining the significance of the impacts is outlined. This method complies with the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) EIA regulations. Part A provides the approach for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D. Both mitigated and unmitigated scenarios are considered for each impact.

Conclusions

It is I.N.K's opinion that the environmental aspects and potential impacts relating to the Oranjemund Airport Access Road have been successfully identified.

The assessment found that the Project present the potential for minimal additional risks and related impacts in the mitigated scenario. With regards to socio-economic, biodiversity; and third parties' safety, without mitigation in place, the impacts related to people is likely to result in unacceptable impacts. With mitigation measures in place, the impacts reduce significantly.

I.N.K concludes that should the Client follow the actions (i.e. management and mitigation measures) provided in the EMP report, the project would result in optimized value creation in relation to the management and preservation of ecological, social and economic aspects.

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LIST OF ACRONYMS, ABBREVIATIONS AND UNITS

Acronyms / Abbreviations / Units	Definition
BID	Background Information Document
DEA	Directorate of Environmental Affairs
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ha	Hectares
IRR	Issues and Response Report
I&APs	Interested and Affected Party
Km	Kilometer
M	Meter
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
mm	Millimeter
MWT	Ministry of Works and Transport
NAMPOWER	Namibia Power Corporation
NDP	National Development Plan
PPP	Public Participation Process
OTC	Oranjemund Town Council

1 INTRODUCTION

The Oranjemund Town Council (hereinafter referred to as OTC) seeks to obtain an Environmental Clearance Certificates (ECCs) for their proposed upgrading and construction of the Oranjemund airport access road off the MR118 and two (2) borrow pits.

The study area (road) is situated between Oranjemund Airport and the MR118 road, positioned to the southeast of Oranjemund Town. Meanwhile, borrow pit A is located to the east of Oranjemund Town, while borrow pit B is found to the southwest, adjacent to the southern boundary of the Town's sewage works. (Refer to Figure 1).

Oranjemund Town is in //Karas Region, to the far south-western part of Namibia, where the Orange River meets the Atlantic Ocean.

1.1 Project Background

The Oranjemund Town Council (OTC) has been grappling with significant challenges in sustaining their gravel and surfaced road network, primarily due to inadequate funding. This shortfall has led to a deterioration of their road infrastructure, raising potential safety concerns for road users. In response to this funding deficiency, the OTC sought financial assistance from the Road Fund Administration, which was subsequently sanctioned under the Memorandum of Agreement (MOA). Among the roads requiring immediate repairs is the access road leading to Oranjemund Airport, branching off from the MR118 road.

This road has been identified and prioritized owing to its critical role in facilitating access to Oranjemund Airport, a gateway into Oranjemund Town. Consequently, the intention is to apply for an Environmental Clearance Certificate (ECC) to facilitate the upgrading and constructionof the Oranjemund Airport Access Road.

Considering the deteriorated condition of the existing roadway and the impending extension of the runway southward along the current alignment, the access road will not be merely repaired but rather enhanced to follow a new trajectory from the airport entrance gate to the MR118 road.

The foundational material for the road construction will be sourced from two established borrow pits.

Prior to the commencement of the project, an environmental clearance is required based on an approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). This report describes the EIA process being followed and provides an overview of the affected environment. It includes an assessment of the environmental impacts that the proposed activities are likely to have and sets out the consultants' recommendations. The proposed management and mitigation measures related to the proposed activities are documented in an EMP.

I.N.K Enviro Consultants cc (hereinafter referred to as I.N.K), an independent firm of environmental consultants, has been appointed by Engco Consultign Engineers on behalf of the Oranjemund Town Council, to undertake the Environmental Impact Assessment process for this project. For more details on the EIA process that was followed, please refer to Section 1.

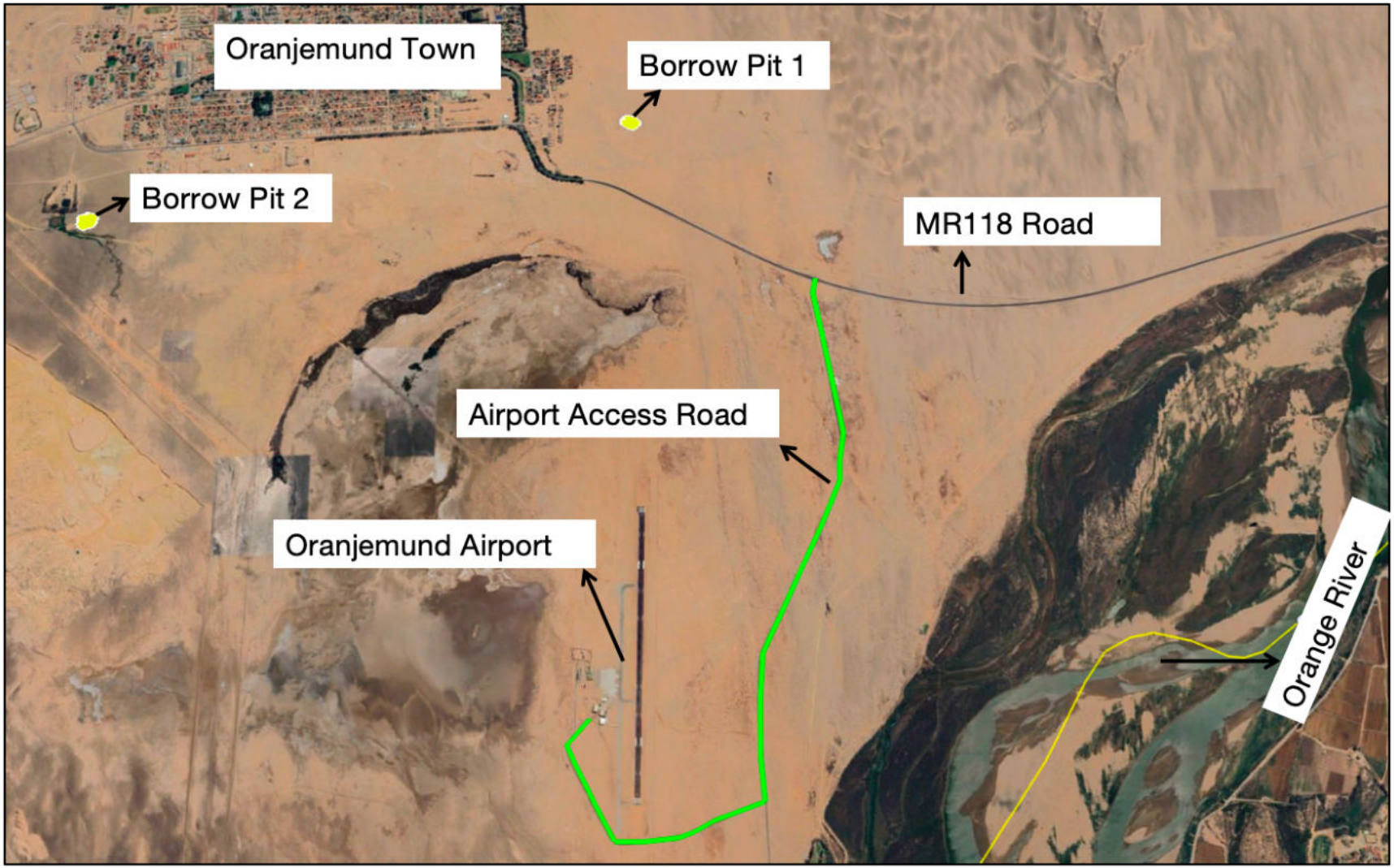

Figure 1: Site Locality Map

1.2 Project Need and Desirability

The OTC has faced challenges in generating sufficient revenue to uphold their road infrastructure, leading to the progressive decline of various routes both within the town and throughout the adjacent townlands.

The condition of certain roads has deteriorated to a degree that poses significant safety risks for road users; one such road is the access route from the MR118 to Oranjemund Airport. Safe and efficient access to and from Oranjemund Airport is regarded as a vital gateway, and therefore, the enhancement of this road will substantially contribute to the broader socio-economic development of Oranjemund Town.

1.3 Introduction to the Environmental Impact Assessment Process

Environmental Impact Assessments are regulated by the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and enacted on 6 January 2012. The Environmental and Social Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 January 2012.

1.3.1 EIA Process

The EIA process that has been followed is summarized in the table below:

Table 1: EIA Process

EIA OBJECTIVES	CORRESPONDING ACTIVITIES
Project initiation, Screening Phase	
◆ Understanding of the environmental and social baseline relating to the proposed Project. ◆ Notify the decision-making authority of the proposed Project. ◆ Initiate the Environmental and Social Impact Assessment process. ◆ Site visits and identify environmental issues.	◆ Project Inception and initiation meetings to discuss the Project and EIA process requirements. ◆ Liaise with the Specialists. ◆ Draft EIA Schedule. ◆ Initiate baseline studies. ◆ Submit Application for authorisations and a Background Information Document (BID) to the authorities. ◆ Register the Project and Applications for environmental clearances with MEFT (DEA) on its online portal.

EIA OBJECTIVES	CORRESPONDING ACTIVITIES
◆ Identify key stakeholders and early identification of other I&APs.	◆ Early identification of environmental aspects and potential impacts associated with the proposed Project.
Assessment Phase	
◆ Notify other regulatory authorities and I&APs of the proposed Project (via newspaper advertisements, BID, emails, site notices and telephone calls). ◆ Conduct Key Stakeholder and Public meetings. ◆ Carry out specialist investigations and establish baseline environmental conditions. ◆ Determine the terms of reference for additional assessment work. ◆ Compile Scoping Report and Issues and Response Report (IRR) ◆ Distribute the Scoping Report for review and comment by relevant authorities and I&APs. ◆ Assessment of potential issues, consider comments received and compile the EIA final report.	◆ Develop Public Participatory Process (PPP) Programme. ◆ Develop I&AP database. ◆ Prepare BID and distribute to I&APs. ◆ Notify government authorities and IAPs of the Project and EIA process (telephone calls, e-mails, BID newspaper advertisements and site notices). ◆ IAP registration and comments. ◆ Meetings with authorities and IAPs. ◆ Investigations by appointed specialists. ◆ Compilation of Scoping Report and EMPs. ◆ Distribute Scoping Report and EMP to all I&APs for review and comments. ◆ Assess potential issues, obtain comments and update the Scoping Report and EMP.

Within this framework, the required components of the EIA report are discussed in more detail as part of the EIA Methodology in Section 8.

EIAs are influenced by national legislation and a range of guidelines. The legislation applicable to this project and the EIA process is discussed further in Section 3 below.

2 SCOPING METHODOLOGY

2.1 Information Collection

I.N.K used various information sources to identify and assess the issues associated with the proposed project as per the following:

- Site visit by I.N.K.
- Consultation with OTC Project Technical Team (Done by Urban Green Sustainability Consultants)
- Consultation with MEFT via online application system.
- Similar EIA report in the vicinity of Oranjemund.
- Consultation with I&APs. (Done by Urban Green Sustainability Consultants)
- Observations were used to document ecological features, such as fauna and flora.
- Atlas of Namibia.
- Google Earth.
- Internet sources.

2.2 Scoping

The main purpose of scoping is to indicate which environmental aspects relating to the proposed project might have an impact on the environment, to assess them and provide management and mitigation measures to avoid or minimise these impacts.

Table 2 outlines the Scoping requirements as set out in Section 8 of the Environmental and Social Impact Assessment Regulations that were promulgated in January 2012 in terms of the Environmental Management Act, 7 of 2007.

Table 2: Scoping Requirements Stipulated in the EIA Regulations.

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(a) the curriculum vitae of the EAP who prepared the report.	Appendix A
(b) a description of the proposed activity.	Section 4
(c) a description of the site on which the activity is to be undertaken and the location of the activity on the site.	Section 4
(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.	Sections 6
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report.	Section 3
(f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - (i) the steps that were taken to notify potentially interested and affected parties of the proposed application. (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given. (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. (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.	Sections 2.3, 2.4, 2.5 and Appendix B
(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 community that may be affected by the activity;	Sections 1.3 and 5
(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;	Sections 7 and 8
(i) terms of reference for the detailed assessment; and	Section 7 & 8

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(j) a management plan, which includes - (i) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure. (ii) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development. (iii) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process that causes pollution or environmental degradation and remedy the cause of pollution or degradation and migration of pollutants.	Separate document

2.3 Public Participation Process

The public participation process for the proposed project was conducted by Urban Green Sustainability Consultants. This process is conducted to ensure that all persons and/or organisations that may be affected by, or interested in the proposed project, were informed of the project and could register their views and concerns. By consulting with relevant authorities and I&APs, the range of environmental issues to be considered in this Report has been given specific context and focus.

Included below is a summary of the I&APs consulted, the process that was followed and the issues that were identified.

2.3.1 Identification of Stakeholder Groups

A stakeholder for the proposed Project is defined as a person, group or organization that has direct or indirect stake in a Project because it can affect or be affected by the Project or its Proponents' actions, objectives and policies. Stakeholders vary in terms of degree of interest, influence and control they have over the Project or the proponent.

During the environmental impact assessment consultations process, various activities as part of the development of the public consultation program were conducted to determine the relevant stakeholders. From the field-consultations, key stakeholder groups were identified and categorized them as Primary and Secondary stakeholders, based on the nature and extent of impact of project and influence of stakeholders on the project.

2.4 The Proposed Project I&APs

The table below provides a broad list of persons, group of persons or organisations that were informed about the project and were requested to register as I&APs should they be interested and/or affected.

Table 3: OTC's Project Key Stakeholders

IAP Grouping	Organisation
Government Ministries	◆ Ministry of Environment, Forestry and Tourism ◆ Ministry of Works and Transport ◆ Ministry of Industrialization, Mines and Energy ◆ Ministry of Agriculture, Forestry, Water and Land Reform ◆ Ministry of Urban and Rural Development
Local Authorities	◆ Oranjemund Town Council ◆ //Karas Regional Council
Parastatal	◆ Roads Authority ◆ Namibia Airports Company ◆ Namibia Civil Aviation Authority ◆ NamPower ◆ NamWater ◆ Tsau //Khaeb National Park
Nearest Communities	◆ Residents of Oranjemund
Other	◆ Namdeb
Media	Newspaper adverts placed on 17 and 24 September 2025, in the following newspapers:

IAP Grouping	Organisation
	◆ Die Republikein ◆ The Allgemeine Zeitung ◆ The Namibian Sun.
Other interested and affected parties	Any other people with an interest in the proposed project or who may be affected by the proposed project.

2.5 Steps in the Consultation Process

Table 4 sets out the steps that were followed as part of the consultation process:

Table 4: Consultation Process with I&APs and Authorities

TASK	DESCRIPTION
Notification - Regulatory Authorities and IAPs	
Notification to MEFT	Submission of the Application Form (online system) as a form of project registration and notification to MEFT.
I&AP identification	A stakeholder database was developed for the proposed project and EIA process. Additional I&APs will be updated during the EIA process as required.
Distribution of background information document (BID), flyers and stakeholders meeting invitation letters	BIDs were made available to all I&APs on the project's stakeholder database. Copies of the BID were available on request. Stakeholder meeting invitation were given out to the residents of Oranjemund. The purpose of the BID was to inform I&APs and authorities about the proposed project, the EIA process, possible environmental impacts and means of providing input into the EIA process. Attached to the BID was a registration and response form, which provided I&APs with an opportunity to submit their names, contact details and comments on the project.
Newspaper Advertisements	Advertisements were placed as follows: ◆ Die Republikein (17 and 24 September 2025) ◆ The Namibian Sun (17 and 24 September 2025) ◆ Allgemeine Zeitung (17 and 24 September 2025) Please refer to Appendix.

TASK	DESCRIPTION
Notification - Regulatory Authorities and IAPs	
Scoping Meetings	Several consultations were made with I&APs and key stakeholders. This included emails and telephonic discussions.
I&AP Review	Commenting period was until 08 October 2025.
Comments and Responses	Email responses and comments were recorded. Please refer to Appendix.
MEFT review of EIA Report and EMP	A copy of the final EIA Report, including authority and I&AP review comments, will be submitted to MEFT via the online application system, on completion of the public review process.

2.6 General Assumptions and Limitations

The key assumptions and limitations of this EIA Report are detailed below.

- It is assumed that the information provided by the Client, relating to the project activities is accurate and that the project will be implemented as described.

3 IDENTIFICATION OF APPLICABLE ENVIRONMENTAL AND SOCIAL GUIDELINES

3.1 Introduction

The Republic of Namibia has five tiers of law and several policies relevant to environmental assessment and protection, which include:

- The Constitution.
- Statutory law.
- Common law.
- Customary law.
- International law.

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

The management and regulation of the activities fall within the jurisdiction of the Ministry of Works and Transport. The environmental regulations are guided and implemented by the DEA within the MEFT.

In the context of the proposed project activities, there are several laws and policies currently applicable.

The EIA Policy (1995) is enforced through the Environmental Management Act, 7 of 2007 and the EIA Regulations of 6 January 2012 (EIA Regulations). In terms of this legal framework certain identified activities may not commence without an environmental clearance issued by MEFT.

3.2 Applicable Authorities

3.2.1 Ministry of Environment, Forestry and Tourism

The mission of the Ministry of Environment, Forestry and Tourism is to promote biodiversity conservation in the Namibian environment through the sustainable utilization of natural resources and tourism development for the maximum social and economic benefit of its citizens. MEFT develops, administers and enforces environmental legislation and policy.

The MEFT's Department of Environmental Affairs ("DEA") is mandated to give effect to Article 95L of the Constitution by promoting environmental sustainability. The Environmental Commissioner serves as head of the DEA. The DEA is responsible for, inter alia, the administration of the EIA process undertaken in terms of the Environmental Management Act, 2007 and the EIA Regulations 2012. The DEA will be responsible for issuing a decision on the application for an ECC. If approved, the DEA will issue an Environmental Clearance Certificate.

3.2.2 Ministry of Works and Transport

This Ministry is responsible for the development, regulation, and management of national infrastructure (roads, rail, air, water) and state assets, ensuring safe, efficient, and accessible transport for socio-economic growth, while also overseeing construction industry policies and technical support for government. This involves infrastructure planning, maintenance, development of new projects (like roads, railways, aerodromes), asset management, and ensuring compliance with industry standards for all transport modes.

3.2.3 Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)

Namibia's Department of Water Affairs (under the Ministry of Agriculture, Fisheries, Water and Land Reform) mandates ensuring national water security, managing, protecting, developing, and conserving water resources, and providing equitable access to safe water and sanitation for all Namibians, coordinating rural and urban supply, ensuring compliance with standards, and responding to emergencies like floods or droughts, all guided by acts like the Water Resources Management Act, 2004. Ministry of Urban and Rural Development

The Ministry aims to create policies and frameworks for sustainable urban and rural growth, focusing heavily on decentralization, coordinating regional and local government, improving housing/shelter, managing land, and ensuring equitable service delivery to reduce poverty and migration, thereby fostering better living conditions and economic opportunities in both settings.

3.2.4 Namibia Airports Company

The aim is to develop, manage, and operate Namibia's airports on sound business principles, ensuring safety, security, efficiency, and compliance with international standards, while supporting tourism and national development.

3.2.5 Namibia Civils Aviation Authority

Its aim is to ensure a safe, orderly, regular, and efficient civil aviation system in Namibia by regulating and overseeing safety and security in its airspace, while also providing vital Air Traffic & Navigation Services (ATNS) and ensuring compliance with international aviation standards like ICAO. Established under the Civil Aviation Act, 2016, it functions as a state-owned enterprise with responsibilities covering airworthiness, flight operations, licensing, aerodromes, security, and air traffic control.

3.2.6 Roads Authority

The Roads Authorities' mandate is to manage a nation's road network, ensuring it's safe, efficient, and supports economic growth through planning, design, construction, and maintenance, plus managing road safety, user charging, and vehicle licensing, as seen with Namibia's Roads Authority (RA) under laws like the Roads Ordinance. This involves everything from road surface upkeep and infrastructure to traffic management and securing funding, often incorporating public-private partnerships

3.3 The Integrated Coastal Management Bill

Once enacted, the Integrated Coastal Management Bill (2014) aims to establish a system of integrated coastal management in Namibia in order to promote the conservation of the coastal

environment, maintaining the natural attributes of the coastal landscapes and seascapes, and ensuring the sustainable development and use of the natural resources within the coastal zone that is also socially, economically and ecologically justifiable.

3.4 Relevant Namibian Policies

Namibia's policies provide the framework to the applicable legislation. Whilst policies do not often carry the same legal recognition as official statutes, policies are used in providing support to legal interpretation or guidance for civil servants and other stakeholders in the implementation of government objectives.

3.4.1 The Namibia Vision 2030

The principles that underpin Vision 2030, a policy framework for Namibia's long-term national development, comprise the following:

- Good governance
- Partnership
- Capacity enhancement
- Comparative advantage
- Sustainable development
- Economic growth
- National sovereignty and human integrity
- Environment
- Peace and security

Vision 2030 states that natural environments are disappearing quickly. Consequently, 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. Vision 2030 emphasises the importance of promoting healthy living which includes that most Namibians are provided with safe drinking water. The importance of developing wealth, livelihood, and the economy is also

emphasized by Vision 2030. This includes infrastructure provision like transport, communication, water, and electricity.

3.5 Other Relevant Local Policies and Legislation

Below (Table 5) is a list of other applicable local policies and legislation for the proposed project.

Table 5: List of local policies and legislation

Local Legislation, and adopted Policies, Protocols and Agreements	Summary	Environmental principles
Road Traffic and Transport Act, (No. 22 of 1999).	provides for the establishment of the Transportation Commission of Namibia, and for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, and the control and regulation of road transport across Namibia's borders. It also addresses matters incidental to these areas.	To control of traffic on public roads, including traffic signs, speed limits, accidents, and offences related to driving.
Civil Aviation Act (No. 6 of 2016)	The Civil Aviation Act, 2016 (specifically Act No. 6 of 2016 in Namibia) mandates a comprehensive regulatory framework for civil aviation, establishing the Namibia Civil Aviation Authority (NCAA) to ensure safety, security, and efficiency in its airspace, by overseeing operator certification, licensing personnel, regulating aerodromes, managing air traffic, investigating accidents, and implementing international standards. Its core functions include creating rules (NAMCARs), certifying operators (AOCs), overseeing flight ops, licensing staff, securing against unlawful	Integrates environmental principles through supporting ICAO's goals for sustainable aviation, focusing on decarbonization via Sustainable Aviation Fuels (SAF), carbon offsetting (CORSIA), efficiency, and technology, with a core philosophy rooted

	interference, and providing air navigation services.	in sustainable development, promoting conservation, and meeting global standards (ICAO Annexes) for a greener aviation sector in Namibia.
Pollution Control and Waste Management Bill	This Act promote sustainable development; to provide for the establishment of a body corporate to be known as the Pollution Control and Waste Management Agency; to prevent and regulate the discharge of pollutants to the air, water and land; to make provision for the establishment of an appropriate framework for integrated pollution prevention and control; to regulate noise, dust and odor pollution; to establish a 'system of waste planning and management; and to enable Namibia to comply with its obligations under international law in this regard.	The environmental principle specific to this Bill is pollution control.
Urban and Regional Planning Act no. 5 of 2018	This Act 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.	Environmental principles specific to this act are harmonization and streamlining of spatial planning in order to avoid land use conflicts, delays in decision making and to minimize negative environmental impacts.
Atmospheric Pollution Prevention Ordinance 11 of 1976	To provide for the prevention of the pollution of the atmosphere	To prevent atmospheric pollution and minimize environmental impacts associated with it.

Water Resources Management Act 11 of 2013	To provide for the management, protection, development, use and conservation of water resources; to provide for the regulation and monitoring of water services and to provide for incidental matters.	Manage water resources, prevent water pollution and control water storage and provision.
Public and Environmental Health Act 1 of 2015	To provide a framework for a structured uniform public and environmental health system in Namibia.	Principles of this act includes protecting individuals and communities from public health risks, encourage community participation to create a healthy environment; and provide for early detection of diseases and public health risks.
National Climate Change Policy	This policy identifies technology development and transfer to be a key issue for which strategies and action plans should be developed.	Promote and encourage new and clean technologies to be developed to reduce greenhouse gas emissions.
Convention on Biological Diversity (CBD)	Namibia ratified the Convention on Biological Diversity in 1992. As a party to the CBD, the Namibian government is obliged to develop a national strategy for the conservation of biodiversity.	Environmental principles of this are to establish a system of protected areas and integrate biodiversity considerations into development planning.
Convention to Combat Desertification (UNCCD)	Namibia ratified the UN Convention to Combat Desertification in 1995. This convention addresses the socio-	Objectives are to adopt integrated strategies that improve land productivity, rehabilitate degraded

	economic and biophysical drivers of land degradation and desertification.	areas, and ensure sustainable management of land and water resources, with a focus on improving community livelihoods.

3.6 International Conventions and Agreements

Below (Table 6) is a list of applicable international conventions and agreements for the proposed project.

Table 6: International conventions and agreements

Legislation	Summary	Environmental principles
2011 Guidelines for the Control and Management of Ship's Biofouling to minimize the Transfer of invasive Aquatic Species.	These guidelines are intended to provide a globally consistent approach to the management of biofouling organisms, which could present a bio-risk in local ports.	Prevent the transfer of invasive species and coordinating a timely and effective response to invasions which requires cooperation and collaboration among governments.
Stockholm Convention on Persistent Organic Pollution (2001)	Is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for longer periods.	To protect human health and the environment from persistent organic pollutants; especially those used in marine paints.
Vienna Convention for the protection of ozone layer (1985)	This Convention is aimed to promote cooperation among nations by exchanging information on the effects of human activities on the ozone layer.	To take control actions to protect the ozone layer.
Montreal protocol (1997)	Is a global agreement to protect the earth's ozone layer by phasing out the chemicals that depletes it.	Control substances and chemicals production that are depleting the ozone layer.
UN Framework on climate change (1992)	This framework was introduced to stabilize greenhouse gas concentrations at a level that	Countries should take precautionary measures to anticipate, prevent or minimize the

	would prevent dangerous anthropogenic interference with the climate system.	causes of climate change and mitigate its adverse effects.
Kyoto protocol (1997)	It is also designed to assist countries in adapting to the adverse of climate change. It facilitates the development and deployment of technologies that can help increase resilience to the impacts of climate change.	Reduce GHG emission at least by 18%.
Basel Convention (1992)	To protect human health and the environment against the adverse effects of hazardous wastes.	Reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes
Conventions on Wetland of International Importance (1971)	Conserving wetlands (swamps, marshes, lakes, mudflats, peat bogs and other bodies of water whether natural or artificial, permanent or temporary).	This convention establishes a management framework aimed at conserving the wetland and ensuring its wise use. The Walvis Bay is recognized under this convention.
Paris Agreement (2015)	Is a legally binding international treaty on climate change.	To limit global warming to preferably 1.5 degrees Celsius, compared to pre-industrial levels.
International Convention for the Control of and Management of Ships' Ballast Water and Sediments of 2004.	This Convention seeks to prevent the spread of harmful aquatic organisms from one region to another, by the establishment of standards and procedures for the management and control of ships' ballast water and sediments.	Protect the oceans from invasive aquatic species
Internal Convention on Biological Diversity	Among others, this Convention aims at conservation of biological diversity and promote sustainable development of biological components.	Conservation of biological diversity, sustainable use and equitable sharing of utilization of biodiversity, ecosystem assessment and monitoring and mitigation of adverse environmental impacts.

3.6.1 Applicable Listed Activities

The EIA Regulations promulgated in terms of the Environmental Management Act, identify certain activities which could have a substantially detrimental effect on the environment. These listed activities require environmental clearance from MEFT prior to commencing. The following listed activities (Table 7) identified in the regulations apply to the proposed project:

Table 7: Listed activities triggered by the proposed Project.

Listed activities
3. Mining and Quarrying Activities Other forms of mining or extraction of any natural resources whether regulated by law or not.
10. Infrastructure
1.1 The construction of facilities for - (b) public roads

4 Project Description

4.1 Introduction

The Project entails the construction of a public road and removal of base material from existing borrow pits for use in road construction.

4.2 Road Alignment

The road to be constructed will follow the existing alignment within the Airport's fenced-in area, while the alignment from the Airport's entrance gate to the MR118 will deviate away from the existing alignment southwards to provide for the future extension of the Airports's runway.

4.3 Borrow Pit Extent

Considering the volume of base material required, the two borrow pits are expected to increase in footprint with approximately 20% and depth between 2m to 3.5 m from side to side.

4.4 Design Specifications

The road will be approximately 5.8 km in length, 7 m wide within a 14 m road reserve, with a single lane in both directions and of a bitumen surface. Standard road markings and traffic signs will apply.

4.5 Temporary Public Bypass Road

A temporary road will be constructed and maintained for the duration of the Project ensuring access to and from the Oranjemund Airport.

The alignment of this temporary road will follow the existing road, which will be demolished and removed once the new road has been commissioned.

4.6 Access to Borrow Pits and Transport Roads

It is expected that the existing road network will be used by construction vehicles to transport base material from the two borrow pits to the project site.

The study will however consider alternative routes to minimize conflict between construction vehicles and other road users.

4.7 Construction Phase

4.7.1 Construction

Construction activities will take place during the establishment and preparation of the sites. Therefore, it is expected that construction will involve the following activities:

- Appoint contractors, labourers, etc.
- Site establishment and setting up the construction camp (clearance of vegetation).
- Survey of temporary and permanent road alignment and earmarking road reserve boundaries.
- Survey borrow pits areas and earmark.
- Clearing the surveyed areas of vegetation.
- Construction of temporary by-passes to provide for traffic during the construction phase.
- Widening of selected drainage structures.
- Construction of the road formation, including roadbed preparation, cut and fill (widened sections only).
- Mining of base material at borrow pits and storage on-site at borrow pits.
- Transportation of base material to the end use area and dumping at the area under construction.
- Construction of a bitumen platform layer.
- Supply and installation of road signs.
- Supply and erection of fences (where the proposed road infringes on fenced properties).
- Rehabilitation of old road areas and disturbed areas.
- Site de-establishment.

4.7.2 Power Supply for Construction Activities

The construction team will provide its own power, where required, by means of generator.

4.7.3 Sanitation during Construction

Mobile toilets with will be used. The septic tanks will be emptied on a regular basis and the effluent disposed of at a licensed facility off-site.

4.7.4 Waste Management during Construction

Waste will be transported off site and disposed of at the nearest landfill site in Oranjemund. No waste will be disposed of or burnt on site.

All hazardous waste, i.e., chemical containers, hydrocarbon contaminated materials, used hydrocarbons etc., will be separated from the general waste and removed from site and disposed of at a licensed hazardous waste disposal.

4.7.5 Timeline

Construction commencement is subject to regulatory approval, i.e. approval of the EIA and issuing of the ECC by MEFT.

The construction phase would take approximately 8 months to 16 months, depending on the number of contractors to be appointed.

4.7.6 Rehabilitation of temporary construction sites

The removal of all temporary construction equipment will be undertaken at the end of the construction activities. This will be done as per the Environmental Management Plan recommendations.

5 PROJECT ALTERNATIVES

5.1 The “no project” option

Due to the nature and the scale of the proposed project, limited alternative options exist.

5.1.1 The “no-go” option

Even though the proposed activity may result in potential negative environmental and social impacts which are discussed in detail in Sections 7 & 8 of this report, it can be concluded that proceeding with this proposed project will have benefits at the local, which will result in significant improvement of the Airport access road’s traffic and road capabilities and enhance the town’s status and potential to cater for vehicles traveling through this road.

6 DESCRIPTION OF THE CURRENT/BASELINE ENVIRONMENT

This section was compiled utilising the following sources of information:

- Available Reports:
    - Desktop Water Resources Impact Assessment Report for the Proposed Horticulture Irrigation Project on Agricultural Plot 52 & 12 near Oranjemund in the //Karas Region (F, Shagama, 2016)
- Visual observations during a site visit by I.N.K
- Google Earth
- Atlas of Namibia
- Internet sources

6.1 Climate

Oranjemund is considered to have a desert climate. Like many of the coastal towns in the country, Oranjemund's temperatures do not fluctuate but rather remain relatively average throughout the year. The mean temperature is 17.3ºC, ranging from 9ºC in July to 24ºC in January (monthly means). Fog occurs, on average, on more than 100 days per year at Oranjemund. It forms a moist cold air from the ocean and meets the hot dry air of the desert. The climate of Oranjemund is strongly influenced by the cold Benguela current which runs in a northerly direction along the coast, which in turn is driven by the South Atlantic anticyclonic climate system. Although the area is a desert, cool and foggy conditions occur most mornings and strong southerly winds are common in the afternoons.

6.1.1 Evaporation

The potential evaporation is more than 2 800 mm/year and downstream on the Orange River, with values higher than 2 600 mm/year.

6.1.2 Rainfall

The average rainfall of Oranjemund recorded is shown in the map below (Figure 3).

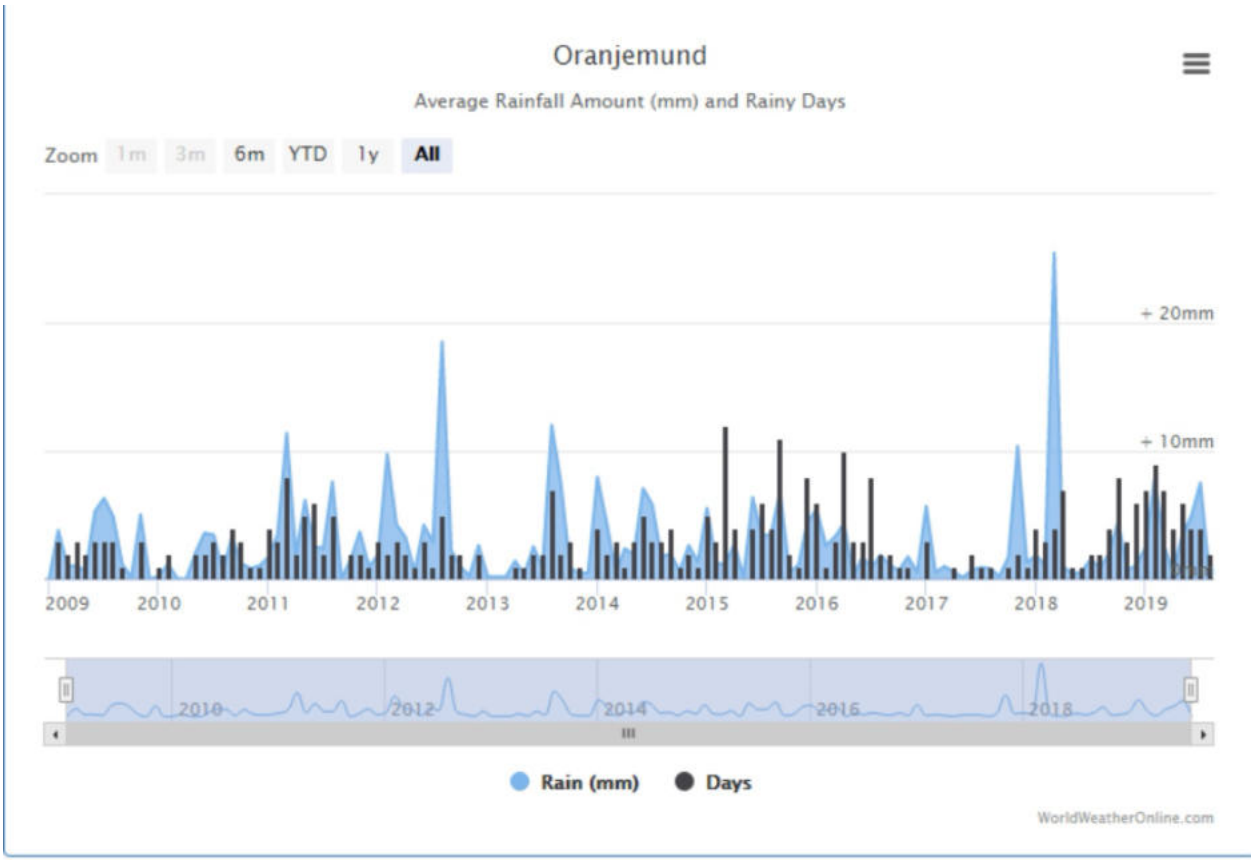

Figure 3: The rainfall patterns in the Oranjemund area (World Weather Online, 2019)

The precipitation is low in the lower part of the Orange River Basin. The mean annual precipitation (MAP) on the lower parts of the Orange River are below 100 mm. The MAP on the Orange River is shown in Figure 4 below.

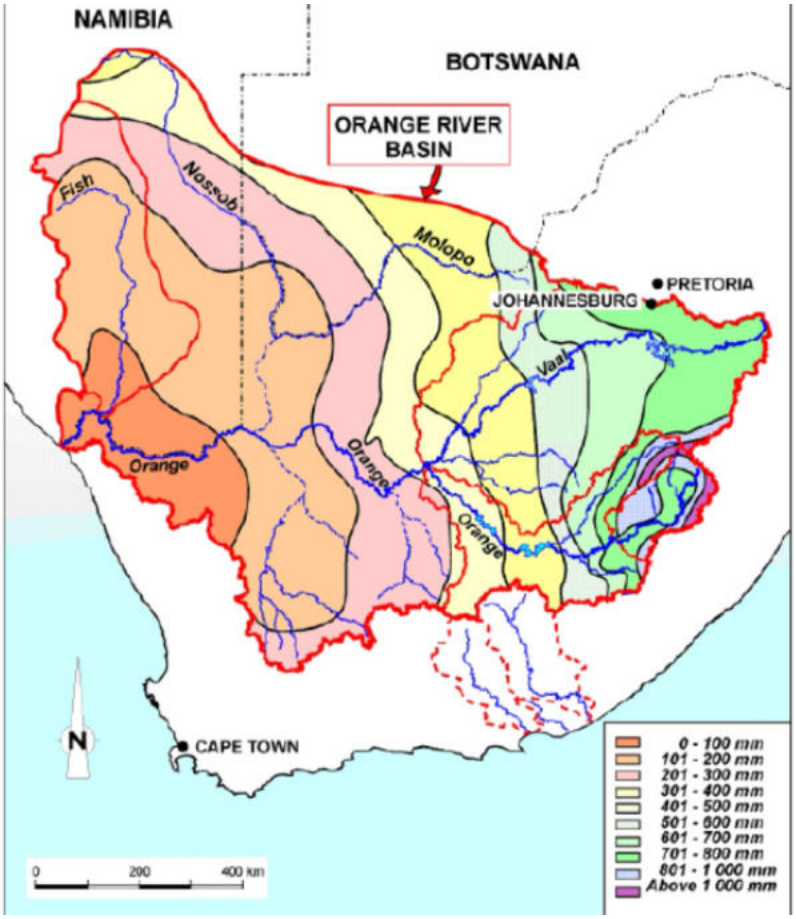

Figure 4: Mean annual precipitation on the Orange River Basin (edited after Fritsch and Troy, 2006)

6.2 Soils

The project site area is covered by the sandy soils of the Namib Desert. In the far west, the Namib is in a hyperarid climate, which severely limits productivity. Areas in the northeastern parts of the //Karas Region receive more rainfall but it drains through the soil rapidly, leaving little moisture for plants. Few nutrients are retained in the porous sand. These characteristics give the Kalahari sandy soils also low carrying capacities. The distribution of the soils is linked to the topography and wind direction in and around the study area with a common transition point along the major natural watercourse that runs from the north-west to south-east (GCS Water & Environmental Consultants, 2017).

6.3 Geology

The project (study) area is overlain by Namib sediments and overlain by carbonate rocks of the Kalahari Group. These Kalahari Group comprises of unconsolidated to semi-consolidated sand and gravel, locally calcrete and deeper bedrocks of marble, sandstone and quartzite.

6.4 Topography

The Oranjemund area can be described as relatively flat with sparse vegetation. The town is located merely 20 meters above sea level on a virtually flat piece of terrain rock type found in the area is the Kalahari and Namib Sands which is largely dominated by sands.

6.5 Land Use

The Project is proposed on land that is administered by the Oranjemund Town Council. The area is currently vacant and there are no formal economic activities or residents.

6.6 Hydrogeology

The project area falls under the Southern Namib and Naukluft groundwater basin and according to Koch *et al* (2011), groundwater potential over most of the //Karas Region is classified as low, with only about 30% having moderate potential. Limited water availability in the Namib Desert presents the single largest constraint on development. Mean rainfall is less than 100 mm per year, meaning that sufficient rain to recharge the aquifers only falls in some years.

There are two types of aquifers in the groundwater basin, namely the shallow alluvial primary aquifers along the Orange River, and a variety of deeper hard rock secondary (heavily karstified) aquifers. Alluvial aquifers are generally only recharged by surface water (the Orange River) and are usually considered part of that water resource. Christelis and Struckmeier (2001) added that the occurrence of exploitable groundwater resources in the Namib Desert is closely linked to the existence of alluvial aquifers created by perennial, ephemeral or even fossil rivers. The only abundant source of groundwater in the Sperrgebiet is the alluvial aquifer along the Orange River, which provides a secure supply to Oranjemund.

With that said, the Orange River is the permanent source of water in the Region to towns (such as Rosh Pinah and Oranjemund), mines as well agricultural and tourism projects.

6.6.1 Water Quality: Orange River Alluvial Aquifers

In 2016 GCS Water & Environmental Consultants analysed the available water data. The available borehole information at the time obtained from Namdeb's old groundwater database showed that, twelve (12) boreholes had been profiled for Electrical Conductivity (EC) between January 1999 and December 2003. Conductivity readings have also been taken from the taps at the (water) production boreholes. Conductivity readings are taken to give early warning of possible deterioration in the quality of the water supplied. The EC values of the monitoring boreholes water increased with depth, ranging from 0.10 to 0.60 mS/m.

There was found to be a big gap in water monitoring data over the years whereby either there is no data for a specific year or there is very little data for certain years. Based on the available monitoring boreholes' data analyzed, the water quality of the alluvial aquifer is classified Group A, which is water of excellent quality and good for human consumption.

6.7 Hydrology

All rivers are ephemeral, except for the Orange River with its extensive catchment in wetter South Africa and Lesotho. Total abstraction from the Orange River, for irrigation schemes, mines and towns, already produces a significant deficit in the mean annual runoff at the mouth, which classifies it as a Category D status (largely modified wetland with extensive losses of natural habitat and basic ecosystem functions. Ephemeral rivers in the Region include; Olifants, Nossob, Fish River, Zebra and Tsondab (GCS Water & Environmental Consultants, 2017).

The entire Orange Basin and relevant neighboring catchments have been divided up into 16 hydrological zones.

6.7.1 Vulnerability of Water Resources to Pollution

In areas where extensive activities are practised, the aspects of water pollution and water protection have increasingly become an issue in most parts of the world.

The surface water bodies / resources are vulnerable to pollution via surface run-offs from project sites where environmentally unfriendly hydrocarbons is handled. Possible pollution may not only originate from these sites, but the nearby towns and other land uses within proximity of the surface water bodies, such as the Orange River.

In a hyper arid environment like Oranjemund, the impact of surface run-offs from rainfall is less likely as the amount of the magnitude of rainfall is low (not enough to cause flooding from site). Surface run-offs from the project site to the Orange River may only occur through hydrocarbon spillages. This means water applied to the site areas may carry hydrocarbons and waste on the site soils and wash them downstream (to the River), depending on the amount of hydrocarbons found on the ground surface.

6.8 Biodiversity

6.8.1 Flora

Oranjemund forms part of the Succulent Karoo Biome and the Succulent Steppe vegetation type. Succulent shrubs are the dominant structure found within this vegetation type. The project area consists of mainly scattered plant species and dwarf shrubland such as *Chenolea Diffusa, Fankena (Genus), Caroxylon aphyllum, Calobota angustifolia, Mesembryanthemum cryptanthum and Aizoon africanum (refer to table)*. No large trees can be found in vicinity of the project area.

Table 8: Plant Species found in the vicinity of the Project

Plant Species	Photo
1. *Chenolea Diffusa*	
2. *Fankena (Genus)*	
3. *Caroxylon aphyllum*	

4. *Calobota angustifolia*	
5. *Mesembryanthemum cryptanthum*	
6. *Aizoon africanum*	

6.8.2 Fauna

In Oranjemund the population of wildlife such as the oryx, wild horses, jackals, springboks, ostriches and brown hyenas are occasionally found in the Project area. Due to the vegetation type, which is not too ideal for grazing, livestock farming is not possible. The area also has high numbers of endemic plants, reptiles and frogs as well as a variety of reptiles.

6.8.3 Birds

The Orange River Mouth is regarded as the sixth most important coastal wetland in southern Africa in terms of the number of waterfowl it supports. The river mouth, mudflats, intrafluvial marshlands, islets near the mouth and adjacent pans provide a sizeable area of sheltered shallow water suitable for concentrations of wetland birds, which use these habitats for breeding purposes or as a stopover on migration routes. The bird population can be as high as 20 000 to 26 000 individuals. Of the 57 wetland species recorded, 14 are listed as either rare or endangered in one or both South African and Namibian Red Data Books.

Key waterbird habitats include the western portion of the saltmarsh (for waders) and the mouth area (for terns and cormorants). The surrounding semi-desert environments are important for Karoo Eremomela, Grey-backed Cisticola, Barlow's Lark and many others. Raptors, such as Afrcan Fish Eagle, Osprey, Peregrine Falcon and Black-breasted Snakke-Eagle are regularly observed.

6.9 Noise

Existing noise sources within and around the project site include:

- natural sounds from wind, animals, and birds;
- vehicle movement on the Rosh Pinah – Oranjemund Road and Oranjemund Airport road.

The immediate surroundings of the project site have no communities inhabited in the area. The sensitivity of noise receptors usually increases at night when conditions are quiet, and ambient noise levels are at their lowest. No operational activities are anticipated at nighttime.

6.10 Heritage Resources

The proposed Project area was surveyed on foot during the site visit conducted by I.N.K.

No archaeological sites were noted within the perimeter of the sites during I.N.K's visit or identified by the locals.

6.11 Visual

The proposed Project area is located adjacent to the Rosh Pinah – Oranjemund Road. The site is a greenfield area with dwarf shrublands scattered all over the site. There are no infrastructures/buildings visible in the vicinity of the area.

6.12 Socio-Economic Structure/Profile

The town of Oranjemund was proclaimed as an official local authority area with independent Council in August 2011 following a long history of management under NAMDEB. It is a sustainable and well-maintained urban area providing in various activities and services, mostly still in support to the diamond mining activities of NAMDEB. The Town consists of a prominent business center and residential component providing accommodation to the approximately 7,441 residents. Evident of all mining towns

The town offers social services and facilities at a level usually only found in much bigger towns. These include health facilities, schools, a crèche, a public library, parks, recreation facilities and sports fields. Although Oranjemund remains a relatively newly proclaimed town, it nevertheless has developed a viable commercial service and industrial sector. There are more than 30 social and recreation clubs in Oranjemund, including horse riding, yachting, golf, soccer, tennis, youth clubs and gymnasiums. The town boasts one of the few golf courses on the west coast which

always shows up clearly as a patch of green vegetation in an otherwise desolate and vegetation free area.

Oranjemund has always rated itself as a highly safe and secure town for its residents with an exceptionally low crime rate. This is partly due to the isolated nature of the town and its small size, but mostly because of the security measures which are implemented around the diamond industry. However, residents and business operators report a recent increase in the crime rate which they attribute to the opening of the town the public.

The upgrade of Oranjemund Airport Access Road is welcomed, as the development will not only make the airport road safe for its users, but also to uplift local economy and image of town. However, one must be cautious with over investment and enlargement of infrastructure that belongs to a private owner.

7 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS

The scoping phase which included a consultation process with key stakeholders that included government authorities and I&APs allowed the opportunity to raise the issues associated with the project development.

The relevance of the potential impacts ("screening") is also presented in the tables below to determine aspects to be assessed in further detail (Section 8 of this report).

Table 9: Environmental Aspects and Potential Impacts

ASPECT	APPLICABLE PHASE	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Significance and Impact Rating
Waste Management (Accidental hydrocarbon spills from vehicles, generators and equipment)	Construction	◆ Potential impact on surface water quality ◆ Water quality degradation ◆ Potential impact on marine and terrestrial fauna and flora ◆ Potential soil impacts	Potential hydrocarbon runoff during tconstruction may result in the contamination of both groundwater and surface water. Hydrocarbon spillages are not anticipated to be substantial due to the nature of road upgrade activities. The heavy machinery and mechanical equipment, which possess the potential for hydrocarbon leakages and spillages, will be employed. However, a substantial number of heavy machinery and equipment are not expected to be on site, therefore spillages from these machinery and equipment would be minimal. Therefore, no further assessment was deemed necessary. The potential hydrocarbon spillage management and mitigation measures are stipulated in the EMP.	**Low (L)**
Land preparation		Alteration of drainage courses that may potentially affect natural drainage	The important flora that can be found within the Project area and could potentially be disturbed from the construction activities include, *Chenolea Diffusa, Fankena (Genus), Caroxylon aphyllum, Calobota*	**High (H)**

ASPECT	APPLICABLE PHASE	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Significance and Impact Rating
		patterns and fauna and flora habitats. ◆ Habitat alteration ◆ Habitat fragmentation and displacement ◆ Physical damage and root disturbance ◆ Displacement of reptiles and small mammals due to habitat disturbance, increased predation risk in fragmented environments. ◆ Interference with natural drainage patters	*angustifolia, Mesembryanthemum cryptanthum and Aizoon africanum.* In addition, the construction activities could potentially be disturbing the breeding birds associated with vegetation along drainage courses of the Orange River, while *reptiles* such as Geckos may be adversely affected by construction-induced vibrations. Therefore, considering the sensitive nature of altering natural drainage courses and cumulative impacts on the terrestrial ecosystem, the potential impacts have been assessed further in section 8.	**High (H)**
		Potential impacts on archaeology sites	There's no evidence of archaeological remains in the area. Therefore, no impacts are expected for this issue. No further assessment is required. However, should there be any archaeological/heritage discoveries on site during the construction and operations, the related management and mitigation measures stipulated in the EMP should be followed.	**Low (L)**
		Noise Impacts on the closest sensitive receptors.	Existing noise sources within and around the project site include natural sounds from wind, animals, and birds; vehicle movement on the Rosh Pinah – Oranjemund Road and Oranjemund Airport Road. Oranjemund town is approximately 2 km from the Airport Access Road. Due to this distance, noise impacts are therefore considered to be minimal to the sensitive receptors in Oranjemund Town. No further noise assessment is undertaken and the relevant management and mitigation measures are outlined in the EMP.	**Low (L)**
		Air Quality Impacts	The only source of dust in the area is from 4x4 off-road vehicles and by sand picked up by wind. The construction phase will have vehicles and trucks moving and delivering material and equipment along the road and potentially	**Low (L)**

ASPECT	APPLICABLE PHASE	POTENTIAL ENVIRONMENTAL IMPACT	RELEVANCE (SCREENING) OF POTENTIAL IMPACT	Significance and Impact Rating
			generating dust. However, this potential impact is deemed minimal due to a low number of vehicles expected during this phase. The relevant management and mitigation measures are outlined in the ESMP.	
Construction on the access road		Impact on traffic on travelers from the airport	A temporary road will be constructed and maintained for the duration of the Project ensuring access to and from the Oranjemund Airport. The alignment of this temporary road will follow the existing road, which will be demolished and removed once the new road has been commissioned. The traffic flow disturbance will be reduced, and travelers will make use of the access road. to the construction of the access road. Therefore, traffic has not been assessed further.	**Low (L)**
Traffic and movement of haul trucks on roads		Potential health risks and injury to workers. 3rd party safety: ◆ Increased risk of accidents	The movement of construction vehicles could cause accidents such as collision to travelers between Oranjemund and the Airport. Therefore, the 3rd party health and safety are assessed further in section 8.	**Medium (M)**
Employment and resource management		Impacts on local economy ◆ Increased Employment opportunities. ◆ Transfer of skills	The construction will be carried out by contractors. Contractors will be engaged on a short term, temporary basis. Jobs will be created and an opportunity for skills transfer. Therefore, esocio-conomic impacts are assessed further in section 8.	**Positive H (High)**

8 ENVIRONMENTAL IMPACT ASSESSMENT

8.1 Assessment Approach and Methodology

The site visit is taken into consideration. This approach is deemed adequate for placing into context the potential impacts associated with the establishment of the Project.

Table below shows the methodology used to conduct the qualitative assessment. Both the criteria used to assess the impacts and the method of determining the significance of the impacts is outlined. This method complies with the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) EIA regulations. Part A provides the approach for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D. Both mitigated and unmitigated scenarios are considered for each impact.

Table 10: Assessment Methodology and Criteria

PART A: DEFINITION AND CRITERIA		
Definition of SIGNIFICANCE		**Significance = consequence x probability**
Definition of CONSEQUENCE		**Consequence is a function of severity, spatial extent and duration**
Criteria for ranking of the SEVERITY/NATURE of environmental impacts	**H**	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action. Irreplaceable loss of resources.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints. Limited loss of resources.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.
Criteria for ranking the DURATION of impacts	**L**	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
Criteria for ranking the SPATIAL SCALE of impacts	**L**	Localised - Within the site boundary.
	M	Fairly widespread – Beyond the site boundary. Within 20 km of the site boundary.
	H	Widespread – Far beyond site boundary. Regional/ national
PART B: DETERMINING CONSEQUENCE		

SEVERITY = L					
DURATION	Long term	**H**	**Medium**	**Medium**	**Medium**
	Medium term	**M**	**Low**	**Low**	**Medium**
	Short term	**L**	**Low**	**Low**	**Medium**
SEVERITY = M					
DURATION	Long term	**H**	**Medium**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Low**	**Medium**	**Medium**
SEVERITY = H					
DURATION	Long term	**H**	**High**	**High**	**High**
	Medium term	**M**	**Medium**	**Medium**	**High**
	Short term	**L**	**Medium**	**Medium**	**High**
			L	**M**	**H**
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
			SPATIAL SCALE		
PART C: DETERMINING SIGNIFICANCE					
PROBABILITY	Definite/ Continuous	**H**	**Medium**	**Medium**	**High**
	Possible/ frequent	**M**	**Medium**	**Medium**	**High**
(of exposure to impacts)	Unlikely/ seldom	**L**	**Low**	**Low**	**Medium**
			L	**M**	**H**
			CONSEQUENCE		

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	**Decision guideline**
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

8.2 Biodiversity

The section assesses the physical impacts on biodiversity associated with the proposed mining.

Issue: physical impacts on biodiversity

Introduction

The construction activities associated with the proposed upgrade of the airport road has the potential to impact on biodiversity. In this regard, the discussion relates to the physical destruction of specific flora species such as *Chenolea Diffusa, Fankena (Genus), Caroxylon aphyllum,*

Calobota angustifolia, Mesembryanthemum cryptanthum and Aizoon africanum and disturbing the breeding birds associated with vegetation along drainage courses of the Orange River, while reptiles such as Geckos may be adversely affected by construction-induced vibrations, which are significant because of their status, and/or the role that they play in the ecosystem.

Assessment of impact

Severity

In the unmitigated scenario, the disturbance of flora will result in the following impacts:

- Loss of habitats.
- Loss of shelter for smaller vertebrates, especially reptiles.
- Direct impacts to birds through removal of nest sites in plants and on the ground.
- Destruction of plant species such as *Chenolea Diffusa, Fankena (Genus), Caroxylon aphyllum, Calobota angustifolia, Mesembryanthemum cryptanthum and Aizoon africanum*.
- Animal mortality resulting from vehicles and machinery strikes (i.e. slow moving animals and dormant invertebrates).
- Vehicle tracks damage the soil and inhibit root growth.
- Impacts on topsoil (i.e. damage / loss of topsoil).

In the unmitigated scenario, the severity is expected to be medium. With the implementation of mitigation measures, the severity can be reduced to low.

Duration

In the unmitigated scenario the loss of biodiversity and related functionality and subsequent colonisation of alien/invasive species is long term and will continue after the life of the operation. This is a high duration. In the mitigated scenario, the duration reduces to medium.

Spatial scale

Biodiversity processes are not confined to the project area. Due to ecosystem linkages and movement of animals, the loss of biodiversity has a medium rating.

Consequence

In the unmitigated scenario, the consequence is high. With mitigation, the consequence is low.

Probability

In the unmitigated scenario, the probability of the impact occurring is high. With the implementation of mitigation measures, the probability reduces to low.

Significance

The significance of this potential impact is medium in the unmitigated scenario and low in the mitigated scenario.

Tabulated summary of the assessed impact – physical destruction of biodiversity

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**M**	**H**	**M**	**H**	**M**	**M**
Mitigated	**L**	**M**	**M**	**L**	**L**	**L**

Mitigation measures

The following actions are relevant:

- Keep footprint of project as small as possible and enforce the operational boundaries through highly visible signs and regulatory mechanisms such as fines or similar.
- Raise awareness through awareness campaigns and training of key staff.
- Once construction is completed, replace topsoil on affected areas according to a comprehensive restoration plan.

8.3 Third parties' safety

ISSUE: Impacts on travelers between the airport and Oranjemund Town

Introduction

This includes potential impacts on third parties and road users that can be harmed from movement of the road construction machinery and equipment. Additionally, there may be disruptions to local traffic patterns, leading to increased congestion and longer travel times.

Assessment of impact

Severity

This presents a potential risk of injury and/or death to third parties. This is a potential high severity. In the mitigated scenario the severity reduces to low as an access road will be developed to prevent traffic related impacts.

Duration

In the context of this assessment, death or permanent injury is considered a long term, permanent impact. This is a high duration.

Spatial scale

Direct impacts associated with traffic will be located within the site boundary, with or without mitigation. The potential indirect impacts could extend beyond the site boundary to the families/communities to which the injured people belong. This is a medium spatial scale.

Consequence

The consequence is high in both the unmitigated and mitigated scenarios.

Probability

In the unmitigated scenario, without management interventions, the probability of the impact occurring is expected to be medium due to the remoteness of the site. The mitigation measures focus on maintaining access for third parties which reduces the probability of the impact occurring to low.

Significance

In the unmitigated scenario, the significance of this potential impact is high. With the implementation of mitigation measures, the significance of this potential impact is medium because the probability of the potential impact occurring is reduced.

Tabulated summary of the assessed impact – accidents and injury as a result of traffic impacts

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Unmitigated	**H**	**H**	**M**	**H**	**M**	**H**
Mitigated	**L**	**H**	**M**	**H**	**L**	**M**

Mitigation measures

The following actions are relevant:

- Ensure that an Emergency Response Plan is in place, in event of an accident.
- The Contractor shall prepare a strategy to ensure the disruption to traffic is minimized to acceptable levels.
- The strategy should include a schedule of work including when and how road crossings (construction at existing intersections) will be made.
- The Contractor shall also liaise with the Traffic Authorities for their approval in this regard.
- Proper traffic and safety warning signs must be placed at the construction site to the satisfaction of the Engineer and the Roads Authority.

8.4 Socio-economic environment

Socio-Economic Benefits

Introduction

The project has the potential to create socio-economic benefits through employment creation and economic contributions. The benefits include employment opportunities, skills and development training and indirect capital injection into businesses in Oranjemund and overall //Karas Region.

The project has potential to create employment, particularly for unskilled and semi-skilled labour.

Since social impacts cannot be assessed in isolation, the assessments presented below are cumulative.

Severity

The proposed project will contribute to the economy in the following positive ways:

Direct benefits include the sales of services provided by the construction; direct number of persons employed and their wages and salaries, taxes paid, and profits earned.

The provision of products and services to the project to produce, as well as the inputs purchased by the upstream supply chain will provide indirect economic benefits.

The spending of salaries and wages of construction workers andemployees/contractors and of input providers on consumer goods will provide induced benefits. If these products and services are produced locally there will be greater economic impact, hence “Buy Namibian”. The economic spin-offs from the project’s construction and operations will provide income to the employees, their immediate household members and to others living elsewhere in Namibia who depends on cash remittances.

Impact on Government revenue

The project will be responsible for corporate tax, sales tax and import duties. Some additional revenue will be gathered from the personal income tax of direct employees, their municipal rates, and VAT on goods and services they purchase, similarly for other employees in the supply chain of goods and services.

Duration

In the normal course, the direct positive economic impacts associated with the project will occur for long term. After construction, there will be limited opportunities through aftercare and monitoring activities. However, the project would have contributed to the benefits of wealth creation and a better skilled workforce are expected to continue beyond this project.

Skills development of local people would be for the long-term, and therefore, the duration of the positive impacts is positive high.

Scale

In both the unmitigated and mitigated scenarios, the impact will be experienced both in the region and throughout Namibia. The spatial scale is widespread beyond the project site and is therefore classified as high.

The severity and scale would therefore be **positive high**.

Consequence

The consequence of these potential positive impacts is **positive high**.

Probability

The probability of the positive impacts is considered **positive high**.

Significance

The significance of the positive impacts is **positive high**, particularly if local people are employed.

Summary of cumulative Positive Impacts on Socio-Economic Environment

MITIGATION	SEVERITY	DURATION	SPATIAL SCALE	CONSEQUENCE	PROBABILITY OF OCCURRENCE	SIGNIFICANCE
Unmitigated	+H	+H	+H	+H	+H	+H
Mitigated	H	H	H	H	H	H+

Mitigation Measures

The following key measures for increasing the potential positive impacts should be implemented:

- Local people be preferentially selected to encourage social growth and development in the region, town and Namibia as a country; and
- Management is urged to begin local selection and provide technical training as soon as possible to enable local people to compete for the lower skilled jobs and upskill themselves in anticipation of the proposed project.

9 CONCLUSION

It is I.N.K's opinion that the environmental aspects and potential impacts relating to the Oranjemund Airport Access Road have been successfully identified.

The assessment found that the Project present the potential for minimal additional risks and related impacts in the mitigated scenario. With regards to socio-economic, biodiversity; and third parties' safety, without mitigation in place, the impacts related to people is likely to result in unacceptable impacts. With mitigation measures in place, the impacts reduce significantly.

I.N.K concludes that should the Client follow the actions (i.e. management and mitigation measures) provided in the EMP report, the project would result in optimized value creation in relation to the management and preservation of ecological, social and economic aspects.

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Appendix 1

Public Participation Report