# APP-007350

## AMANZI TRAILS NAMIBIA CC //KHARAS REGION

## ENVIRONMENTAL MANAGEMENT PLAN

**Prepared by:**

**Prepared for:**

January 2026

| | | |
|---|---|---|
| **Project:** | AMANZI TRAILS NAMIBIA CC //KHARAS REGION: ENVIRONMENTAL MANAGEMENT PLAN | |
| **Report: Version/Date:** | Final<br>January 2026 | |
| **Prepared for: (Proponent)** | Amanzi Trails Namibia CC<br>P O Box 58<br>Noordoewer<br>Namibia | |
| **Lead Consultant** | Geo Pollution Technologies (Pty) Ltd<br>PO Box 11073<br>Windhoek<br>Namibia | TEL.: (+264-61) 257411<br>FAX.: (+264) 88626368 |
| **Main Project Team:** | **Quzette Bosman**<br>(BA. Geography/Sociology); (BA (Hons.) Environmental Management)<br>**Johann Strauss**<br>(B.A Geography/Psychology/Environmental Management)<br>**André Faul**<br>(B.Sc. Zoology/Biochemistry); (B.Sc. (Hons.) Zoology); (M.Sc. Conservation Ecology); (PhD Medical Bioscience) | |
| **Cite this document as:** | Bosman Q, Faul A, Strauss J; 2026 January; Amanzi Trails Namibia CC, //Kharas Region: Environmental Management Plan | |
| **Copyright** | Copyright on this document is reserved. No part of this document may be utilised without the written permission of Geo Pollution Technologies (Pty) Ltd. | |
| **Report Approval** |  <br>**Quzette Bosman**<br>Environmental & Social Assessment Practitioner | |

I Harais van der Merwe acting as the representative of Amanzi Trails Namibia CC, hereby confirm that we approve the Environmental Management Plan as presented in this document. All material information in the possession of the Proponent that reasonably has or may have the potential of influencing the Environmental Management Plan was provided to the consultant.

Signed at Noordoewer on the 20th day of April 2026

Amanzi Trails Namibia CC

CC/2006/0718
Company Registration Number

# TABLE OF CONTENTS

## LIST OF FIGURES



## LIST OF PHOTOS



## LIST OF TABLES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| **AIDS** | Acquired Immune Deficiency Syndrome |
| **ECC** | Environmental Clearance Certificate |
| **EMA** | Environmental Management Act No 7 of 2007 |
| **EMP** | Environmental Management Plan |
| **EMS** | Environmental Management System |
| **GPT** | Geo Pollution Technologies |
| **HIV** | Human Immunodeficiency Virus |
| **IUCN** | International Union for Conservation of Nature |
| **MEFT** | Ministry of Environment, Forestry and Tourism |
| **mm/a** | Millimetres per annum |
| **MSDS** | Material Safety Data Sheet |
| **PPE** | Personal Protective Equipment |
| **ppm** | Parts per million |
| **SADC** | Southern African Development Community |
| **SANS** | South African National Standards |
| **WHO** | World Health Organization |

# GLOSSARY OF TERMS

**Alternatives** - A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The "no-go" alternative constitutes the 'without project' option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.

**Assessment** - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

**Competent Authority** - means a body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.

**Construction** - means the building, erection or modification of a facility, structure or infrastructure that is necessary for the undertaking of an activity, including the modification, alteration, upgrading or decommissioning of such facility, structure or infrastructure.

**Cumulative Impacts** - in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

**Environment** - As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, palaeontological or social values".

**Environmental Management Plan (EMP)** - A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the project.

**Environmental Management System (EMS)** - An Environment Management System, or EMS, is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of business management. An EMS ensures environmental considerations are a priority, along with other concerns such as costs, product quality, investments, PR productivity and strategic planning. An EMS generally makes a positive impact on a company's bottom line. It increases efficiency and focuses on customer needs and marketplace conditions, improving both the company's financial and environmental performance. By using an EMS to convert environmental problems into commercial opportunities, companies usually become more competitive.

**Evaluation -** means the process of ascertaining the relative importance or significance of information, the light of people's values, preference and judgements in order to make a decision.

**Hazard** - Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.

**Mitigate** - The implementation of practical measures to reduce adverse impacts.

**Proponent (Applicant)** - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment & Tourism.

**Public** - Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

**Significant Effect/Impact** - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

**Stakeholder Engagement** - The process of engagement between stakeholders (the proponent, authorities and IAPs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term "public participation".

**Stakeholders** - A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (IAPs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

**Sustainable Development** - "Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations" – the definition of the World Commission on Environment and Development (1987). "Improving the quality of human life while living within the carrying capacity of supporting ecosystems" – the definition given in a publication called "Caring for the Earth: A Strategy for Sustainable Living" by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).

# 1 INTRODUCTION

Amanzi Trails Namibia CC (the Proponent), requested Geo Pollution Technologies (Pty) Ltd to prepare an environmental management plan (EMP) for the existing Amanzi Trails Namibia, situated along the Orange River approximately 16 km downstream of the Noordoewer border post, //Kharas Region (Figure 1-1). The facility has 24 shaded grassed campsites, which vary in size and can accommodate between one to four vehicles per camping site, with additional space for caravans and trailers. Service infrastructure include a small shop, dining lapa, ablution facilities, workshop and water abstraction infrastructure. Operational activities are typical of similar tourism facilities in the region and include day to day operations and maintenance, guided canoeing, fish trips and a number of other tourist activities.

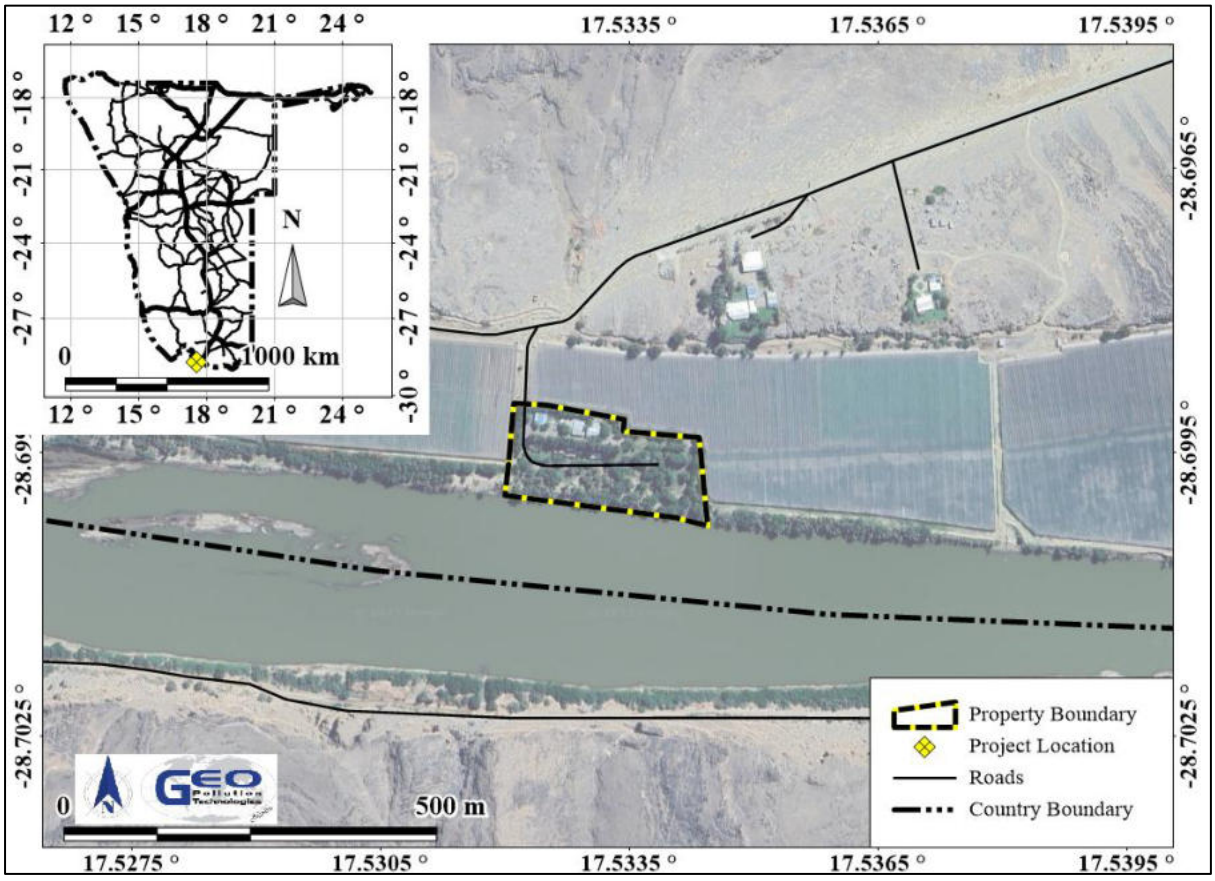



**Figure 1-1 Project location**

In order to comply with Namibian legislation, and to adhere to all codes and standards applied in their operations, the Proponent wishes to apply for an environmental clearance certificate (ECC) for the facilities operations. In support of the ECC application, an EMP will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT). The EMP provides management options to ensure environmental impacts of the facility are continually minimised. The environment being defined in the Environmental Assessment Policy and Environmental Management Act as “land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values”.

The EMP will be used to apply for renewal of the existing ECC in compliance with Namibia’s Environmental Management Act (Act No 7 of 2007).

# 2 SCOPE

The scope of the EMP is to:

- Provide a brief overview of all components and related operations of the facility.
- Summarise the legal and regulatory framework within which the facility operates.
- Provide a brief overview of the environment, i.e. the physical, biological, social and economic conditions, potentially impacted by the facility.
- Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels.
- Provide sufficient information to the relevant competent authorities and the MEFT to make an informed decision regarding the granting of the ECC.

# 3 FACILITY OPERATIONS AND RELATED ACTIVITIES

Amanzi Trails, when translated means “Water trails”. Operations of the company was developed to provide patrons with an opportunity to row along the Orange River on guided river tours since 1998. The following section provides a brief description of the infrastructure, services supply and operations of the facility.

## 3.1 ACCOMMODATION AND GUIDED TOURS

The facility’s main focus is to provide guided canoe tours on the Orange River. To accommodate tour groups, campsites were established as short-term overnight sites. Tourist groups typically arrive at the facility, spend one night and depart early the following morning on the guided tours. While on the Orange River, vehicles and tents of patrons remain at the main facility until the tour group returns to the facility. All tour groups and their equipment are transported back to the facility by the Proponent.

The initial facility was designed to have a minimal long term impact on the surrounding environment. In doing so, limited vegetation clearance was conducted to maximize integration between the facility and surrounding environment. Individual, grassed campsites are fenced off with reeds, (Photo 3-1), and (Photo 3-2) to provide privacy and also serve as a dust shield between the internal unpaved roads and the campsites. Communal ablution blocks are equipped with hot water showers, toilets and sinks, (Photo 3-3) and (Photo 3-4). Near all campsites are provided with sinks/basins or a scullery that provide hot water for washing dishes or laundry. Most of the cleaning and maintenance staff live in Noordoewer, while the remaining employees, such as tour guides and facility manager reside at the facility.

**Photo 3-1 Vacant campsite**

**Photo 3-2 Occupied campsite**

**Photo 3-3 Communal ablution block**


**Photo 3-4 Vehicle used to return patrons back to the facility**

## 3.2 DINING, SHOP AND ADMINISTRATION

The main complex area at the facility hosts the dining lapa area (Photo 3-5). Food preparations for large group can done at the lapa and kitchen area which is equipped with a gas stove. Food is served at the dining area and beverages are prepared at the bar (Photo 3-6). A small shop sells, among other, meat, drinks, wood, and ice to guests. Offices for managers are present adjacent to the shop and reception.


**Photo 3-5 Directions to the lapa, reception, and bar**

**Photo 3-6 Dining lapa**

## 3.3 MAINTENANCE AND SERVICE SUPPLY

Support buildings include a maintenance workshop, various storage sheds (Photo 3-8) as well as staff ablutions and a waste management area (Photo 3-11) and (Photo 3-12). Equipment used for guided tours on the Orange River, is store in shaded areas, underroof and in the storage sheds. Maintenance and servicing of the canoe and inflatable devices are conducted in the area furthest removed from the campsites. Electricity is supplied for operations by NamPower while all water is sourced from the Orange River via an abstraction pump.

**Photo 3-7 Maintenance area**

**Photo 3-8 Storage shed**

**Photo 3-9 Canoe storage**

**Photo 3-10 Floating device testing tank**

All waste produced is collected and temporarily stored in a designated waste storage area. Non-toxic, combustible waste such as paper, cardboard and food is burnt in a dedicated and fenced pit, (Photo 3-12), while other waste such as plastic, tins, and, glass, are stored separately until it's collected by a third party for recycling (Photo 3-13).

All wastewater and sewage of the facility drains into two septic tanks (Photo 3-14). Chambers allows for anaerobic digestion of solids, wastewater then drains into the final chamber which is pumped out by a third party for disposal.

**Photo 3-11 Plastic recycling storage unit**

**Photo 3-12 Burn pit**

**Photo 3-13 Metal recycling storage unit**

**Photo 3-14 Septic tank**

# 4 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an ECC, as per the Namibian legislation. The legislation and standards provided in Table 4-1 and Table 4-2 govern the environmental assessment process in Namibia and/or are relevant to the facility.

**Table 4-1 Namibian law applicable to the facility**

| Law | Key Aspects |
|---|---|
| **The Namibian Constitution** | ♦ Promote the welfare of people.<br>♦ Incorporates a high level of environmental protection.<br>♦ Incorporates international agreements as part of Namibian law. |
| **Environmental Management Act**<br>Act No. 7 of 2007, Government Notice No. 232 of 2007 | ♦ Defines the environment.<br>♦ Promote sustainable management of the environment and the use of natural resources.<br>♦ Provide a process of assessment and control of activities with possible significant effects on the environment. |
| **Environmental Management Act Regulations**<br>Act No. 7 of 2007, Government Notice No. 28-30 of 2012 | ♦ Commencement of the Environmental Management Act.<br>♦ List activities that requires an environmental clearance certificate.<br>♦ Provide Environmental Impact Assessment Regulations. |
| **Namibia Tourism Board Act**<br>Act No. 21 of 2000, Government Notice 261 of 200, 2000 | ♦ Provide for the registration and grading of accommodation establishments.<br>♦ Provide for the declaration of any sector of the tourism industry as a regulated sector and for the registration of businesses falling within a regulated sector.<br>♦ Provides regulations and minimum requirements pertaining to:<br>o Levies payable.<br>o Registrations of regulated businesses.<br>o Registrations of accommodation establishments. |
| **Accommodation Establishments and Tourism Ordinance 20 of 1973** | ♦ Consolidate and amend the laws relating to accommodation establishments and tourism and to provide for the establishment of tourist recreation areas and incidental matters.<br>♦ Provides for regulations of tourism establishments.<br>♦ Numerous amendments and repeals. |
| **Water Resources Management Act**<br>Act No. 11 of 2013, Government Notice No. 332 of 2013 | ♦ Provide for management, protection, development, use and conservation of water resources.<br>♦ Prevention of water pollution and assignment of liability. |
| **Forest Act**<br>Act No. 12 of 2001, Government Notice No. 248 of 2001 | ♦ Makes provision for the protection of the environment and the control and management of forest fires.<br>♦ Provides the licencing and permit conditions for the removal of woody and other vegetation as well as the disturbance and removal of soil from forested areas. |
| **Forest Regulations: Forest Act, 2001**<br>Government Notice No. 170 of 2015 | ♦ Declares protected trees or plants.<br>♦ Issuing of permits to remove protected tree and plant species. |

| Law | Key Aspects |
|---|---|
| **Local Authorities Act**<br>Act No. 23 of 1992, Government Notice No. 116 of 1992 | ♦ Define the powers, duties and functions of local authority councils.<br>♦ Regulates discharges into sewers. |
| **Public and Environmental Health Act**<br>Act No. 1 of 2015, Government Notice No. 86 of 2015 | ♦ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters.<br>♦ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation. |
| **Labour Act**<br>Act No. 11 of 2007, Government Notice No. 236 of 2007 | ♦ Provides for Labour Law and the protection and safety of employees.<br>♦ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997). |

**Table 4-2 Relevant multilateral environmental agreements for Namibia and the facility**

| Agreement | Key Aspects |
|---|---|
| **Charter of the Regional Tourism Organisation of Southern Africa (RETOSA), 1997** | ♦ Development of tourism through effective marketing of the Region in collaboration with the public and private sector.<br>♦ To facilitate, encourage and assist in the development of legal and ethical tourism throughout the Southern African Region taking due consideration of the overall development of the people, the Region and the Region's natural and cultural resources. |
| **Stockholm Declaration on the Human Environment, Stockholm 1972** | ♦ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment. |
| **Protocol on the Development of Tourism in SADC, 1998** | ♦ The Protocol sets out SADC's objective to build upon the region's potential as a tourist destination. |
| **Statutes of the World Tourism Organization, 1970** | ♦ Promotion and development of tourism with a view to contributing to economic development, international understanding, peace, prosperity, and universal respect for, and observance of, human rights and fundamental freedoms for all without distinction as to race, sex, language or religion. |
| **United Nations Framework Convention on Climate Change (UNFCCC)** | ♦ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention. |
| **Convention on Biological Diversity, Rio de Janeiro, 1992** | ♦ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity. |

Listed activities which require an ECC application (Government Regulation No. 29 of 2012) related to this project include the following:

***Section 8 of Government Notice No. 29 of 2012: Water Resource Developments***

- ♦ 8.3 Any water abstraction from a river that forms an international boundary: Water is abstracted from the Orange River, which forms an international boundary with South Africa.
- ♦ 8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems: The Proponent has installed wastewater treatment facilities (two septic tanks with individual chambers) within the operational area to manage mainly black and grey water.

***Section 11 of Government Notice No. 29 of 2012: Other Activities***

- 11.2 Construction of cemeteries, camping leisure, and recreation sites. The facility was constructed and currently in operation and maintained accordingly.

# 5 ENVIRONMENTAL CHARACTERISTICS

This section lists pertinent environmental characteristics of the study area and provides a statement on the potential environmental impacts on each.

## 5.1 LOCALITY AND SURROUNDING LAND USE

The facility is located in Noordoewer, a border town in the //Kharas Region of Namibia (28.699450 °S 17.533240 °E). The facility is located on the banks of the Orange River which forms an international border with South Africa. Accessed from the C13 route (D2012 District road). The campsite borders the Orange River to the south and to the north, west, and east the facility borders existing agriculture activities. The Noordoewer border post is approximately 15 km southeast of the facility.

***Implications and Impacts***

The facility promotes tourism in the area by offering camp facilities. Contribution to the local community is made through direct employment. The facility has diversified the local and regional land-use that mostly dominated by agriculture activities, thereby strengthening the local economic resilience.

## 5.2 CLIMATE

According to the Köppen–Geiger Climate Classification system, the project area is located within a hot desert climate (BWh). This climate type is characterised by extremely low rainfall and high temperatures. Annual precipitation is well below potential evapotranspiration, with the area receiving less than 100 mm a year of rainfall, and showing a variability of 50 to 60 %. The potential evapotranspiration is approximately 2,700 to 2,800 mm/a. By dividing the mean annual potential evapotranspiration into the mean annual precipitation, an aridity index value for the area was computed as 0.02, which indicates the area to be arid.

The mean annual temperature exceeds 18 °C, with the average annual minimum temperature between 8 and 10 °C and maximum temperature between 36 and 38°C, resulting in an annual temperature range of 22 to 24 °C. Higher temperatures have been recorded by the Proponent during the summer months. An average diurnal temperature (difference between daily minimum and maximum temperature) for this area is ranging from 16 to 18 °C. Direct normal solar irradiance for the area is 8.235 kWh/m²/day.

***Implications and Impacts***

High radiation and UV exposure levels coupled with high summer temperatures may result in heatstroke of workers and guests. Solar radiation may be beneficial in generating additional electricity through a PV Solar systems. The facility may employ solar power to reduce reliance and pressure on the localized electricity grid.

## 5.3 TOPOGRAPHY AND DRAINAGE

The project is located within the Gamkab Basin, a landscape dominated by large, open valleys of gently south draining ground underlain with rocks of the Namaqua Metamorphic Complex and younger sediments and dolerites of the Karoo Supergroup. Noordoewer located on the northern bank of the Orange River in an area known for the incised riverbed, resulting in high ridges constituting the southern bank, the ridges of the southern bank is visible from the facility.

Localised drainage is well developed. All runoff flows towards the Orange River and mainly through the Uhabis River. Ground surface elevation is between 100-200 m above sea level in the area and is located within the Orange River catchment.

**Photo 5-1 Ridges to west on the southern border**

**Photo 5-2 Ridges to the east on the southern border**

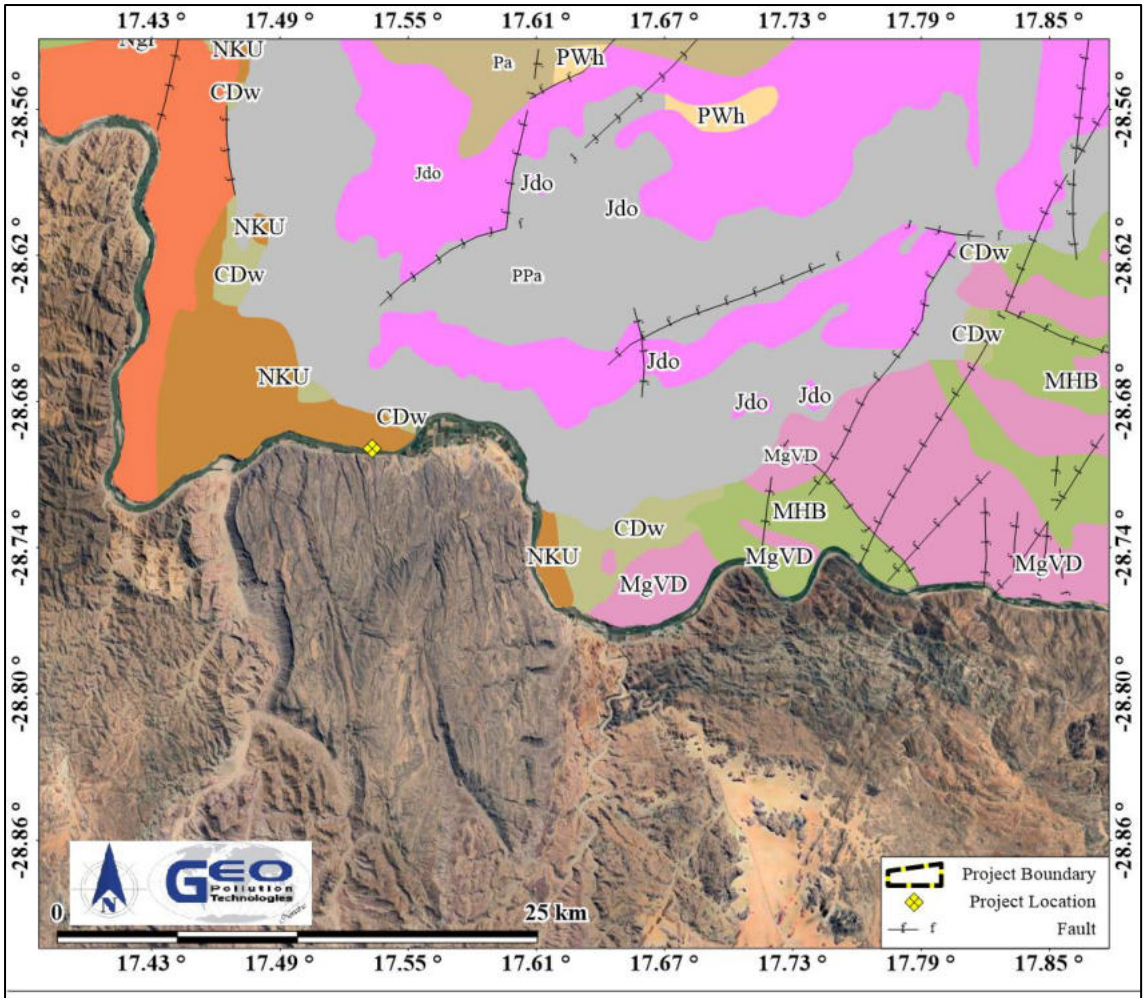
***Implications and Impacts***

Flash floods may present a risk to the facility, however, the probability thereof is low. Any pollutants that are not contained and are transported via surface water flow will be transported away from the project location and potentially pollute surrounding areas and ultimately the Orange River.

## 5.4 GEOLOGY AND HYDROGEOLOGY

The project area is underlain by rocks of the Kuibis Subgroup which belongs to the Nama Group of the greater Damara Sequence. This group formed roughly 550 – 540 million years ago during the late Precambrian (Ediacaran Period). These rocks (NKU), made up of limestone, shale, sandstone and minor conglomerate were deposited in shallow-marine environments and have since become well-cemented, forming a hard and stable bedrock surface. Beneath the Nama rocks lies the much older Damara Sequence, a deeply deformed package of metamorphic rocks formed during the Pan-African Orogeny (approximately 650 - 550 million years ago) when ancient continental plates collided. Compared to the complex and folded Damara basement, the overlying Kuibis Subgroup represents a younger, more stable sedimentary cover. Due to the dense and compact nature of the Kuibis rocks, the groundwater storage capacity in the area is low (Le Heron, 2025). Overlaying the Kuibis Subgroup, the geological sequence in the Noordoewer region continues upward into the Dwyka Group and then the Ecca Group, both part of the Karoo Supergroup. The Dwyka Group (Late Carboniferous, approximately 300 million years old) consists mainly of glacial deposits, including diamictite and dropstone-bearing shales, which were laid down during the Late Palaeozoic Ice Age. Overlying the Dwyka is the Ecca Group (Early Permian), beginning with the Prince Albert Formation, which is made up of dark marine shales that formed after the glaciers retreated and the region was covered by a quiet, deepening sea (Le Heron, 2025).

Groundwater information in the area is very limited as groundwater resources were not developed due to the Orange River supplying an easier resource. Flow in the subsurface soil will mainly be through primary porosity in the unconsolidated top layers and through secondary porosity in the consolidated formations. It is conceptualised that the majority of flow will be towards the river in the unconsolidated layers.




| Age | Lith Code | Supergroup | Group | Subgroup | Formation | Suite | Description |
|---|---|---|---|---|---|---|---|
| Jurassic to Cretaceous | Jdo | Karoo | | | | | Dolerite |
| Permian | Pa | Karoo | Ecca | | Aussenkjer | | Shale;limestone;siltstone |
| Permian | PWh | Karoo | Ecca | | Whitehill | | Shale |
| Permian | PPa | Karoo | Ecca | | Prince Albert | | Shale |
| Permo-Carboniferous | CDw | Karoo | | | Dwyka | | Tillite;shale;sandstone |
| Namibian | NKU | Damara | Nama | Kuibis | | | Sandstone/quartzite;limestone;conglomerate |
| Cambrian | Ngr | Damara | | | | Red Granite | Granite and granitic rocks |
| Kheisian | MgVD | | | | | Vioolsdrif | Granite and granitic rocks |
| Kheisian | MHB | | Orange River | Haib | | | Andesite;dacite;rhyolite |

**Figure 5-1 Geology of the project area**

***Implications and Impacts***

Groundwater is not utilized in the area, but remains an important resource and would be at risk if sewage spills are not contained, cleaned and disposed of properly. Polluted groundwater may transport pollutants to the nearby Orange River.

## 5.5 WATER SUPPLY

All water supply to Noordoewer is pumped from the Orange River. Households and general businesses are supplied by a NamWater supply scheme that consists of an abstraction point in the irrigation canal, which transports raw water to a treatment plant. From there, clean water is distributed to elevated towers for supply to the town. All agricultural operations in the area are also reliant on the Orange River. The facility pumps water from the Orange River directly and is not reliant on the NamWater supply scheme.

***Implications and Impacts***

The facility is responsible for cleaning their water, which is abstracted from the Orange River, to a standard suitable for domestic use supply.

## 5.6 FAUNA AND FLORA

Noordoewer lies along the lower Orange River in southern Namibia and forms part of the Lower Orange River vegetation zone, a narrow riparian corridor in the wider Nama Karoo Biome. The surrounding landscape is dominated by arid dwarf-shrubland typical of the region. The Orange River banks support lush riparian vegetation due to the perennial flow of the river. This creates a striking ecological contrast in the otherwise dry and mostly barren land. The riparian vegetation has, however, been significantly impacted by anthropogenic activities and is dominated by alien invasive *Prosopis* spp. (mesquite) and *Phragmites australis* (common reed).

The upland areas away from the river are characterised by sparse dwarf shrubs, succulents, and scattered grasses adapted to low and variable rainfall (typically <100 mm/yr). Vegetation cover in these dry plains is generally low, with extensive bare gravel plains and rocky substrates.

Due to the transformation of the landscape by mainly agricultural activities, mammals are rarely seen in the area and close to the guesthouse. However, animals may still move through less-disturbed areas, in the broader landscape, to access the Orange River as a water source. This includes kudu, klipspringer and baboons. The riparian vegetation provides critical habitat for birds, small mammals, and invertebrates in an otherwise semi-desert environment. Snake and scorpion species may be found at the guesthouse where they could pose danger to guests or employees.

***Implications and Impacts***

The facility itself does not present a threat to the biodiversity. Possible pollution and changes or creation of habitats (such as close to the septic tanks), may create a suitable environment for animal and/or plant species not traditionally know in the area or not frequenting the area. Temporary storage of food waste may present an opportunity for wildlife scavenging etc. while uncontrolled pollution (such a chemical spills) may and can cause damage to the local biodiversity.

Poaching and illegal collection of plant, geological and animal material may impact on the local environment. Patrons and staff alike should be made aware of the implications of poaching. Due to the nature of the tourism operations conducted by the Proponent, nature conservation is of key importance to the Proponent.

## 5.7 DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

The project is located within the //Kharas Region, falls under the Karasburg West Constituency. The total population for this region is 109,893 of which 54,452 are male and 55,441 are female. The region also has a density of 0.68 people/km² and a literacy rate of 96.1%, while the constituency has a total population of 17, 741 and a density of 1.3 people/km² (Namibia Statistics Agency, 2023).

***Implications and Impacts***

Current operations have increased employment locally and created positive economic spin-offs for the surrounding community that is mainly employed by the agriculture sector. Employment opportunities and economic diversification, as brought on through the facility, may influence the demographic profile of the community through mainly in-migration and education. Skills development and training benefit employees while the facility may have an influence on further stimulating economic growth for the area.

# 6 ENVIRONMENTAL MANAGEMENT PLAN

The purpose of this section is to list the most pertinent environmental impacts that are expected from the operational, construction (upgrades, maintenance, etc.) and potential decommissioning activities of the facility.

## 6.1 OBJECTIVES OF THE EMP

The EMP provides management options to ensure impacts of the facility are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the operation of the facility. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

- to include all components of construction activities (upgrades, maintenance, etc.) and operations of the facility;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with the facility;
- to monitor and audit the performance of operational personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible operational personnel.

## 6.2 IMPLEMENTATION OF THE EMP

Section 6.3 outline the management of the environmental elements that may be affected by the different activities. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of prevention and mitigation measures as well as reporting activities, should be determined by the Proponent and included in the EMP. The EMP is a living document that must be prepared in detail, and regularly updated, by the Proponent as the project progress and evolve.

The EMP and ECC must be communicated to the facility managers. A copy of the ECC and EMP should be kept on site. All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the ECC and must be submitted to the MEFT. Renewal of ECC will require six monthly reports based on the monitoring prescribed in this EMP.

Various potential and definite impacts will emanate from the operations and decommissioning phases. The majority of these impacts can be mitigated or prevented. The prevention and mitigation measures are listed below.

## 6.3 MANAGEMENT OF IMPACTS: OPERATIONS AND CONSTRUCTION

The following section provide management measures for both the operational phase as well as construction activities related to the facility It should be noted that, since it is a well-established facility that has already operated for 27 years, most of the measures proposed to enhance positive impacts, and prevent or mitigate negative impacts, have already been implemented by the Proponent.

### 6.3.1 Planning

During the phases of planning for operations, construction and decommissioning of the facility, it is the responsibility of the Proponent to ensure they are and remain compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- Ensure that all necessary permits and licenses from the various ministries, local authorities and any other bodies that governs the construction activities and operations of the project are in place and remains valid. This includes registration with the Namibian Tourism Board, and a water abstraction license from the Ministry of Agricultural, Fisheries, Water and Land Reform.
- Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- Have the following emergency plans, equipment and personnel on site where reasonable to deal with all potential emergencies:
    - Risk management / mitigation / EMP/ Emergency Response Plan and HSE Manuals,
    - Adequate protection and indemnity insurance cover for incidents;
    - Comply with the provisions of all relevant safety standards;
    - Procedures, equipment and materials required for emergencies.
- If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.
- Submit bi-annual reports to the MEFT to allow for ECC renewal after three years. This is a requirement by MEFT.
- Appoint a specialist environmental consultant to update the EMP and apply for renewal of the environmental clearance certificate prior to expiry.

### 6.3.2 Employment

A workforce is required for the day to day operations of the establishment. Employees with various skill levels are required. Skilled employees are for example required to run the river rafting and fishing trips while less skilled labourers are employed to tend to the campsites and gardens. The Proponent, through all their tourism establishments, contributes to the reduction in unemployment in Noordoewer and Namibia.

**Desired Outcome:** Provision of employment to local Namibians and in line with the relevant laws of Namibia.

**Actions**

**Enhancement:**

- The Proponent must employ local Namibians where possible.
- If the skills exist locally, employees must first be sourced from the region and then nationally.
- Deviations from this practice must be justified.

**Responsible Body:**

- Proponent

**Data Sources and Monitoring:**

Bi-annual summary report based on employee records.

### 6.3.3 Skills, Technology and Development

During operations of the facility, training is provided to a portion of the workforce to be able to conduct certain tasks according to the required standards. Skills are periodically transferred to an unskilled workforce for general tasks. Development of people and technology are key to economic development. During normal operations, employees will enhance their working expertise while some individuals may be identified for promotion and additional skills development and training.

**Desired Outcome:** To see an increase in skills of local Namibians, as well as development and technology advancements in the tourism industry and local community.

**Actions**

**Enhancement:**

- If the skills exist locally, contractors must first be sourced from the region and then nationally. Deviations from this practice must be justified.
- Skills development and improvement programs to be made available as identified during performance assessments.
- Employees to be informed about parameters and requirements for references upon employment.
- The Proponent must employ local Namibians from the area where possible. Deviations from this practise should be justified appropriately.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- Record should be kept of training provided.
- Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.
- Bi-annual summary report based on employee training.

### 6.3.4 Demographic Profile and Community Health

The scale of the Proponent's establishment is limited and it has not created a large change in the demographic profile of the local community. The local community may be exposed to factors such as communicable disease like HIV/AIDS as well as alcoholism/drug abuse. These are typically aggravated during the presence of possible foreign construction teams and contractors. An increase in foreign people in the area may potentially increase the risk of criminal and socially/culturally deviant behaviour.

**Desired Outcome:** To prevent the occurrence of social ills and prevent the spread of diseases such as HIV/AIDS.

**Actions**

**Prevention:**

- Employ only local people from the area where possible, deviations from this practice should be justified appropriately.
- Ensure sanitation facilities and all related sanitation requirements are available and maintained at the facility for all employees.
- Educational programmes for employees on various topics of social behaviour HIV/AIDs and general upliftment of employees' social status.
- Appointment of reputable contractors.

**Responsible Body:**

- Proponent

**Data Sources and Monitoring:**

- Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- Bi-annual summary report based on educational programmes and training conducted.

### 6.3.5 Traffic

Potential traffic impacts are limited to the turnoff from the C13 and the gravel road leading to the campsite. The C13 road is however a relatively low traffic road and impacts here are expected to be unlikely.

**Desired Outcome:** Minimum impact on traffic and no transport or traffic related incidents.

**Actions**

**Prevention:**

- Erect clear signage regarding access and exit points at the facility.
- Vehicle accessing and leaving the facility should remain on existing established roads / tracks and maintain low speeds.
- If any traffic impacts are expected, possibly as a result of delivery of equipment or construction material, traffic management should be performed to prevent these.

**Mitigation:**

- Treated grey water may be used for dust suppression purposes on access roads to the facility.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- A bi-annual report should be compiled of all incidents reported, complaints received, and action taken.

### 6.3.6 Health, Safety and Security

Activity associated with operations and maintenance / construction is reliant on human labour and therefore health and safety risks exist. Activities such as the operation of vehicles and machinery as well as handling of hazardous chemicals pose risks to employees. Encounters with wild animals, including venomous species like snakes may pose risks to staff and uninformed guests. Security risks will be related to unauthorized entry, theft and sabotage.

**Desired Outcome:** To prevent injury, health impacts and theft.

**Actions**

**Prevention:**

- Clearly label dangerous and restricted areas as well as dangerous equipment and products. This includes the chemical store.
- Equipment and goods that will be locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- Provide all employees with required and adequate personal protective equipment (PPE).
- Staff should be educated / trained on human wildlife conflict management, and guest should be informed upon arrival not to approach wild animals and to be vigilant for, and not to confront, snakes or other potentially venomous / dangerous animals.
- All Health and Safety standards specified in the Labour Act should be complied with.
- Implementation of maintenance register for all equipment.

**Mitigation:**

- Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- Security procedures and proper security measures must be in place to protect workers and clients, especially during cash in transit activities.
- Reduce the amount of cash kept on site to reduce the risk of robberies.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- Any incidents must be recorded with action taken to prevent future occurrences.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

### 6.3.7 Fire

Construction activities, failing electrical infrastructure and fires outside of designated areas may increase the risk of the occurrence of uncontrolled fires which may spread into the nearby vineyards. Risk of fire during the operational phase relate to kitchen operations, open flames, such as the braai facility and smoking, including irresponsible disposal of cigarette buds which may all lead to fire. Chemicals stored and used for general activities may be flammable. Improper waste burning further increases fire risks.

**Desired Outcome:** To prevent property damage, fires, possible injury and impacts caused by uncontrolled fires.

**Actions**

**Prevention:**

- Prepare a holistic fire protection and prevention plan. This plan must include evacuation plans and signage, an emergency response plan and a firefighting plan.
- Personnel training (safe operational procedures, firefighting, fire prevention and responsible housekeeping practices).
- Ensure the kitchen is equipped with fire extinguishers, heat alarms and fire blankets.
- Erection of a lighting conductor near the lapa that has a thatched roof.
- Ensure all flammable chemicals are stored according to material safety data sheet (MSDS) and SANS instructions and all spills or leaks are cleaned up immediately.
- Maintain regular site, mechanical and electrical inspections and maintenance.
- Maintain firefighting equipment and promote good housekeeping.
- Ensure that fires are never left unattended.
- Fire used for purposes such as cooking (by guest) must only be allowed within designated areas.

**Mitigation:**

- Implement the fire protection and firefighting plan in the event of a fire.
- Quick response time by trained staff will limit the spread and impact of fire.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

### 6.3.8 Noise

Since the facility is a tourist establishment, noise are typically kept to a minimum not to be a disturbance to guests. However, the facility often hosts large numbers of scholars, resulting in a noisier environment than is typically experienced at tourism establishments. During construction and maintenance activities some noise generating activities can exist that may lead to hearing loss in workers.

**Desired Outcome:** To prevent any nuisance and hearing loss due to noise generated.

**Actions**

**Prevention:**

- Follow Health and Safety Regulations of the Labour Act and/or World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment.
- All machinery and vehicles must be regularly serviced to ensure minimal noise production.

**Mitigation:**

- Hearing protectors as standard PPE for workers in situations with elevated noise levels.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- Health and Safety Regulations of the Labour Act and WHO Guidelines.
- Maintain a complaints register.
- Bi-annual reporting on complaints and actions taken to address complaints and prevent future occurrences.

### 6.3.9 Waste

Solid waste generated on site is largely general and or domestic waste. Maintenance waste can include discarded or obsolete equipment, fuels and contaminated rags and materials. Some wastes can be dangerous / hazardous such as obsolete or expired chemicals, hydrocarbon contaminated material and rotting food waste, etc. General and domestic waste is kept separate from hazardous waste and usually burned at a designated area. Old oils are transported from site to a waste oil collection point.

Sewage originates from ablution facilities and kitchens during the operational phase. It is disposed of via septic tank systems. Sewage effluent especially may present a contamination risk.

**Desired Outcome:** To reduce the amount of waste produced, and prevent pollution and littering.

**Actions**

**Prevention:**

- All regulation and by-laws relating to environmental health should be adhered to.
- Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- Ensure adequate temporary waste storage facilities are available.
- Ensure waste cannot be blown away by wind.
- Prevent scavenging (human and non-human) of waste.
- Ensure all ablution facilities are connected to properly constructed and maintained effluent treatment system to prevent groundwater contamination.
- The septic tanks / french drain soak away systems should be designed and operated according to the general guidelines set forth in the *Department of Water Affairs and Forestry, Code of Practice: Volume 1, Septic tank Systems*.
    - It is recommended that a site-specific effluent management plan be drafted for each operational site inclusive of design, operations and locations and should also be communicated to all staff
- Ensure all ablution facilities are connected to the system to prevent groundwater contamination.
- No foreign objects, hazardous chemicals, fuels or excessive amounts of cooking grease may enter the sewage system.
- Use only bio-degradable, septic tank friendly cleaning chemicals.
- Should any buildings or structures be decommissioned, all waste and infrastructure should be removed from the site and disposed of at a recognised landfill site.
- Should the septic tanks be decommissioned, all waste should be removed from the tank and disposed of in an appropriate manner. The tanks may then be crushed in place and the holes effectively backfilled.

**Mitigation:**

- Communication to relevant land owners and or authorities in the event of any sewage spill.
- Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, contaminated rugs, paper water and soil).
- See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- Liaise with the local authority regarding waste and handling of hazardous waste.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- Any complaints received regarding waste should be recorded with notes on action taken.
- All information and reporting to be included in a bi-annual report.

### 6.3.10 Ecosystem and Biodiversity Impact

Amanzi Trails is an existing establishment. At the campsite no further impact on vegetation is expected. Poaching an illegal collection of plant and animal materials may occur. Impacts may also be related to pollution of the environment.

**Desired Outcome:** To avoid pollution of, and impacts on, the ecological environment.

**Actions**

**Prevention:**

- Educate all contracted and permanent employees on the value of biodiversity.
- Strict conditions prohibiting harvesting and poaching of fauna and flora should be part of employment contracts.
- Regular inspection of surrounding areas and river courses for snares, nets or any other illegal activities.
- Disciplinary actions to be taken against all employees failing to comply with contractual conditions related to poaching and the environment.
- Where possible, removal of trees, especially protected species and large trees, must be avoided.
- The necessary permits from the Directorate of Forestry, MEFT must be obtained for removal of all protected species.

**Mitigation:**

- For construction activities, if any, contain construction material to a designated laydown area and prevent unnecessary movement out of areas earmarked for clearing and construction.
- Report any extraordinary animal sightings, conflict or incidents to the MEFT.
- Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Prevent scavenging of waste by fauna.

**Responsible Body:**

- Contractor
- Proponent

**Data Sources and Monitoring:**

- All information and reporting to be included in a bi-annual report.

### 6.3.11 Groundwater, Surface Water and Soil Contamination

Numerous sources exist that may potentially pollute soil and subsequently groundwater. This include vehicles and machinery that leak oil. Operations entail the storage and handling of chemicals in small quantities which present contamination risks if not sufficiently contained. Untreated sewage not sufficiently treated that enters the environment can reach groundwater. In terms of the facility operations, the possible contamination events will be small in scale, localised and it is not foreseen to pose a significant risk to the soil structure, groundwater or the Orange River.

**Desired Outcome:** To prevent the contamination of water and soil.

**Actions**

**Prevention:**

- All machinery should be properly maintained to be in a good working condition during operations.
- Employ drip trays and spill kits when servicing / repairs of equipment is needed.
- The septic tanks must be regularly inspected and serviced as required.
- All chemical should be stored in a sufficiently bunded area.

**Mitigation:**

- Spill clean-up means must be readily available on site as per the relevant MSDS.
- Any hazardous spill must be cleaned up immediately.

**Responsible Body:**

- Department of Water Affairs, Ministry of Agriculture, Fisheries, Water, and Land Reform
- Proponent
- Contractors

**Data Sources and Monitoring:**

- A report should be compiled bi-annually of all spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken.

### 6.3.12 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the establishment. The nature of the facility is contrary the existing landscape character. Operations will be kept tidy and neat which will promote effectiveness while being aesthetically pleasing.

**Desired Outcome:** To minimise aesthetic impacts associated with the facility.

**Actions**

**Prevention:**

- Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.
- Low brightness lights should be used and directed downwards to ensure a minimal visual impact is maintained.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- A maintenance record should be kept.
- A report should be compiled of all complaints received and actions taken.

### 6.3.13 Impacts on Utilities and Infrastructure

Any damage caused during construction and maintenance activities to existing infrastructure and services supply like roads and electricity where present.

**Desired Outcome:** No impact on utilities and infrastructure.

**Actions**

**Prevention:**

- Appointing qualified and reputable contractors is essential.
- The contractor must determine exactly where amenities and pipelines are situated before construction commences (utility clearance e.g. ground penetrating radar surveys).
- Liaison with the suppliers of services is essential.

**Mitigation:**

- Emergency procedures for corrective action available on file.

**Responsible Body:**

- Roads Authority
- NamPower
- Proponent
- Contractors

**Data Sources and Monitoring:**

- A bi-annual report should be compiled of all incidents that occurred and corrective action taken.

### 6.3.14 Cumulative Impact

The facility contributes to several positive cumulative impacts in the Noordoewer settlement. Positive impacts include supporting local employment, strengthening the tourism industry, and enhancing the economic resilience all of which promote the long term sustainability of the settlement and its surrounding area.

Negative cumulative impacts associated with the facility includes waste generation, water abstraction from the Orange River, and the increase of traffic on the C13 and the gravel road leading to the facility, which my lead to increased collisions. Among these, challenges waste management remains the most significant concern due the existing challenges faced by the Noordoewer Settlement Office to handle waste. Therefore strong emphasis should be place on the waste management measures implemented by the Proponent.

**Desired Outcome:** To minimise cumulative all impacts associated with the establishment.

**Actions**

**Mitigation:**

- Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient.

**Responsible Body:**

- Proponent

**Data Sources and Monitoring:**

- Annual summary report based on all other impacts must be created to give an overall assessment of the impact of the operational phase.

## 6.4 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the ECC. Construction activities may however include modification and decommissioning. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within the Labour Act and/or WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. The EMP for the establishment will have to be reviewed at the time of decommissioning to cater for changes made to the site and to implement guidelines and mitigation measures.

## 6.5 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent could implement an Environmental Management System (EMS) for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- A stated environmental policy which sets the desired level of environmental performance;
- An environmental legal register;
- An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- Identification of environmental, safety and health training needs;
- An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;
- Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS; and
- The EMP.

# 7 CONCLUSION

Operations of Amanzi Trails has a positive impact on the tourism sector operational in the area and Namibia. It provides camping amenities for adventure enthusiasts participating in canoe excursions along the Orange River or overnight facilityers and long-term facilityers. It provides employment opportunities and skills development to a local workforce. Revenue is generated that contributes to the region as well as the Namibian economy.

Negative impacts associated with the operations and maintenance / construction activities can successfully be mitigated. Implementing a safety, health, environment and quality (SHEQ) policy will contribute to effective management procedures to prevent and mitigate impacts. All regulations relating to tourism and health and safety legislation should be implemented. Groundwater and soil pollution must be prevented at all times. Fire prevention should be key and fire response plans must be in place and regular training provided. All staff must be made aware of the importance of biodiversity and the poaching or illegal harvesting of animal and plant products prohibited. Any waste produced must be removed from site and disposed of at an appropriate facility or re-used or recycled where possible.

The EMP should be used as an on-site reference document for the operations of the facility. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. The Proponent could use an in-house Environment Management System in conjunction with the environmental management plan. All operational personnel must be taught the contents of these documents.

# 8 REFERENCES

Atlas of Namibia Project. 2002. Digital Atlas of Namibia Unpublished Report. Ministry of Environment & Tourism

Atlas of Namibia Team, 2022, Atlas of Namibia: its land, water and life, Namibia Nature Foundation, Windhoek

Directorate of Environmental Affairs, 2008. Procedures and Guidelines for Environmental Impact Assessment (EIA) and Environmental Management Plans (EMP), Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek.

Le Heron, D.P., Mejías Osorio, P. & Wohlschlägl, R., 2025. Mapping a 300-million-year old glacier bed: The Noordoewer section, Orange River, Namibia. Gondwana Research, 146, pp.163–172. https://doi.org/10.1016/j.gr.2025.05.024

Namibian Statistics Agency, 2023. Namibia 2023 Population & Housing Census Preliminary Report

Varma, P. 2018. Köppen Climate Classification. https://alchetron.com/K%C3%B6ppen-climate-classification#Group-B-Dry-arid-and-semiarid-climates.

World Travel and Tourism Council 2018: Travel & Tourism Economic Impact 2018 Namibia.