

APP-001689

**OKAHIRONGO RIVER CAMP, MARIENFLUSS, KUNENE
REGION**

UPDATED ENVIRONMENTAL MANAGEMENT PLAN



Prepared by:



Prepared for:

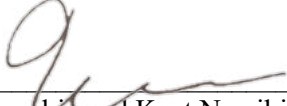
**Abercrombie and
Kent Namibia Travel
(Pty) Ltd**

July 2023

Project:	OKAHIRONGO RIVER CAMP, MARIENFLUSS, KUNENE REGION: UPDATED ENVIRONMENTAL MANAGEMENT PLAN	
Report: Version/Date:	Final July 2023	
Prepared for: (Proponent)	Abercrombie and Kent Namibia Travel (Pty) Ltd P O Box 30078 Windhoek, Namibia	
Lead Consultant	Geo Pollution Technologies (Pty) Ltd PO Box 11073 Windhoek Namibia	TEL.: (+264-61) 257411 FAX.: (+264) 88626368
Main Project Team:	Pierre Botha (B.Sc. Geography/Geology); (B.Sc. (Hons) Geohydrology) André Faul (B.Sc. Zoology/Biochemistry); (B.Sc. (Hons) Zoology); (M.Sc. Conservation Ecology); (Ph.D. Medical Bioscience)	
Cite this document as:	Botha P, Faul A. 2023 July; Okahirongo River Camp, Marienfluss, Kunene Region: Updated 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.	

I Ina-Mari Ferreira Robbertse acting as a representative of Abercrombie and Kent Namibia Travel (Pty) Ltd, hereby confirms that all material information in the possession of the Proponent that reasonably has or may have the potential of influencing any decision or the objectivity of this plan is fairly represented in this report and the report is hereby approved.

Signed at Randburg, Johannesburg on the 17th day of July 2023.


Abercrombie and Kent Namibia Travel (Pty) Ltd

2004/166
Business Registration Number

TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS	2
3	ENVIRONMENTAL MANAGEMENT PLAN.....	6
3.1	OBJECTIVES OF THE EMP	6
3.2	IMPLEMENTATION OF THE EMP	6
3.3	MANAGEMENT OF IMPACTS: OPERATIONS AND CONSTRUCTION	6
3.3.1	<i>Planning.....</i>	6
3.3.2	<i>Skills, Technology and Development</i>	8
3.3.3	<i>Economic Resilience and Employment</i>	9
3.3.4	<i>Demographic Profile and Community Health</i>	10
3.3.5	<i>Traffic</i>	11
3.3.6	<i>Health, Safety and Security.....</i>	12
3.3.7	<i>Fire</i>	13
3.3.8	<i>Noise</i>	14
3.3.9	<i>Waste Production.....</i>	15
3.3.10	<i>Ecosystem and Biodiversity Impact</i>	16
3.3.11	<i>Groundwater, Surface Water and Soil Contamination</i>	17
3.3.12	<i>Visual Impact.....</i>	18
3.3.13	<i>Cumulative Impact.....</i>	19
3.4	DECOMMISSIONING AND REHABILITATION	20
3.5	ENVIRONMENTAL MANAGEMENT SYSTEM.....	20
4	CONCLUSION.....	20
5	REFERENCES.....	21

LIST OF FIGURES

FIGURE 1-1	CAMP AIRSTRIP	2
------------	---------------------	---

LIST OF TABLES

TABLE 2-1	NAMIBIAN LAW APPLICABLE TO THE CAMP.....	2
TABLE 2-2	STANDARDS OR CODES OF PRACTISE	4
TABLE 2-3	RELEVANT MULTILATERAL ENVIRONMENTAL AGREEMENTS FOR NAMIBIA AND THE DEVELOPMENT	5

1 INTRODUCTION

Abercrombie and Kent Namibia Travel (Pty) Ltd owns and operates the Okahirongo Rver Camp in the Marienfluss Conservancy, Kunene Region (Figure 1-1). In addition to luxury tented accommodation, the camp has restaurant and bar services, a swimming pool, and a small curio shop. In addition to the normal luxury tented camp facilities, staff accommodation, diesel storage, a small photovoltaic system, diesel stand-by generator and a landing strip are present. Water for the camp is obtained from the Kunene River. Sewage is directed to French drain systems (septic tanks with soak-aways) and waste that cannot be burned are transported to Sesfontein's waste disposal site. For a detailed description of the camp and the environment, refer to the detailed environmental assessment and management plan prepared for the camp in 2022 (Botha & Coetzer 2022).

The environmental management plan (EMP) provides management options to ensure impacts of construction (refurbishment and maintenance) and operations of the camp 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 EMP acts as a stand-alone document, which can be used during the various phases (planning, construction, operational and decommissioning) of any proposed activity or development.

All contractors and sub-contractors taking part in construction and operational activities related to the camp, should be made aware of the relevant sections of the EMP, so as to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of the various activities;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the both construction and operational activities;
- ◆ to monitor and audit the performance of the construction and operational personnel in applying such controls; and
- ◆ to ensure that appropriate environmental training is provided to responsible personnel and contractors.

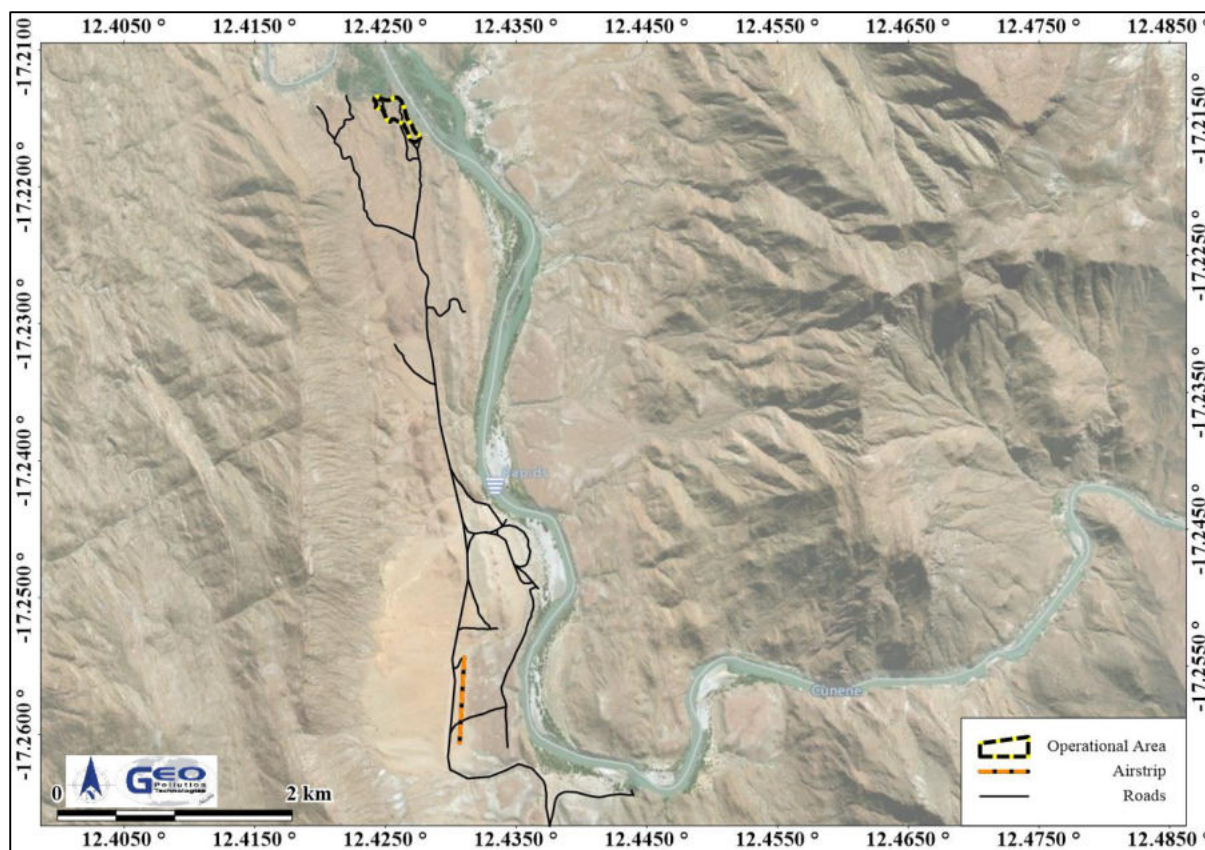


Figure 1-1 Project location

2 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 2-1 to Table 2-3 govern the environmental assessment process in Namibia and/or are relevant to the camp.

Table 2-1 Namibian law applicable to the camp

Law	Key Aspects
The Namibian Constitution	<ul style="list-style-type: none"> ◆ Promotes the welfare of people. ◆ Incorporates a high level of environmental protection. ◆ Incorporates international agreements as part of Namibian law.
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	<ul style="list-style-type: none"> ◆ Defines the environment. ◆ Promotes sustainable management of the environment and the use of natural resources. ◆ Provides a process of assessment and control of activities with possible significant effects on the environment.
Environmental Management Act Regulations Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> ◆ Commencement of the Environmental Management Act. ◆ Lists activities that requires an environmental clearance certificate. ◆ Provides Environmental Impact Assessment Regulations.

Law	Key Aspects
<p>Namibia Tourism Board Act Act no. 21 of 2000, Government Notice 261 of 200, 2000</p>	<ul style="list-style-type: none"> ◆ Provides for the registration and grading of accommodation establishments. ◆ Provides 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. ◆ Provides regulations and minimum requirements pertaining to: <ul style="list-style-type: none"> ○ Levies payable. ○ Registrations of regulated businesses. ○ Registrations of accommodation establishments.
<p>Accommodation Establishments and Tourism Ordinance 20 of 1973</p>	<ul style="list-style-type: none"> ◆ Consolidates and amends the laws relating to accommodation establishments and tourism and to provide for the establishment of tourist recreation areas and incidental matters. ◆ Provides for regulations of tourism establishments. ◆ Numerous amendments and repeals.
<p>Petroleum Products and Energy Act Act No. 13 of 1990, Government Notice No. 45 of 1990</p>	<ul style="list-style-type: none"> ◆ Regulates petroleum industry. ◆ Makes provision for impact assessment. ◆ Petroleum Products Regulations (Government Notice No. 155 of 2000). <ul style="list-style-type: none"> ○ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002).
<p>The Water Act Act No. 54 of 1956</p>	<ul style="list-style-type: none"> ◆ Remains in force until the new Water Resources Management Act comes into force. ◆ Defines the interests of the state in protecting water resources. ◆ Controls the disposal of effluent. ◆ Numerous amendments.
<p>Water Resources Management Act Act No. 11 of 2013</p>	<ul style="list-style-type: none"> ◆ Provides for management, protection, development, use and conservation of water resources. ◆ Prevention of water pollution and assignment of liability. ◆ Not in force yet.
<p>Forest Act (Act 12 of 2001, Government Notice No. 248 of 2001)</p>	<ul style="list-style-type: none"> ◆ Makes provision for the protection of the environment and the control and management of forest fires. ◆ 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.
<p>Forest Regulations: Forest Act, 2001 Government Notice No. 170 of 2015</p>	<ul style="list-style-type: none"> ◆ Declares protected trees or plants. ◆ Issuing of permits to remove protected tree and plant species.

Law	Key Aspects
Civil Aviation Act Act No. 6 of 2016, Government Notice 137 of 2016	<ul style="list-style-type: none"> ◆ Consolidates the laws relating to civil aviation and civil aviation offences. ◆ Provides for a civil aviation regulatory and control framework for maintaining, enhancing and promoting the safety and security of civil aviation for ensuring the implementation of international aviation agreements. ◆ Provides for Namibia Civil Aviation Regulations And Technical Standards.
Aerodrome Ordinance Ordinance 12 of 1963	<ul style="list-style-type: none"> ◆ Provides for the establishment, management and maintenance of aerodromes.
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	<ul style="list-style-type: none"> ◆ Defines the powers, duties and functions of local authority councils. ◆ Regulates discharges into sewers.
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	<ul style="list-style-type: none"> ◆ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters. ◆ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation.
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	<ul style="list-style-type: none"> ◆ Provides for Labour Law and the protection and safety of employees. ◆ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997).
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	<ul style="list-style-type: none"> ◆ Governs the control of noxious or offensive gases ◆ Prohibits scheduled process without a registration certificate in a controlled area. ◆ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process.
Hazardous Substances Ordinance Ordinance No. 14 of 1974	<ul style="list-style-type: none"> ◆ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export. ◆ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings.
Pollution Control and Waste Management Bill (draft document)	<ul style="list-style-type: none"> ◆ Not in force yet. ◆ Provides for prevention and control of pollution and waste. ◆ Provides for procedures to be followed for licence applications.

Table 2-2 Standards or codes of practise

Standard or Code	Key Aspects
South African National Standards (SANS)	<ul style="list-style-type: none"> ◆ The Petroleum Products and Energy Act prescribes SANS standards for the construction, operations and demolition of petroleum facilities. ◆ SANS 10131 is specifically aimed at storage and distribution of petroleum products in aboveground storage tanks. <ul style="list-style-type: none"> ○ Provide requirements for spill control infrastructure.

Table 2-3 Relevant multilateral environmental agreements for Namibia and the development

Agreement	Key Aspects
Charter of the Regional Tourism Organisation of Southern Africa (RETOSA), 1997	<ul style="list-style-type: none"> ◆ Development of tourism through effective marketing of the Region in collaboration with the public and private sector. ◆ 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.	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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)	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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 2 of Government Notice No. 29 of 2012: Waste Management, Treatment, Handling and Disposal Activities

- ◆ 2.1 The construction of facilities for waste sites, treatment of waste and disposal of waste: The Proponent temporarily stores waste for disposal at an external landfill, the proponent further burns general, non-toxic combustible waste such as paper, cardboard and food at the site.

Section 6 of Government Notice No. 29 of 2012: Tourism Development Activities

- ◆ 6. The construction of resorts, lodges, hotels or other tourism and hospitality facilities: The camp and related tourism facility was constructed and is currently in operation and maintained accordingly.

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 Kunene River for current commercial (tourism) operations.
- ◆ 8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems: The Proponent has installed wastewater treatment facilities (septic tank and soak-away systems) within the operational area to manage mainly black and grey water.

Section 9 of Government Notice No. 29 of 2012: Hazardous Substance Treatment, Handling and Storage

- ◆ 9.5 Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin. The Proponent has a

fuel installation for *storing* diesel in aboveground tanks and drums which has a combined capacity of 800 l, which are store in mobile 200 l drums.

Section 10: Infrastructure

- ◆ 10.1 (d) The construction of airports and airfields. A landing strip was constructed and is operated and maintained by the Proponent.

3 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 camp.

3.1 OBJECTIVES OF THE EMP

The EMP provides management options to ensure impacts of the camp is 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 camp. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the camp 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 camp;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the camp;
- ◆ 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.

3.2 IMPLEMENTATION OF THE EMP

Section 3.3 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 camp 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.

3.3 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 camp.

3.3.1 Planning

During the phases of planning for operations, construction and decommissioning of the camp, 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 from the various ministries, local authorities and any other bodies that governs the construction activities and operations of the camp are in place and remains valid. This includes registration with the Namibia Tourism Board and special permission for storage of petroleum products in excess of 600 l from the Ministry of Mines and Energy.
- ◆ 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.
- ◆ Ensure all agreements entered into between the Proponent and the Marienfluss Conservancy are continually adhered to, and updated in writing if and where 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 environmental clearance certificate 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.

3.3.2 Skills, Technology and Development

During various phases of the camp, 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.

3.3.3 Economic Resilience and Employment

The change in land use, from communal to tourism, lead to changes in the way revenue is generated and paid to the national treasury. Skilled and unskilled labour are required for the operations and maintenance / construction activities associated with the camp. Furthermore, a contractual monthly levy as well as percentage of income generated is paid towards the Marienfluss Conservancy. Increased travel within Namibia and specifically to this region is expected to increase the demand for accommodation and related services.

Desired Outcome: Contribution to national treasury and continued remuneration of temporary and permanent employees as per the Labour Act. Continued contributions to social security.

Actions

Enhancement:

- ◆ The Proponent must employ local Namibians from the Conservancy where possible.
- ◆ If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- ◆ Deviations from this practice must be justified.
- ◆ Minimum salary agreements made with the Conservancy should be re-negotiated at least every two years.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records and financial contributions to the various institutions such as social security, receiver of revenue etc.

3.3.4 Demographic Profile and Community Health

Greater economic prosperity as linked to the flourishing camp operations may lead to a change in the demographic profile of the local community. Change will result with an influx of job seekers over time and further densification of the settlement. Community structures may change with an increase in population while the economic profile will be adjusted as the employment structure of the area is changed. Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse. An increase in people in the area may potentially increase the risk of criminal and socially deviant behaviour such as vandalism and poaching. More people in the area will exert additional pressure on governmental services, particularly essential services such as health care. Medical assistance, emergency services and the policing of the community may become strained.

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 conservancy where possible, deviations from this practice should be justified appropriately.
- ◆ Ensure sanitation facilities and all related sanitation requirements are available and maintained at the camp for all employees.
- ◆ To prevent conflict between families within the conservancy, employment should be divided in such a manner that ensures adequate distribution between families as far as possible.
- ◆ Educational programmes for employees on various topics of social behaviour HIV/AIDs and general upliftment of employees' social status.
- ◆ To ensure disturbances to Ovahimba tribes and important cultural and sacred sites are limited, the camp should only allow guided visits, based on terms set by the conservancy.
- ◆ 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.

3.3.5 Traffic

As the camp is located in a remote area and access is gained via an off-road track, traffic impacts are unlikely, and mostly related to degradation of road surfaces, dust generation and nuisance to local villages.

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

Actions

Prevention:

- ◆ Vehicle accessing and leaving the camp 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 camp.

Responsible Body:

- ◆ Proponent

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.

3.3.6 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. The site is located within a remote area and occurrences of wild animals, including crocodile in the river, is common. Encounters with these wild animals, including venomous species like snakes and scorpions may pose risks to staff and uninformed guests. The air strip may pose safety risk which may lead to injury and even death if not properly designed and operated, and regularly maintained. 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 and consumer fuel installation.
- ◆ 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.
- ◆ As a result of the possibility of malaria infection, personnel and guests should be encouraged to, during times of mosquito activity, take measures to prevent mosquito bites including wearing long sleeved clothing, applying insect repellents and sleeping under mosquito nets.
- ◆ All Health and Safety standards specified in the Labour Act should be complied with.
- ◆ Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.
- ◆ All industry specific health and safety procedures and regulations applicable to the kitchen and the preparation of food for guests should be in place and adhered to.
- ◆ Consult with the Namibia Civil Aviation Authority (NCAA) on the design, operational procedures and maintenance of the air strip to ensure all necessary safety parameters are in place.

Mitigation:

- ◆ The remoteness of the camp increases the risk in the event of an incident, therefore 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, including emergency evacuation 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, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- ◆ Educate staff on the symptoms of malaria and encourage them to report such symptoms.
- ◆ Security procedures and proper security measures must be in place.

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.

3.3.7 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 field. Similarly machinery can ignite dry vegetation if sufficient heat (e.g. exhaust pipes) or sparks are produced. Chemicals and fuels stored and used for general activities may be flammable. Improper waste burning or discarding of cigarette buds further increases fire risks.

Desired Outcome: To prevent property damage, veld 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 all 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 proponent good housekeeping.
- ◆ Fire used for purposes such as cooking (by staff) must only be allowed within designated areas.
- ◆ The burning of waste should be done in a designated area and strictly controlled and monitored.

Mitigation:

- ◆ Implement the fire protection and prevention 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.

3.3.8 Noise

Since the camp is a tourist establishment, noise are typically kept to a minimum not to be a disturbance to guests. However, during construction and maintenance activities some noise generating activities can exist that may lead to hearing loss in workers. Aircraft landing and taking off from the airstrip may cause noise disturbances at nearby receptors. The closest receptor to the airstrip is a small village approximately 400 m northeast of the airstrip. The Kunene River Community Camp and Camp Syncro are both situated approximately 1.5 km from the airstrip. Furthermore aircraft will visit the airstrip very infrequently and landing and take-off will be during the day unless there are some sort of emergency.

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 nuisances and hearing impairment.
- ◆ Only light aircraft may fly in the area, and stick to direct routes to and from the airstrip, no additional scenic flights of low level flights over the river should be allowed.
- ◆ 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 / or World Health Organization (WHO) guidelines.
- ◆ Maintain a complaints register.
- ◆ Bi-annual reporting on complaints and actions taken to address complaints and prevent future occurrences.

3.3.9 Waste Production

Various waste streams are produced during the operational and construction / maintenance phases. Waste may include hazardous waste associated with hydrocarbon products and chemicals and soil and water contaminated with such products. Construction waste may include building rubble (concrete) and discarded equipment. Domestic waste will be generated by the camp and related operations. Waste presents a contamination risk and when not removed regularly may become a health and / or fire hazard as well as attract wild animals and scavengers. Sewage is a form of liquid biological waste that needs disposal.

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

Actions

Prevention:

- ◆ Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- ◆ Ensure adequate disposal storage facilities are available.
- ◆ Ensure waste cannot be blown away by wind.
- ◆ Prevent scavenging (human and non-human) of waste.
- ◆ Sewage water and grey water should be treated separately to reduce the amount of sewage water generated.
- ◆ The septic tank 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*.
- ◆ 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.
- ◆ All regulation and by-laws relating to environmental health should be adhered to.
- ◆ Adhere to effluent disposal permit conditions for septic tank soak-away systems.
- ◆ Ensure all ablution facilities are connected to properly constructed and maintained effluent treatment system to prevent groundwater contamination.
- ◆ 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 covered with at least 0.5 m soil.

Mitigation:

- ◆ 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.

3.3.10 Ecosystem and Biodiversity Impact

Okahirongo River Camp is an existing facility and no further impact on vegetation is expected. The camp further indirectly contributes to biodiversity management by contributing a portion of income generated to the Marienfluss Conservancy. Poaching and illegal collection of plant and animal materials may occur. Impacts may also be related to pollution of the environment. Birds and animals colliding with aircraft landing or taking-off from the airstrip. Human / wildlife interactions further presents a risk to both the wildlife and the people involved if not properly managed.

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

Actions.

Prevention:

- ◆ Where possible, removal of trees, especially protected species and large trees, must be avoided during construction activities.
- ◆ The necessary permits from the Directorate of Forestry, MEFT must be obtained for removal of all protected species.
- ◆ 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. This includes prohibitions or regulations on the collection of firewood.
- ◆ Firewood should be sourced from regions with an abundance of wood, preferably from invasive species as far as possible.
- ◆ Regular inspection of surrounding areas and river courses for snares, traps 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.
- ◆ Ensure that no animals or birds are present on the airstrip prior to aircraft landing or taking off (e.g. fly-overs or driving length of airstrip with vehicle).
- ◆ Only guided tours should be allowed from the camp, and should be limited to existing established roads.
- ◆ Only one boat may be operated from the camp for river cruises, this will reduce environmental related disturbances as well as the cumulative impact.
- ◆ Guides employed should be either NATH or FGASA accredited
- ◆ Policy documents should be drafted and implemented on how to deal with wildlife interactions and visits to villages, this should include:
 - Training requirements for guides,
 - Induction requirements for clients,
 - Routes that may be used (existing only).

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.
- ◆ Avoid 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.

3.3.11 Groundwater, Surface Water and Soil Contamination

Various sources exist that may potentially pollute soil and subsequently groundwater. This include vehicles and machinery that leak oil or hydraulic fluids (e.g. earthmoving equipment and graders). Operations entail the storage and handling of chemicals in small quantities which present contamination risks if not sufficiently contained. Raw sewage not sufficiently treated that enters the environment can reach groundwater.

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

Actions

Prevention:

- ◆ Proper training of operators of machinery and vehicles and employees must be conducted on a regular basis (fuel and chemical handling, spill detection, spill control).
- ◆ All machinery and vehicles 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.
- ◆ If water from the swimming pool will enter the environment, biodegradable / environmentally friendly chemicals should be used for water treatment.
- ◆ All chemical should be stored in a sufficiently bunded area.
- ◆ The storage and handling of fuel should be done in accordance with SANS requirements.

Mitigation:

- ◆ Any chemical spillage of more than 200 litre must be reported to the Ministry of Mines and Energy.
- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS.
- ◆ The fuel tanks' bund area must be cleaned if any fuel products are present and this waste must be disposed of at a suitably classified hazardous waste disposal facility.
- ◆ Any spill must be cleaned up immediately.

Responsible Body:

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

Data Sources and Monitoring:

- ◆ Effluent disposal permit.
- ◆ 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.

3.3.12 Visual Impact

This impact is not only associated with the aesthetics of the site, but also the structural integrity. The existing camp was designed in a manner which reduces the impact on the landscape character. The camp is uniquely located and serves as a point of interest to tourists and patrons to the area, it should be kept clean, tidy and maintained to ensure it remains aesthetically pleasing.

Desired Outcome: To minimise aesthetic impacts associated with the camp.

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.

3.3.13 Cumulative Impact

Possible cumulative impacts associated with the operational phase and any maintenance / construction activities are mainly linked to increased traffic. Being isolated, cumulative impacts are however expected to be unlikely.

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

Actions

Mitigation:

- ◆ Strategies should be put in place, in conjunction with the Conservancy, to reduce impacts on popular tourist spots “pressure points” within the vicinity.
- ◆ 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:

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

3.4 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the ECC. Construction activities may however include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Prior to the complete decommissioning of the camp, the post closure land use should be assessed. It is recommended that the camp either be sold, or all infrastructure be offered to the local community in order to continue with the operations. This will mitigate the possible impacts associated with job losses etc. Should the camp be donated to the local community / sold, all existing contamination at the site should be cleared / remediated prior to the transfer of infrastructure, the existing EIA and EMP should further be transferred to the new owner to ensure continual compliance with EMP requirements.

In the event where the camp cannot be sold or transferred to the local community, decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure, if any, not forming part of post decommissioning land use. 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 Health and Safety Regulations of the Labour Act and 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. Should operations be decommissioned with no employment or remuneration plan for the conservancy and employees, a significant social and economic impact will be suffered by the local community. The EMP for the camp will have to be reviewed and updated prior to decommissioning to cater for changes made to the site and implement guidelines and mitigation measures related to social and environmental aspects.

3.5 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; and
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS.
- ◆ The EMP.

4 CONCLUSION

Operations of Okahirongo River Camp has a positive impact on the tourism sector operational in the area and Namibia. It provides luxury accommodation and tourism related services in a remote area, increasing ease of accessibility. It provides employment opportunities and skills development to a local workforce. Revenue is generated that contributes to the Marienfluss Conservancy 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. Hazardous waste must be disposed of at an approved hazardous waste disposal site.

The updated EMP should continue to be used as an on-site reference document for the operations of the camp. 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.

5 REFERENCES

Botha P, Faul A, Coetzer W. 2022 February; Okahirongo River Camp, Marienfluss, Kunene Region: Environmental Management Plan