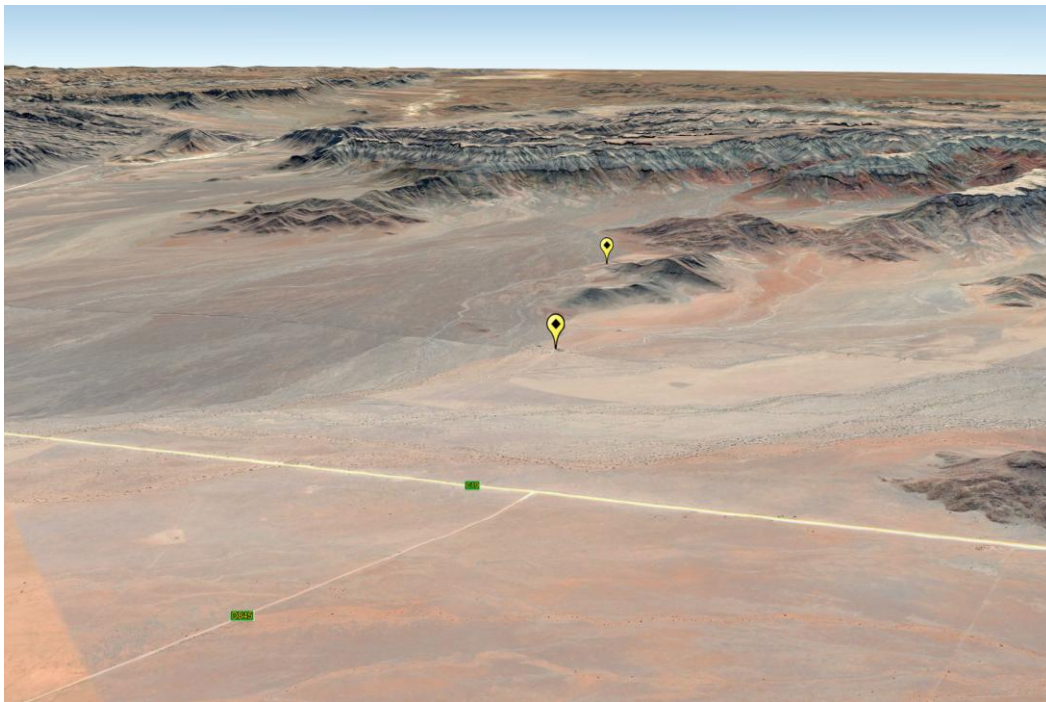


# ENVIRONMENTAL MANAGEMENT PLAN (EMP)

**PROPOSED NEW LUXURY SAFARI HOUSE, COTTAGE AND  
GLAMPING CAMP UNITS ON FARM SHANGRI-LA NO. 190**

**HARDAP REGION**



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## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION AND BACKGROUND .....</b>	<b>3</b>
<b>2.</b>	<b>LEGISLATIVE FRAMEWORK .....</b>	<b>4</b>
<b>3.</b>	<b>ENVIRONMENTAL MANAGEMENT PLAN .....</b>	<b>9</b>
3.1	RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT .....	9
3.2	TRAINING AND INDUCTION .....	9
3.3	ENVIRONMENTAL INCIDENT REPORTING .....	9
3.4	ENVIRONMENTAL MONITORING.....	10
3.5	EMP ADMINISTRATION .....	10
3.6	EMP AMENDMENTS.....	10
3.7	NON COMPLIANCE OF THE EMP.....	10
3.8	ENVIRONMENTAL REGISTER.....	10
3.9	RESPONSIBLE PARTIES .....	11
3.9.1	<i>Environmental Control Officer.....</i>	<i>11</i>
3.9.2	<i>The Contractor.....</i>	<i>12</i>
<b>4.</b>	<b>PROJECT IMPLEMENTATION.....</b>	<b>12</b>
4.1	PLANNING AND DESIGN MANAGEMENT .....	12
4.2	ENVIRONMENTAL AWARENESS .....	13
4.2.1	<i>Access routes and work sites.....</i>	<i>13</i>
4.2.2	<i>Fire and safety management.....</i>	<i>14</i>
4.2.3	<i>Staff management.....</i>	<i>14</i>
4.2.4	<i>Waste management.....</i>	<i>14</i>
4.2.5	<i>Cement and concrete batching.....</i>	<i>15</i>
4.2.6	<i>Hydrocarbons management.....</i>	<i>15</i>
4.2.7	<i>Flood management.....</i>	<i>15</i>
4.2.8	<i>Stockpiling, Handling, and Storage of Building Materials.....</i>	<i>16</i>
4.2.9	<i>Excavation, Backfilling and Trenching.....</i>	<i>16</i>
4.2.10	<i>Erosion Control.....</i>	<i>16</i>
4.2.11	<i>Servicing and Re-Fuelling of Construction Equipment.....</i>	<i>16</i>
4.2.12	<i>Noise.....</i>	<i>17</i>
4.2.13	<i>Dust.....</i>	<i>17</i>
4.2.14	<i>Heritage / Archaeological Sites.....</i>	<i>17</i>
4.2.15	<i>Site Demarcation and Rehabilitation.....</i>	<i>17</i>
4.2.16	<i>Site Management.....</i>	<i>17</i>
<b>5.</b>	<b>MANAGEMENT OF ENVIRONMENTAL - PRE-CONSTRUCTION ACTIVITIES .....</b>	<b>18</b>
<b>6.</b>	<b>MANAGEMENT OF ENVIRONMENTAL - CONSTRUCTION AND OPERATIONAL PHASES.....</b>	<b>19</b>
<b>7.</b>	<b>CONCLUSIONS .....</b>	<b>32</b>

## 1. INTRODUCTION AND BACKGROUND

This Environmental Management Plan (EMP) serves as a managing tool for the construction and operations of a new luxury Safari house, cottage and glamping camp units on Farm Shangri-La No.190, in the Hardap Region. The EMP is developed to outline measures to be implemented in order to minimise adverse environmental degradation associated with this development.

The impacts associated with possible decommissioning phase will be similar to that of the construction phase. The EMP will have to be reviewed at the time of decommissioning to cater for changes made to the development.

The EMP serves as a guiding tool for the contractors and workforce on their roles and responsibilities concerning environmental management on site, and also provides an environmental monitoring framework for all project phases of the development. This environmental management plan aims to take a pro-active route by addressing potential problems before they occur. The EMP acts as a stand-alone document, which can be used during the various phases of the development.

In this report,

- a) the **Contractor** (its sub-contractors, including suppliers) refers to construction personnel responsible for the *construction and maintenance activities* of the project.
- b) the **Proponent** refers to Infinity Nature Holdings (Pty) Ltd, its employees and staff responsible for *planning, funding, developing and operations* of the project.

The purpose of the EMP is to:

- ✓ Train employees and contractors with regard to environmental obligations.
- ✓ Promote and encourage good environmental management practices.
- ✓ Outline responsibilities and roles of Infinity Nature Holdings (Pty) Ltd and the contractor in managing the environment.
- ✓ Describe all monitoring procedures required to identify environmental impacts.
- ✓ Minimise disturbance of the natural environment.
- ✓ Develop waste management practices.
- ✓ Prevent all forms of pollution.
- ✓ Protect the natural environment.
- ✓ Prevent soil and water erosion.
- ✓ Comply with all applicable laws, regulations and standards for environmental protection.

The pre-construction activities of the proposed development entail:

- ✓ Ensuring and maintaining environmental authorisations/permits/licences.

- ✓ Ensuring environmental awareness for all project personnel (i.e. contractors, sub-contractors and suppliers).
- ✓ Developing and implementing environmental emergency preparedness procedures for the project.

The construction phase of the proposed development entails:

- ✓ Land clearing and preparation.
- ✓ Excavations for building foundations, electrical, water and sewer systems.
- ✓ Transport and installation of solar panels, electrical and water lines, and all associated material.
- ✓ Transport and installation of septic tanks and associated sewer reticulation pipelines and relevant material.
- ✓ Construction of associated buildings and other infrastructure.

The operational phase of the proposed development entails:

- ✓ Provide accommodation and leisure services to the general public.
- ✓ Operation and maintenance of the sewer, water and electrical infrastructure; buildings and roads.
- ✓ Progressive Rehabilitation.

Possible decommissioning of the proposed development entails:

- ✓ Removal of all infrastructure not reused during future use of land; and
- ✓ Rehabilitation of the land.

## **2. LEGISLATIVE FRAMEWORK**

### **A. The Namibian Constitution**

The Namibian Constitution has a section on principles of state policy. These principles cannot be enforced by the courts in the same way as other sections of the Constitution. But they are intended to guide the Government in making laws which can be enforced.

The Constitution clearly indicates that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.

### **B. Environmental Management Act No.7 of 2007**

This Act provides a list of projects requiring an Environmental assessment. It aims to promote the sustainable management of the environment and the use of natural

resources and to provide for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters.

The Act defines the term “*environment*” as an interconnected system of natural and human-made elements such as land, water and air; all living organisms and matter arising from nature, cultural, historical, artistic, economic and social heritage and values.

The Environmental Management Act has three main purposes:

- (a) to make sure that people consider the impact of activities on the environment carefully and in good time
- (b) to make sure that all interested or affected people have a chance to participate in environmental assessments
- (c) to make sure that the findings of environmental assessments are considered before any decisions are made about activities which might affect the environment.

*Line Ministry: Ministry of Environment and Tourism*

#### **C. Water Resources Management Act of Namibia (2004) (Guideline only)**

The Water Resource Management Act (2004) has been promulgated but not yet implemented as the regulations are still being drafted. This act repealed the existing South African Water Act No.54 of 1956 which was used by Namibia, however the Act describes procedures and stipulations which are much more stringent than those contained in the Water Amendment Act.

This Act ensures that Namibia’s water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates discharge of effluent by permit.

*Line Ministry: Ministry of Agriculture, Water Affairs and Forestry*

#### **D. Water Act No. 54 of 1956**

This Act provides for Constitutional demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of this Act, all water resources are the property of the State and the EIA process is used as a fundamental management tool.

A water resource includes a watercourse, surface water, estuary or aquifer, and, where relevant, its bed and banks. A watercourse means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland lake or dam, into which or from which water flows; and any collection of water that the Minister may declare to be a watercourse. Permits are required in terms of the Act for the undertaking of the following activities relevant to the proposed project:

- Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit in terms of Section 21 (f); and
- Disposal of waste in a manner that may detrimentally impact on a water resource in terms of Section 21 (g).

#### **E. Labour Act No.11 of 2007**

The purpose of the Act is to “consolidate and amend the labour law; to establish a comprehensive labour law for all employers and employees; to entrench fundamental labour rights and protections; to regulate basic terms and conditions of employment; to ensure the health, safety and welfare of employees; to protect employees from unfair labour practices; to regulate the registration of trade unions and employers’ organisations; to regulate collective labour relations; to provide for the systematic prevention and resolution of labour disputes; to establish the Labour Advisory Council, the Labour Court, the Wages Commission and the labour inspectorate; to provide for the appointment of the Labour Commissioner and the Deputy Labour Commissioner; and to provide for incidental matters.”

The following aspects, within the framework of Health and Safety, are regulated in Namibia (as per Regulations Relating to the Health and Safety of Employees at Work; Labour Act, 1992):

- Rights and Duties of Employers (Chapter 1);
- Welfare and Facilities at Work-Places(Chapter 3);
- Safety of Machinery (Chapter 4);
- Hazardous Substances (Chapter 5);
- Physical Hazards and General Provisions (Chapter 6);
- Medical Examinations and Emergency Arrangements (Chapter 7);
- Construction Safety (Chapter 8); and
- Electrical Safety (Chapter 9).

*Line Ministry: Ministry of Labour*

#### **F. National Heritage Act No 27 of 2004**

The Act calls for the protection and conservation of heritage resources and artefacts. Should any archaeological material, e.g. old weapons, coins, bones found during the construction, work should stop immediately and the National Heritage Council of Namibia must be informed as soon as possible. The Heritage Council will then decide to clear the area or decide to conserve the site or material.

*Relevant Authority: National Heritage Council of Namibia*

### **G. Sewerage and Drainage Regulations (amendments) Local authorities act, section 23 (1992)**

The regulations make provision for proper construction of pipelines in drainage lines. The regulations also stipulate the prevention of pollution and environmental damage caused by improper construction of sewerage and water pipelines in drainage lines.

*Line Ministry: Ministry of Regional and Local Government, Housing and Rural Development*

### **H. Soil Conservation Act (No.76 of 1969)**

The Act advocates for the Prevention and combating of soil erosion, conservation, improvement and manner of use of soil and vegetation, and protection of water resources.

*Line Ministry: Ministry of Environment and Tourism*

### **I. Draft Pollution Control and Waste Management Bill**

The proposed development only applies to Parts 2, 7 and 8 of the Bill.

Part 2 stipulates that no person shall discharge or cause to be discharged any pollutant to the air from a process except under and in accordance with the provisions of an air pollution licence issued under section 23. It further provides for procedures to be followed in licence application, fees to be paid and required terms of conditions for air pollution licences.

Part 7 states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances.

Part 8 calls for emergency preparedness by the person handling hazardous substances, through emergency response plans.

### **J. Environmental Assessment Policy of Namibia (1995)**

Environmental Assessments (EA's) seek to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT (in the context of IEM and EA's) is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.

*Line Ministry: Ministry of Environment and Tourism*

Apart from the requirements of the Environmental Assessment Policy, the following sustainability principles needs to be taken into consideration, particularly to achieve proper waste management and pollution control:

✓ **Cradle to Grave Responsibility**

This principle provides that those who manufacture potentially harmful products should be liable for their safe production, use and disposal and that those who initiate potentially polluting activities should be liable for their commissioning, operation and decommissioning.

✓ **Precautionary Principle**

There are numerous versions of the precautionary principle. At its simplest it provides that if there is any doubt about the effects of a potentially polluting activity, a cautious approach should be adopted.

✓ **The Polluter Pays Principle**

A person who generates waste or causes pollution should, in theory, pay the full costs of its treatment or of the harm, which it causes to the environment.

✓ **Public Participation and Access to Information**

In the context of environmental management, citizens should have access to information and the right to participate in decisions making.

**K. Atmospheric Pollution Prevention Ordinance of Namibia No. 11 of 1976)**

The Ordinance prohibits anyone from carrying on a scheduled process without a registration certificate in a controlled area. A certificate must be issued if it can be demonstrated that the best practical means are being adopted for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process. Best practice would be to notify the line Ministry about emissions but it is not a legal requirement.

*Line Ministry: Ministry of Health and Social Services*

**L. Hazardous Substances Ordinance No. 14 of 1974**

The Ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export and is administered by the Minister of Health and Social Welfare. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings.

*Line Ministry: Ministry of Health and Social Services*

**M. Public Health Act 36 of 1919 and Subsequent Amendments**

The Act, with emphasis to Section 119 prohibits the presence of nuisance on any land occupied. The term nuisance for the purpose of this EIA is specifically relevant specified, where relevant in Section 122 as follows:



- ✓ any dwelling or premises which is or are of such construction as to be injurious or dangerous to health or which is or are liable to favour the spread of any infectious disease;
- ✓ any area of land kept or permitted to remain in such a state as to be offensive, or liable to cause any infectious, communicable or preventable disease or injury or danger to health; or
- ✓ any other condition whatever which is offensive, injurious or dangerous to health.
- ✓ Potential impacts associated with the upgrade and operations are expected to include dust, air quality impacts, noise nuisance and smoke emissions.

*Line Ministry: Ministry of Health and Social Services*

### **3. ENVIRONMENTAL MANAGEMENT PLAN**

#### **3.1 Responsibilities for Environmental Management**

Infinity Nature Holdings (Pty) Ltd (proponent) will be responsible for environmental control on site during the construction and operational phase. It is very important a pre-construction briefing meeting be held to reach an agreement on specific roles of various parties and penalties for non-compliance.

#### **3.2 Training and Induction**

The proponent is bound to be responsible for ensuring that environmental awareness education of all employees and contractors is done satisfactorily. The proponent should also ensure that employees and contractors are made aware of the environmental requirements of the project.

The EMP should form part of the Terms of Reference for all contractors, sub-contractors and suppliers. All contractors, sub-contractors and suppliers will have to sign an agreement to assure that they understood the EMP and that they will comply. All senior staff should familiarise themselves with the full contents of the EMP and its implications. Senior staff (i.e. foreman/Supervisor) is expected to train and assist the rest of the employees on the contents of the EMP.

#### **3.3 Environmental Incident Reporting**

All environmental incidents occurring at the proposed site shall be recorded. The incident report must have to include time, date, location, and nature of the incident, extent of the incident, actions taken, and personnel involved.

All complaints received from I&APs, neighbouring communities and farmers should be directed to the managing director of Infinity Nature Holdings (Pty) Ltd. In addition, the proponent's management should be able to respond to the complainant within a week (even if pending further investigation).

It is important that the issues raised are considered and that the complainant feels that their concerns have been addressed to and wherever possible actions taken to address these. All complaints should be entered in the environmental register and all responses and actions taken to address these should be recorded

### **3.4 Environmental Monitoring**

Periodic environmental monitoring must be taken on a regular basis. Monitoring should be done in order to ensure compliance with all aspects of the EMP. Findings should be liaised with to all responsible officers as chain command.

### **3.5 EMP Administration**

Copies of this EMP shall be kept at the site office and should be distributed to all senior staff members, including those of the contractors.

### **3.6 EMP Amendments**

The EMP amendments should be conducted when deemed necessary (e.g. change in project site conditions) and should be communicated to the DEA. Amendments to the EMP should be liaised to all employees and contractors.

### **3.7 Non compliance of the EMP**

Problems may occur in carrying out mitigation measures or monitoring procedures that could result in non-compliance of the EMP. The responsible personnel should encourage staff to comply with the EMP, and address acts of non-compliance and penalties.

The contractor is responsible for reporting non-conformance with the EMP, to the ECO officer. The proponent's management in consultation with the ECO must thereafter, undertake the following activities:

- Investigate and identify the cause of non-conformance.
- Report matters of non-conformance to Infinity Nature Holdings (Pty) Ltd (depending on the severity of the incident).
- Implement suitable corrective action as well as prevent recurrence of the incident.
- Assign responsibility for corrective and preventative action.
- Any corrective action taken to eliminate the causes of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

### **3.8 Environmental Register**

An environmental register should be kept at the project sites (i.e. Manager's office) in which incidents related to actual impacts are recorded. This will include information related to incidents such as spillages, dust generation and complaints from adjacent farms. It should also contain information relating to actions taken. Any party on site may complete the register, however, it is envisaged that the Safari house, cottage and camp

unit's manager, the contractor and the ECO officer will be the main contributors, and who will also be the main parties involved in suggesting mitigation measures.

### **3.9 Responsible Parties**

The implementation of this EMP should be the responsibility of Infinity Nature Holdings (Pty) Ltd during all phases of the development. Below are the responsibilities of the people required during the implementation of a range of environmental management related matters.

#### **3.9.1 Environmental Control Officer**

A qualified Environmental Control Officer should be appointed by Infinity Nature Holdings (Pty) Ltd to monitor and review the on-site environmental management and implementation of this EMP. The duties of the ECO officer:

- ✓ Monitoring of all the Contractor's activities for compliance with the various environmental requirements contained in this EMP;
- ✓ Providing of an environmental register at the site to be filled in by any person reporting an environmental incident, issue or concern and inspected by the ECO officer on a regular basis to check for issues raised and actions taken;
- ✓ Ensuring that the EMP conditions are adhered to at all times and taking action;
- ✓ Ensuring that environmental impacts are kept to a minimum;
- ✓ Notifying the Environmental Authorities immediately of any events or incidents that may cause significant environmental damage or breach the requirements of the EMP;
- ✓ Environmental Awareness Training courses to be conducted to the Contractor's entire team of workers;
- ✓ Ensuring that a register of public complaints is maintained by the Contractor and that any and all public comments or issues are appropriately reported and addressed;
- ✓ Reviewing and approving method statements in consultation with the Technical Manager;
- ✓ Reporting to Infinity Nature Holdings (Pty) Ltd on a regular basis and advising of any major environmental impacts. Attending site meetings (when necessary);
- ✓ Inspecting the project sites and surrounding areas regularly, and monitoring an ongoing environmental awareness program in conjunction with the Safari house, cottage and camp units manager;
- ✓ Requesting the removal of people and/or equipment not complying with the specifications of EMP;

- ✓ Undertaking continual review of the EMP and submitting a report to the relevant stakeholders; and
- ✓ The ECO officer will submit all written instructions and verbal requests to the contractor and forward a copy to the proponent via the project site manager.

### **3.9.2 The Contractor**

The duties of the Contractor:

- ✓ The Contractor shall ensure adherence to, and compliance with the construction EMP in a legal and timely manner;
- ✓ Ensure that all staff members, subcontractors and suppliers have a comprehensive understanding of the EMP and adhere to the provisions for the duration of the construction phase;
- ✓ Develop a layout of the operations of the construction site indicating the position of all construction activities including but not limited to: site offices, ablution facilities, storage areas, workshops, batching plant, stockpile areas, waste disposal facilities, hazardous substance storage area, access routes etc. Any changes to this layout plan will need to be reviewed in conjunction with the ECO;
- ✓ Ensure that all recommendations made in monitoring and audit reports are implemented throughout the construction phase;
- ✓ Accept liability for any and all work required in terms of the environmental specifications resulting from environmental negligence, mismanagement and/or non-compliance
- ✓ Ensure that all staff, sub-contractors and suppliers are aware of the environmental issues relating to the construction activities that they are undertaking on site and of all mitigation and precautionary measures that must be implemented.

The above is applicable to maintenance personnel.

## **4. PROJECT IMPLEMENTATION**

### **4.1 Planning and Design Management**

It should be noted that, Infinity Nature Holdings (Pty) Ltd. together with the project manager must ensure that this EMP is also included in the tender documentation that is to be given to the Contractor (to be appointed) and the Contractor must adhere to all requirements as well management actions outlined in this EMP.

The planning management plan addresses all aspects of the planning and design phase, such as detailed architectural, infrastructural and engineering services layout and design. All members of the planning and design team are to be in possession of this

management plan and must be aware of the environmental aspects, risks and mitigation measures.

## **4.2 Environmental Awareness**

An environmental awareness plan must be implemented for both the construction and operational phases of the development. The EMP shall thus provide the basis of the information to be supplied.

All construction and operational staff as well as suppliers and regular out-sourced contractors shall be required to attend a general orientation session prior to the commencement of any activities. All impacts that could potentially arise and affect the environment must be discussed and explained in detail as well as required mitigation measures. The consequences of not following the mitigation measures stipulated in the management plan must be addressed.

It is recommended that all permanent staff receive detailed training relative to their job description. This training will focus on the environmental issues and impacts that are directly linked to their activities. In addition, staff members shall be required to report all incidents so that the appropriate mitigation measures can be implemented in a timely manner.

### **4.2.1 Access routes and work sites**

With regards to traffic, the Contractor should be responsible for the control of all project related traffic. This will include building material suppliers and ensure that all construction vehicles or those associated with the project use designated routes within working times. Vehicular movement, construction trucks and earthmoving equipment will access the project site from C19 road.

No new tracks/roads shall be established and only existing roads may be used and those that are planned. Work sites shall be clearly demarcated and road signs erected where needed. Vehicle access will be limited to specific entrance (where necessary) to facilitate control.

The entrance will be manned during the operation hours; and access routes will be closed to prevent unauthorised entry. A notice board, in two languages (English and Nama), must be erected at the entrance and must state entrance requirements and operating hours of the site, the operator/responsible person and emergency telephone numbers. Suitable signs must also be erected on the approach roads and on-site, to direct drivers and to control speed.

Road access to the working face of the development must be maintained at all times in a manner suitable to accommodate vehicles normally expected to access the facility. Roads must be regularly graded and wetted to control dust,

where necessary. Furthermore, on-going controls, such as fencing and policing, must be implemented, where necessary.

#### **4.2.2 Fire and safety management**

All electrical installations, wiring and systems at the project location must be approved by a qualified electrician who will issue a Certificate of Compliance before commencement of operations of the Safari house, cottage and camp units.

Proper handling, storage, use and disposal of any hazardous waste (e.g. hydrocarbons, paint, batteries, radioactive waste etc) should be conducted. Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise.

No uncontrolled fire, whether for cooking or any other purpose, is to be made at the project site during the construction and operational phases. The proponent and contractor shall take all reasonable measures and active steps to avoid increasing the risk of fire through activities on site and prevent the accidental occurrence or spread of fire; and shall ensure that there is sufficient fire-fighting equipment on site at all times. This equipment shall include fire extinguishers. The Contractor should be prepared for such events.

#### **4.2.3 Staff management**

The Contractor must ensure that their employees have suitable personal protective equipment and properly trained in fire fighting and first aid.

#### **4.2.4 Waste management**

Waste will be generated in the form of rubble, cement bags, pipe and electrical wire cuttings. Contaminated soil due to oil leakages, lubricants and grease from the construction equipment and machinery may also be generated during the construction phase.

The oil leakages, lubricants and grease must be addressed. Contaminated soil must be removed and disposed off at the hazardous landfill. The contractor must provide containers on-site, to store any hazardous waste produced. Regular inspection and housekeeping procedure monitoring should be maintained by the contractor.

During operational phase, the developer shall provide sufficient bins or containers on-site to store any solid or liquid waste produced. The bins and containers should be weatherproof and scavenger-proof. The waste shall be removed regularly off-site to designated waste disposal sites.

#### **4.2.5 Cement and concrete batching**

The contractor is advised that cement and concrete are regarded as materials that are potentially damaging to the natural environment on account of the very high pH of the material, and the chemicals contained therein. The contractor shall ensure that all operations that involve the use of cement and concrete are carefully controlled. Concrete mixing shall only take place in agreed specific areas on site.

Water and slurry from concrete mixing operations shall be contained to prevent pollution of the ground surrounding the mixing points. Old cement bags shall be placed in wind and spill proof containers as soon as they are empty. The contractor shall not allow closed, open or empty bags to lie around the site.

Where exposed aggregate finishes are specified the contractor shall collect all cement-laden water and store it in conservancy tanks for disposal off site at an approved disposal site.

All visible remains of excess concrete shall be physically removed immediately and disposed of as waste. Washing the visible signs into the ground is not acceptable. All excess aggregate shall also be removed.

All excess concrete shall be removed from site on completion of concrete works and disposed of. Washing of the excess into the ground is not allowed. No cement or concrete laden water will be permitted to be drained directly into any surface water source.

#### **4.2.6 Hydrocarbons management**

If any spillage occurs, contaminated soil shall be collected in a holding tray or drum and which will then disposed at a licensed hazardous waste site. Any spillage of more than 200 litres must be reported to the Ministry of Mines and Energy as per the Petroleum Products Act.

The Contractor shall take all reasonable measures to prevent surface or groundwater pollution from the release of oils and fuels.

#### **4.2.7 Flood management**

The intended development shall be designed in such a way that surface water run-off is well developed. Storm water management of the intended development should be a key aspect of flood management within the development. All culverts should be kept clean to allow storm water to flow freely.

#### **4.2.8 Stockpiling, Handling, and Storage of Building Materials**

The Contractor shall ensure that stockpiles and storage yards are demarcated in areas that are already disturbed or where they will cause minimal disturbance. The Contractor / ECO shall indicate which activities are to take place in which areas within the site (e.g. mixing of cement, stockpiling of materials etc). These activities must be limited to single sites only. All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the Contractor to, and used or worn by the staff whose duty it is to manage and maintain the Contractor's and his subcontractor's and supplier's plant, machinery and equipment.

#### **4.2.9 Excavation, Backfilling and Trenching**

The contractor shall ensure that all excavations and trenches are not to be left open for more than 2 days, thus it is recommended that excavations should be opened and closed the same day. Warning signs should be erected around the excavated areas to clearly demarcate the area against access. In addition, soil that was/has been removed shall be used to backfill areas where required and excavated material shall be stockpiled along the trench within the working servitude.

#### **4.2.10 Erosion Control**

The Contractor shall protect all areas susceptible to erosion and shall take measures, to the approval of the ECO. The Contractor shall not allow erosion to develop on a large scale before effecting repairs and all erosion damage shall be repaired as soon as possible.

#### **4.2.11 Servicing and Re-Fuelling of Construction Equipment**

All maintenance and repair works shall be conducted in areas designated for this purpose (i.e. spill containment structures). The ground under the servicing and refuelling areas must be protected against pollution caused by spills or leakages from any point source.

The Contractor may only change oil or lubricant at agreed and designated locations, except if there is a breakdown or emergency repair, and then any accidental spillages must be cleaned up / removed immediately. Construction vehicles are to be maintained in an acceptable state of repair.

No vehicles or equipment with leaks or causing spills will be permitted to operate at any of the construction sites. These will be sent immediately back to the maintenance yard for repair. Fuels required during construction must be stored in a central depot at the construction camp. This storage area should be located on a slab and be contained within a bund capable of containing at least the volume of one of the containers.



#### **4.2.12 Noise**

The Contractor / ECO shall ensure that people from adjacent areas must be kept informed of the need and extent of noisy disruptive processes. The use of radios, television sets and other such equipment by workers must be controlled and noise levels kept to a level that does not disturb the human and wildlife in the area.

#### **4.2.13 Dust**

The Contractor shall take precautions to the satisfaction of the ECO to limit the production of dust and damage caused by dust. Dust suppression measures shall be agreed upon in consultation with the ECO. The following measures must be implemented to minimise dust impacts:

- ✓ Construction vehicles to only use designated roads;
- ✓ During high wind conditions the Contractor must make the decision to cease works until the wind has calmed down; and
- ✓ Cover any stockpiles with a suitable material, such as plastic or shade-cloth, to minimise windblown dust.

#### **4.2.14 Heritage / Archaeological Sites**

Should any archaeological resource be found at the project location, construction work should be ceased immediately. It is therefore the responsibility of the Contractor to inform the ECO of any archaeological resource found on site or in close proximity of the site. The ECO shall report the incident to the National Heritage Council of Namibia and during this time further construction work may only resume once clearance is given by the archaeologist and/or specialist.

#### **4.2.15 Site Demarcation and Rehabilitation**

The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project. The project site should be fully rehabilitated (e.g. clear and clean area, rake, pack branches etc.) including all disturbed areas and protect them from erosion. Only indigenous plants which are able to establish easily and will need less maintenance because they have already adapted to the local conditions should be considered.

#### **4.2.16 Site Management**

It should be noted that areas outside this designated working zone shall be considered “no go” areas. The offloading zones must be clearly demarcated when offloading goods to enhance safety around the project location.

## 5. MANAGEMENT OF ENVIRONMENTAL ASPECTS DURING PRE-CONSTRUCTION ACTIVITIES

Pre-construction phase	
<b>Description</b>	<ul style="list-style-type: none"> <li>▪ Compliance Requirements</li> <li>▪ Public Consultation</li> <li>▪ Environmental Awareness</li> <li>▪ Health and safety Aspects</li> </ul>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>+ Conduct an environmental scoping assessment (ESA) to comply with the requirements of the Environmental Management Act (2007) and its regulations of 2012.</li> <li>+ Identify and address all environmental and social issues.</li> <li>+ Ensure that all persons involved in the project are aware of, and are familiar with, the environmental requirements for the project.</li> <li>+ Ensure that all contractors, sub-contractors, suppliers, etc. are familiar with, understand and adhere to the EMP.</li> <li>+ A pre-construction meeting is recommended in order to reach agreement on specific roles of the various parties and penalties for non-compliances with the EMP.</li> <li>+ Initiate participation of Interested and affected parties (I&amp;APs).</li> <li>+ Inform I&amp;APs and key stakeholders about the proposed development.</li> <li>+ Identify issues and concerns of key I&amp;APs with regards to the proposed development.</li> <li>+ Develop a communication structure with the I&amp;APs.</li> <li>+ Ensure that all persons involved in the project are aware of, and are familiar with the environmental requirements for the project.</li> <li>+ Develop and implement environmental emergency preparedness procedures.</li> <li>+ Establish personnel protection standards and mandatory safety practices and procedures for the development.</li> <li>+ Establish the lines of communication among contractors and subcontractors involved in work operations for safety and health matters.</li> <li>+ Conduct HIV/AIDS Awareness Programme for all operations of the development for not less than 90% of workers.</li> <li>+ Provide and maintain condom dispenser and maintain HIV/AIDS awareness posters.</li> <li>+ Provide information regarding the voluntary testing of construction workers and counselling, support and care.</li> </ul>
<b>Proposed Monitoring</b>	<p>Record of environmental compliance (ECC). Record of approved site-specific EMP for project site. Record of awareness training and attendance register. Record of health and safety plan.</p>
<b>Responsible Party</b>	Proponent / ECO

## 6. MANAGEMENT OF ENVIRONMENTAL ASPECTS DURING CONSTRUCTION AND OPERATIONAL PHASES

### Groundwater

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	<p>Groundwater quality could be impacted through leachate of petroleum, chemical, harmful and hazardous substances. In particular, oil leakages, diesel, lubricants and grease from construction vehicles, equipment and machinery utilised during the construction phase may occur. Care must be taken to avoid contamination of soil and groundwater.</p> <p>Any leaks, spills and/or overflow of portable toilets (if any) at the project location may transport the effluent to sensitive drainage lines; or areas where sensitive geological structures and formations are present. Inflow into these structures and formations would cause a pollution threat.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Prevent spillages of any chemicals and petroleum products (i.e. oils, lubricants, petrol and diesel). Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles or equipment.</li> <li>✚ Any major servicing and maintenance of vehicles and equipment should be conducted on containment surfaces provided for this purpose. Removal of oil from machinery should be conducted on these surfaces.</li> <li>✚ All fuelling, storage and chemical handling should be conducted on containment surfaces provided for this purpose.</li> <li>✚ Spillage control procedures must be in place according to relevant SANS standards or better.</li> <li>✚ Should portable ablution facilities be necessary, adequate containment systems should be erected for these facilities.</li> <li>✚ Waste should be properly contained to avoid any leakages and/or spillages, and should regularly be disposed off at a suitable sewage disposal site. Run-off from these toilets due to overflows should be avoided at all cost.</li> <li>✚ Proper environmental awareness and remedial response training of operators must be conducted on a regular basis.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual inspection.
<b>Responsible Party</b>	Proponent / Contractors.

## Surface Water

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	Local drainage is well developed and runoff takes place towards the southwest, through the relief of nearby dry streams in the area. Contamination of surface water may occur through petroleum, chemical and other hazardous substances. Contaminants in the form of oil leakages, diesel, lubricants and grease from the construction equipment and machinery may occur during the construction phase.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"><li>✚ Use drip trays, linings or concrete floors when evidence of leaks are observed on construction vehicles or equipment.</li><li>✚ Remove leaking vehicles from project location immediately.</li><li>✚ Any major servicing and maintenance of vehicles and equipment should be conducted on containment surfaces provided for this purpose. Used oil must be disposed of by approved practices..</li><li>✚ Any spillage of hazardous substances including fuel, oil, paint or cleaning solvent must be cleaned up immediately, stored and transported off-site to a designated hazardous waste disposal facility.</li><li>✚ Prevent discharge of any pollutants, such as cements, concrete, lime, chemicals, and hydrocarbons into the nearby streams and drainage lines.</li><li>✚ Properly secure all portable toilets (if any) to the ground to prevent them toppling due to wind or any other cause.</li><li>✚ Maintain toilets in a hygienic state and remove waste to a designated waste disposal facility.</li><li>✚ Ensure that no spillages occur when the toilets are cleaned or emptied.</li><li>✚ Contain contaminated water from batching operations and allow sediments to settle before being disposed of as waste water.</li><li>✚ Stabilise cleared areas as soon as possible to prevent and control surface erosion; and also the impacts of sedimentation.</li><li>✚ Proper environmental awareness and remedial response training of operators must be conducted on a regular basis.</li><li>✚ An emergency plan should be in place on how to deal with spillages and leakages during this phase.</li></ul>
<b>Proposed Monitoring</b>	Regular visual inspection. Surface water quality monitoring in cases of evident pollution.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	<p>Spillages and leakages might occur from operational vehicles and equipment; and/or from general vehicles frequenting the site. Potential for hydrocarbon contamination of surface and groundwater especially from paved surfaces at the development.</p> <p>Leakages may also occur due to failure or maintenance of bulk services (i.e. sewer pipelines etc.) at the Safari house, cottage and camp units. This could have impacts on groundwater especially in cases of large sewer spills.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Use drip trays, linings or concrete floors when evidence of leaks are observed on construction vehicles or equipment.</li> <li>✚ Where necessary, remove leaking vehicles from project location immediately.</li> <li>✚ The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.</li> <li>✚ Remove all excess sedimentation, rubble and any other waste material present in waterways and dispose of in a suitable manner to ensure proper drainage runoff.</li> <li>✚ Avoid discharge of pollutants (such as cement, concrete, lime, chemicals, contaminated waste water or leachate) into water ways.</li> <li>✚ All hazardous wastes generated in the project area should be safely contained, transported and disposed / treated at a designated waste disposal.</li> <li>✚ Ensure that stormwater management systems are regularly maintained and tested, and are in good working order.</li> <li>✚ Regular inspections of the integrity (i.e. storage tanks and pipeline pressure / tightness tests) of all bulk services and other relevant infrastructure are advised to eliminate the risk of impact on the environment due to leakage.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual inspection.
<b>Responsible Party</b>	Proponent / Contractors.

## Air Quality (Dust Pollution)

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	<p>Dust will be generated during the construction and installation of buildings, bulk services and all associated infrastructure of the development. Problems thereof are however expected to be site specific and should not impact any third party or neighbouring land / farms. Dust is expected to be worse during the winter months when strong winds occur.</p> <p>The release of various other particulates at the site during the construction phase and exhaust fumes from vehicles and machinery related to the construction activities are also expected. Dust is regarded as a nuisance as it reduces visibility, affects the human health and retards plant growth.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Ensure measures are in place to minimise dust generated during the construction phase.</li> <li>✚ Use appropriate dust suppression measures when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather.</li> <li>✚ Avoid excavation, handling and transport of materials which may generate dust under high wind conditions.</li> <li>✚ Locate stockpiles of construction materials in sheltered areas where they are not exposed to erosive effects of the wind.</li> <li>✚ Ensure all vehicle, plant and equipment are in good condition. Encourage reduction of engine idling.</li> <li>✚ Plan construction activities for months with poor wind conditions.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual inspection.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	<p>Vehicles that will be frequenting the development will generate dust; and contribute to the release of hydrocarbon vapours, carbon monoxide and sulphur oxides into the air. Possible release of sewer odour, due to sewer system failure or maintenance may also occur.</p> <p>Refrigerant of ozone depleting sources for air conditioning devices at the development. The coolants and refrigerants that the air conditioning units at the site rely on to cool the air in the rooms are chemical compounds that may leak out over time. This light substance head up into the atmosphere and can be dangerous to the environment.</p> <p>Hydrocarbon vapours will be released during delivery and dispensing of fuel to the development, as liquid displaces the gaseous mixture in the tanks. Fuel vapours are a significant source of benzene, a known carcinogen for humans.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Use appropriate dust suppression measures when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather.</li> <li>✚ Avoid handling and transport of materials which may generate dust under high wind conditions.</li> <li>✚ The use of domestic air conditioning devices with zero ozone depleting substances.</li> </ul>

<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Ensure all project fleet and equipment is in good condition.</li> <li>✚ Encourage reduction of engine idling at the project location.</li> </ul>
<b>Proposed Monitoring</b>	A complaints register regarding emissions/smell should be kept and acted on if it becomes a regular complaint.
<b>Responsible Body</b>	Proponent / Contractors.

## Security and Safety

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	Safety issues could arise from the construction vehicles, earthmoving equipment and tools that will be used at the construction sites. This increases the possibility of injuries and the contractor must ensure that all staff members are made aware of the potential risks of injuries on site. Construction sites usually house construction building material and equipment on site which may attract criminal activities.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Provide suitable emergency and safety signage on site (manufactured of durable, weatherproof material). The signage signs should be placed at strategic locations to ensure awareness.</li> <li>✚ Demarcate and barricade any areas which may pose a safety risk (including hazardous substances, deep excavations etc). These notices must be worded in English and local Nama language.</li> <li>✚ Enforce the use of appropriate Personal Protective Equipment (PPE) for the right task or duties at all times.</li> <li>✚ Prevent illegal access to the farm and construction sites by implementing appropriate security measures. These measures should not pose a threat to any human or wildlife at the project location.</li> <li>✚ Construction camp(s) should be located in such a way that it does not pose a risk to human and wildlife.</li> <li>✚ Equipment housed on site must be placed in a way that does not encourage criminal activities.</li> <li>✚ Sensitize operators of earthmoving equipment and tools to switch off engines of vehicles or machinery not being used.</li> <li>✚ The contractor is advised to ensure that the team is equipped with first aid kits and that they are available on site, at all times.</li> <li>✚ Proper barricading and/or fencing around the work sites should be erected to avoid entrance of unauthorized persons and local wildlife.</li> <li>✚ Adequate lighting within and around the construction location should be erected, when visibility becomes an issue.</li> </ul>
<b>Proposed Monitoring</b>	Security and safety procedures evaluation. Safety incident monitoring.
<b>Responsible Party</b>	Proponent / Contractors.

## Noise Pollution

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	<p>An increase of ambient noise levels at the construction sites are expected due to the construction activities. Noise pollution due to heavy-duty equipment and machinery will be generated. It is not expected that the noise generated during construction will impact any third parties or neighbouring land; however it may interfere with the wildlife on the farm.</p> <p>Excessive noise pollution has a negative impact on wildlife species by reducing habitat quality, increasing stress levels, and masking other sounds. Chronic noise exposure is especially disruptive for species that rely on sound for communication or hunting. Animals that use noise for hunting, such as bats and owls, and prey species that rely on noise to detect predators may have decreased patterns of foraging, reducing growth and survivability.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Ensure the use of construction vehicles and equipment that emit reduced noise levels. Ensure that all mufflers on vehicles and machinery are in full operational order.</li> <li>✚ Ensure proper maintenance is conducted on vehicles to ensure the reduction of noise emission.</li> <li>✚ The construction staff should be equipped with ear protection equipment.</li> <li>✚ Audio equipment (if any) should not be played at levels considered intrusive by others.</li> <li>✚ Construction activities will be limited to a period between 07h00 and 19h00</li> </ul>
<b>Proposed Monitoring</b>	Strict operational times. Regular inspection.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	<p>The Safari house, cottage and camping environment is generally quiet but there are certain areas where staff may be exposed to a noise hazard (i.e. workshops, generator and boiler rooms etc.). Hearing loss may result from long-term exposure to hazardous noise levels. Where the permissible noise exposure level is exceeded, measures should be taken to lessen the noise exposure.</p> <p>Excessive noise pollution may also has a negative impact on wildlife in the area by reducing habitat quality, increasing stress levels, and masking other sounds.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Audio equipment (if any) should not be played at levels considered intrusive by others.</li> <li>✚ Maintenance activities will be limited to a period between 07h00 and 19h00.</li> <li>✚ Ensure all project fleet and equipment is in good working condition.</li> <li>✚ Construct suitable noise barriers. Line interior surfaces with sound absorbing materials.</li> </ul>
<b>Proposed Monitoring</b>	Observation of on-site noise levels by the site manager or supervisor.
<b>Responsible Body</b>	Proponent / Contractors.



## Waste Generation

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	Waste material will be generated during the construction of the proposed development. Waste in the form of rock cuttings, pipe cuttings, electrical cuttings, oil spills or leakages of petroleum products might occur during the construction phase.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Ensure that sufficient weather- and vermin- proof bins / containers are present on sites for the disposal of solid waste. Waste and litter generated during this phase must be placed in these disposal bins.</li> <li>✚ The Contractor shall institute a waste control and removal system for the sites. Empty bins regularly as required. All waste shall be disposed off-site at an approved landfill site.</li> <li>✚ No disposal of /or burying of waste on site should be conducted. No waste should be burned on site.</li> <li>✚ Separate hazardous wastes from general waste, clearly marked, and stored in appropriate containers. The protocols associated with handling of such hazardous wastes shall be known by all relevant staff members</li> <li>✚ Regular inspection and housekeeping procedure monitoring should be maintained at all times.</li> </ul>
<b>Proposed Monitoring</b>	Regular inspection and housekeeping procedure monitoring. Observation of site appearance by the manager.
<b>Responsible Party</b>	Proponent / Contractors

<b>Operational phase</b>	
<b>Description</b>	Waste in the form of solid waste from the development will be generated. Waste will be removed by the proponent or its waste removal and disposed off at an approved waste disposal site.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Waste bins must be available in all key locations of the development at all times. All waste must be properly collected.</li> <li>✚ The developer shall put in place a waste management plan aimed at minimising the production of all wastes.</li> <li>✚ Where practical, the developer shall put measures in place to recycle waste materials generated by the development such as plastics, papers, cardboards and discarded metal.</li> <li>✚ Contamination of soil should be prevented through the use of containment areas as provided. Any contaminated soil generated must be contained, disposed-off and/or bioremediated accordingly.</li> <li>✚ Potentially hazardous wastes shall be stored separately from general waste, clearly marked.</li> <li>✚ Ensure regular inspections of littering at the Safari house, cottage and camp sites (and surrounding land) and remove any littering observed.</li> </ul>
<b>Proposed Monitoring</b>	Regular inspection and housekeeping procedure monitoring. Observation of site appearance by the manager.
<b>Responsible Body</b>	Proponent / Contractors.

## Traffic

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	<p>Construction vehicles will access the project location mainly from the C19 main road. Construction related activities are expected to have a minimal impact on the movement of traffic along this road, due to the fact that construction vehicles will frequent the site only periodically.</p> <p>No diversion of traffic or closure of the road is expected, however a slight nuisance might be experienced by motorists using the same road. This will most likely be caused by slow moving vehicles frequenting the construction site. It is however expected to be short-lived.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Maintain official traffic signalling when approaching the farm access road in conjunction with local or national traffic regulations.</li> <li>✚ Where necessary, speed limit warning signs must be erected to minimise accidents.</li> <li>✚ Construction vehicles and machinery must be tagged with reflective signs or tapes to maximise visibility and avoid accidents.</li> <li>✚ Where feasible, Construction vehicles should not travel to and from the site during peak times (07h00 to 09h00 and 16h00 to 18h00), to minimise impacts on traffic.</li> <li>✚ Construction vehicles should not be allowed to obstruct the road, hence no stopping in the road, wholly or partially, but rather pull off the road or park on the roadside.</li> </ul>
<b>Proposed Monitoring</b>	Observations of the traffic flow along the C19 road, access and service roads.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	Although negligible, a slight increase in traffic will be experienced along the C19 main road, the main access leading to the development; and the various service roads on the farm. This impact will be long-lived, as both local motorists and tourist vehicles will be frequenting the development.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Speed limits and road signs as set out by national traffic regulations should be adhered to in order to minimise accidents.</li> <li>✚ Appropriate road signs should be erected to reduce these impacts and their spin-offs.</li> <li>✚ No new tracks shall be established in areas considered to be environmentally sensitive (e.g. areas of sensitive natural undisturbed vegetation, water resources, etc).</li> <li>✚ The proponent shall control the movement of all vehicles in areas without roads or tracks in order to reduce impact on the natural environment.</li> </ul>
<b>Proposed Monitoring</b>	Observations of the traffic flow along the C19 road, access and service roads.
<b>Responsible Body</b>	Proponent / Contractors.

## Ecological impacts

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	The project location consists generally of little vegetation (i.e. low shrubs, bush and grasses) with the exception of lichens found in the gravel plains, and in dry river beds where plants grow. The site is free of conservation worthy vegetation.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Limit clearing of vegetation to areas within the footprint of the construction sites and reduce the frequency of disturbance.</li> <li>✚ Disturbance of areas outside the designated working zone is not allowed.</li> <li>✚ No vegetation should be removed outside the designated project area</li> </ul>
<b>Proposed Monitoring</b>	Regular project site inspection.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	The operations of the proposed development shall have minimal impacts on fauna and flora.
<b>Proposed Mitigation Measures</b>	✚ The operational activities would not exceed the demarcated areas of the development footprint.
<b>Proposed Monitoring</b>	Regular site inspection.
<b>Responsible Body</b>	Proponent / Contractors.

## Spillages

<b>Operational phase</b>	
<b>Description</b>	Spillages are bound to occur during delivery and dispensing of fuel and other hazardous products over the operational phase of the tourist development.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Risk of impact from this can be lowered through proper training of staff.</li> <li>✚ Installation of suitable containment structures and installation of spill containment areas around the delivery and dispensing points.</li> <li>✚ Staff must be provided with emergency response procedures which they should be familiar with.</li> <li>✚ Detergents and fuel storage tanks / drums should be placed in suitable containment structures, such as bund walls.</li> <li>✚ Staff should at all times be aware of the precautions associated with the handling of chemical / petroleum products as described in the relevant Material Safety Data Sheets.</li> </ul>
<b>Proposed Monitoring</b>	Regular inspection of the project site
<b>Responsible Body</b>	Proponent / Contractors.

## Fire and Explosion

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	Although explosions and fires are not the most common cause of construction site injuries, the impact of such incidents on worker health and safety can be devastating. Furthermore, an explosion or fire at a worksite tends to impact all workers present, and is likely to give rise to a third party liability claim.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Ensure that all fire fighting devices are in good working order and they are serviced.</li> <li>✚ All personnel have to be trained about responsible fire protection measures and good housekeeping such as the removal of flammable materials on site.</li> <li>✚ Exhaust from engine powered equipment must be kept a safe distance from combustible materials.</li> <li>✚ No smoking may be allowed near fire hazards.</li> <li>✚ Combustible materials must be stored so as to reduce the risk of catching fire, and to minimize the spread of fire internally and to permit convenient access for fire fighting.</li> <li>✚ Regular inspections should be carried out to inspect and test fire fighting equipment by the contractor.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual site inspection.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	The use of flammable substances such as liquefied petroleum gas (LPG) or high-pressure applications, like workshops, kitchens and laundry room are at risk for fire and explosion. The main hazards are gas leakage followed by ignition (when mixed with air it is highly flammable and potentially explosive). Improper usage or faulty electrical installations could also result in fires.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Emergency response procedures should be in place so as to alert the employees on how to react to fire and explosions incidents.</li> <li>✚ Establish and maintain designated smoking areas at the development.</li> <li>✚ Avoid smoking in areas that are close to fire hazard areas and environments, such as fuel storage areas and areas of dry vegetation.</li> <li>✚ Ensure that sufficient fire-fighting equipment is available at the development. Fire fighting equipment is to be suitably maintained.</li> <li>✚ Supply appropriate signage and relevant emergency contact details at the development and displayed outside the reception building.</li> <li>✚ Do not allow informal cooking or warming fires at the development.</li> </ul>

<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Appoint a fire officer who shall be responsible for co-ordinating emergency response in the event of a fire according to the Emergency Response Plan.</li> <li>✚ Gas pressure vessels should be inspected regularly as required by law.</li> <li>✚ Staff, especially those working in the kitchens, should be taught on how to detect gas leakage. All staff to be sufficiently trained in the operation of fire- fighting equipment.</li> <li>✚ It is highly recommended that electrical wiring of the development be installed and approved by a qualified electrician who will issue a Certificate of Compliance.</li> </ul>
<b>Proposed Monitoring</b>	Regular inspections should be carried out to inspect and test fire fighting equipment.
<b>Responsible Body</b>	Proponent / Contractors.

**Heritage Impacts**

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	There are no known heritage areas envisaged to be impacted by the new development; however the contractor might come across archaeological features or objects that possess cultural values during construction activities.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ If such remains or objects with cultural values (e.g. bones, weapons, ancient cutlery, graves etc) are uncovered at the project location or surrounding, it should be barricaded off, and</li> <li>✚ The relevant authorities (i.e. the local police and National Heritage Council of Namibia) should be contacted immediately.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual site inspection.
<b>Responsible Party</b>	Proponent / Contractors.

**Socio-Economic Aspects**

<b>Construction/Decommissioning phase</b>	
<b>Description</b>	Temporary employment opportunities are anticipated to be created during construction, both directly through construction workers and indirectly through suppliers, service providers, and informal traders attracted to the project site
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Construction contractor(s) should be sourced from the area, or region at large (where feasible).</li> <li>✚ Construction workers should be sourced from the area, or region at large (where feasible).</li> <li>✚ Suppliers of construction materials should be sourced from the area, or region at large (where feasible).</li> <li>✚ Locally source services required during the construction process, such as securities, rental of portable toilets, plant hire, etc.</li> </ul>
<b>Proposed Monitoring</b>	Regular visual site inspection.
<b>Responsible Party</b>	Proponent / Contractors.

<b>Operational phase</b>	
<b>Description</b>	The creation of new employment opportunities is considered to be a positive impact. It is not clear as to exactly how many employment positions will be created, however at least 6 new jobs are envisaged for the development.
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Employment creation should be targeted at the immediate communities in the project area, or region at large</li> <li>✚ Suppliers of operational stock should be sourced from the area, or region at large (where feasible).</li> <li>✚ Where feasible, locally source services required during the operational process, such as securities, rental of portable toilets, plant hire, etc.</li> </ul>
<b>Proposed Monitoring</b>	Regular site inspection.
<b>Responsible Body</b>	Proponent / Contractors.

## **Health and Safety**

<b>Operational phase</b>	
<b>Description</b>	<p>The operations of the Safari house, cottage and camp units can cause health and safety risks to workers on site. Employees could be exposed through skin contact and inhalation with hazardous substances / hydrocarbon particulates during handling of such products.</p> <p>Safety issues could also arise from the vehicles, equipment and tools that will be used on site during the operational and maintenance activities. This increases the possibility of injuries at the development and all project personnel must be made aware of the potential risks of injuries on site.</p>
<b>Proposed Mitigation Measures</b>	<ul style="list-style-type: none"> <li>✚ Staff must be properly trained and made aware of all the MSDS (Material Safety Data Sheets) sheets of all chemicals on site.</li> <li>✚ Fire fighting equipment and first aid kit should be made available and must be serviced regularly.</li> <li>✚ Employees are expected to be trained on how to use all equipment and how to handle petroleum products and other hazardous substances.</li> <li>✚ Ensure contact details of emergency services in the area at strategic locations (i.e. reception, workshop etc.) of the development.</li> <li>✚ Demarcate and place signage on any areas which may pose a safety risk (including trenches, excavations etc.).</li> <li>✚ The project personnel are advised to ensure that proper personal protective gear and first aid kits are available, at all times. Staff should be properly trained in first aid and safety awareness.</li> </ul>
<b>Proposed Monitoring</b>	Regular inspection of health and safety aspects
<b>Responsible Body</b>	Proponent / Contractors.

## **7. CONCLUSIONS**

If the above-mentioned management recommendations are properly implemented, it is anticipated that most of the adverse impacts on the environment can be mitigated. An appointed environmental officer/consultant will need to monitor or audit the site throughout construction to ensure that the EMP is fully implemented and complied with. The EMP caters for all project phases, but will need to be reviewed during all phases of project, especially when revisions are made to the project development plans.

The Environmental Management Plan should be used as an on-site tool during all phases of the proposed project. Parties responsible for contravention of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Clearance Certificates issued on ESA/EMP are only valid for 3 years and will need to be reviewed and submitted to the Department of Environmental Affairs again for approval.

### **Matrix Consulting Services**

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