JEB GUEST FARM ENVIRONMENTAL MANAGEMENT PLAN

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Project Name	Environmental Scoping Report with Environmental Management Plan: Montana Tourist Villas in the Hardap Region.
Stage of Report	Final:
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ACRONYMS AND ABBREVIATIONS

BOD	Biological Oxygen Demand
DEA	Directorate of Environmental Affairs
DWA	Department of Water Affairs
ECC	Environmental Clearance Certificate
EMP	Environmental Management Plan
MEFT	Ministry of Environment, Forestry and Tourism

1 INTRODUCTION

Enviro Dynamics compiled a ***pro-bono*** Environmental Management Plan for JEB Guestfarm in the Hardap Region of Namibia

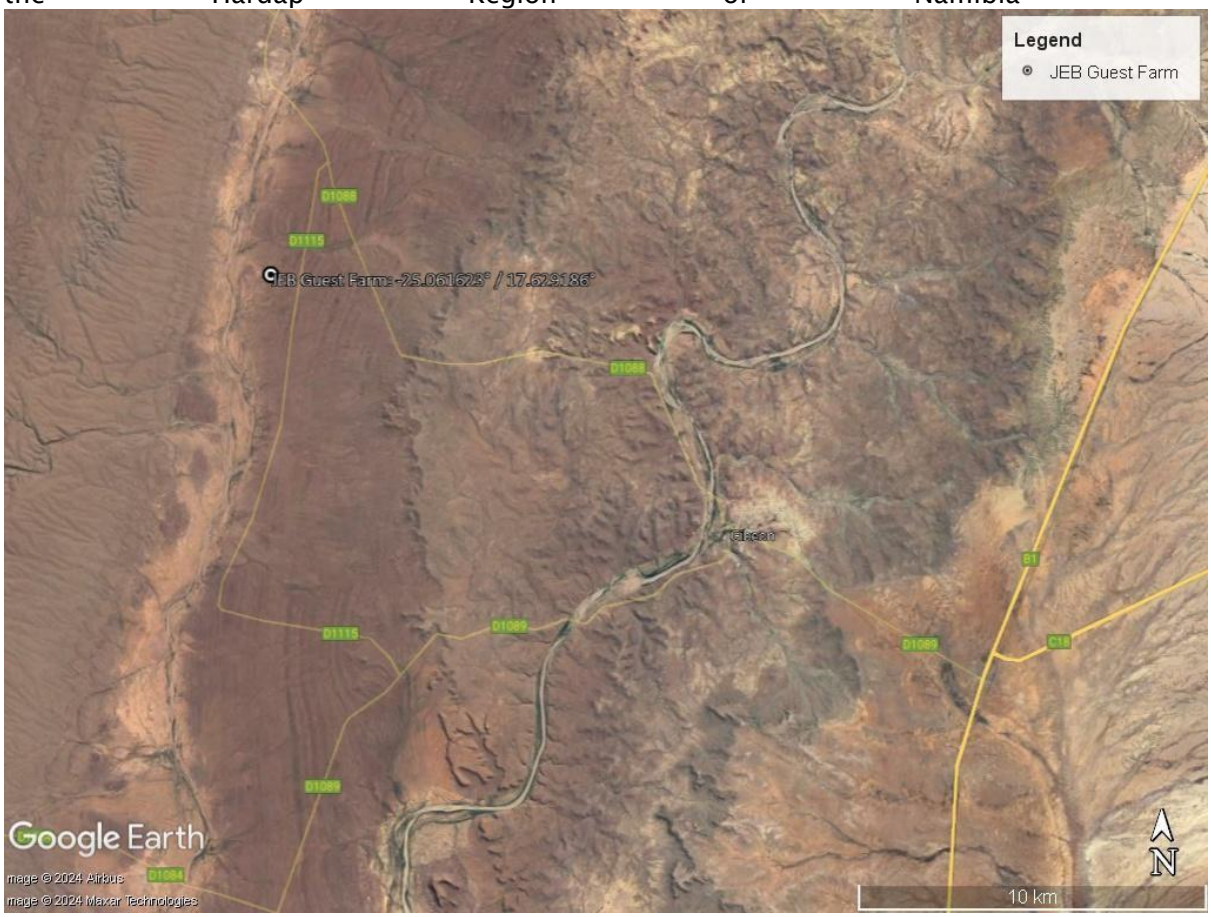

Figure **1**).

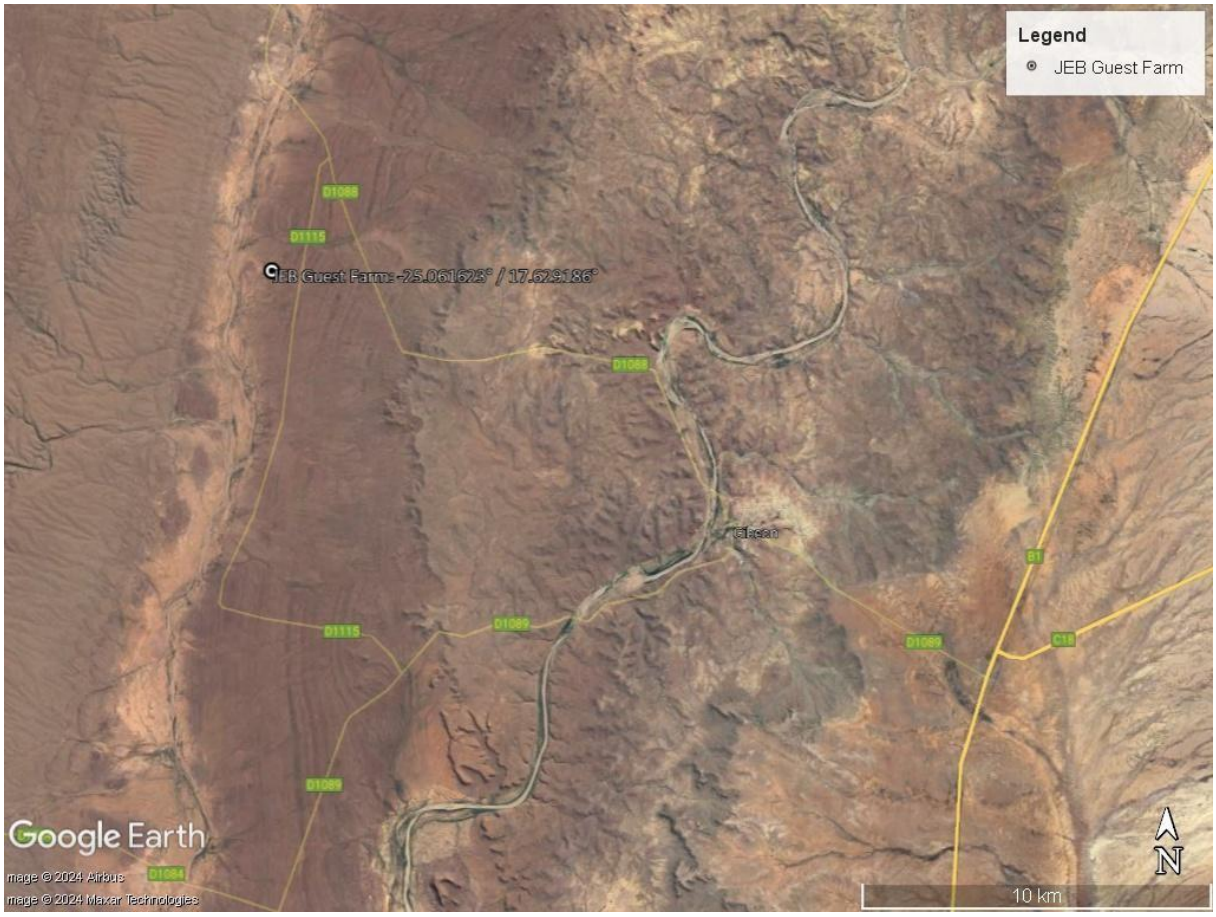

Figure 1: Locality Map

The project activity and environmental regulations (Items 2.1 and 6) required the fulfilment of various legal requirements, one of which is to obtain an Environmental Clearance Certificate (ECC) from the Department of Environmental Affairs (DEA) through an approved Environmental Management Plan (EMP).

As the report is pro-bono Enviro Dynamics is not responsible for the final use and implementation of this report by the user, JEB Guest Farm.

WHAT IS COVERED IN THE ENVIRONMENTAL ASSESSMENT?

The Environmental Assessment is based on the information gathered through:

- Desk study from referenced resources.

WHAT IS AN ENVIRONMENTAL MANAGEMENT PLAN (EMP)?

An EMP is a list of management actions needed to ensure that undue or reasonably avoidable adverse impacts of the operations of an establishment are prevented; and that the positive benefits of the establishment are enhanced. It assigns responsibilities to the management cadre of the tourist villas for implementing its provisions and will be used as a checklist to monitor compliance at the site(s).

This Environmental Management Plan (EMP) addresses the Construction and Operational Phase of the Montana Tourist Villas.

WHAT ARE THE LEGAL IMPLICATIONS AND OBLIGATIONS UNDER THIS STUDY AND PLAN ?

This Environmental Assessment and EMP will be submitted to the DEA of the Ministry of Environment, Forestry and Tourism (MEFT). The MEFT will issue an environmental clearance to the proponent. The Environmental Clearance places the proponent under a legal obligation to adhere to the recommendations in the EMP.

The EA/EMP, once approved, therefore becomes a legally binding document and each role-player identified in the EMP is required to abide to the conditions stipulated in it.

The Environmental Clearance process is guided by:

- ✓ The Environmental Management Act and its Regulations.

2 PROJECT DESCRIPTION

Table 1 below provides a summary of the various features of the guest farm:

Table 1: Description of camp infrastructure and service features

FEATURES	DESCRIPTION
ACCESS	Existing and in-use farm tracks give access to the facility from the D1115 road. (Fig 1)
ACTIVITIES	The villas offers the following activties: • A base for scenic drives to value the unique physical, natural and geological landscape. • Accomodation. • Traditional culture interests.
EMPLOYEE STRUCTURE	• Manager. • Staff will consist of a small group (up to 10) of local residents from the Region.
ACCOMMODATION AND FACILITIES	
ACCOMODATION	The accomodation will consist of • Office/reception, • two private units and • three family units Construction materials will be traditionsal materials sourced locally.
SERVICES INFRASTRUCTURE	
WATER SUPPLY	• The major water infrastructure will be supplied from the existing farm infrastructure approx. five km from the facility • Future borehole at the facility as improved water resource is planned.
ELECTRICITY SUPPLY	• The electricity demand is minimal • Will be from solar panels and battery system.
SEWAGE DISPOSAL	• Sewage will be disposed of by means of septic tank and a suitable French drain system, with future plans for recycling system.
DOMESTIC WASTE DISPOSAL	• Solid waste will be minimal and will be removed, sorted and disposed of as: - metals, paper, glass and plastics removed to the farm disposal site and - composting material.
ROADS	• No additional roads will be constructed and only existing roads will be used.
FOOTPRINT	• Direct footprint is estimated as less than 250m ^{2}

3 ENVIRONMENTAL AND SOCIAL BASELINE

The environmental baseline conditions are based on the information gathered through:

Table 2 Below depicts the environmental and social baseline conditions observed.

Table 2: Social and environmental baseline of each site.

FEATURE	DESCRIPTION
SOCIAL BASELINE	
SOCIO-ECONOMIC CONDITIONS AND LAND USE	The tourist facility is located on communal land on the farm Rietkuil, approximately 23 km west of Gibeon, on the D1115 road. There is no human activity except tourism and farming in the immediate vicinity and the wider context of the arid Nama-Karoo basin. Therefore the population density is low, up to 1 person per km ^{2} and most likely declining (Mendelsohn J, 2009). Most people in the region are from Nama Khoekhoe origin, although it is affected by an influx of people from other regions The risk to farming is significant due to low, irregular rainfall. Recent economic activity in the western //Karas region shifted from stock farming to low density tourism with much potential to develop further (Mendelsohn J, 2009).
ARCHAEOLOGY	The presence of archaeology in the Nama-Karoo basin is medium. Sites of the Early and Middle Stone Age and the presence of rock art is sparce and the risk is very low (Mendelsohn J, 2009).
CLIMATE	The site has low, irregular rainfall (Mendelsohn J, 2009). Annual rain may reach 150mm with a coefficient of variation of 60+ %. Rain usually occurs later in the rain season, around March (Mendelsohn J, 2009). Average maximum / minimum temperatures are between 36 °C to 4°C, and solar radiation is above average for Namibia ((Mendelsohn J, 2009). The area is usually exposed to high pressure cells in summer and cold fronts during winter may cause cold spells but with little contribution in terms of moisture.
GEOLOGY AND PALAEONTOLOGY	The Main Karoo basin is part of the Nama Group and shows very little mineralisation in the immediate area. Soil cover is Eutric Leptosoils is usually shallow, course material from more recent erosion, up to 30cm deep medium to fine material (Mendelsohn J, 2009). The soil is prone to erosion, with limited ability to retain water.
GROUNDWATER	According to geohydrological data the farm is on very low potential schale (will produce low yield of 0.5 to 3 m ^{3}/hour from groundwater ((Christelis.G, 2011). The risk for groundwater pollution is very low.
FAUNA	Mammal and reptile diversity is average, whereas bird diversity is below average((Mendelsohn J, 2009). Mammal endemism is also above average and reptile endemism is below average whereas bird and insects are below average. Kudu, gemsbok, ostrich and springbok will be common game (Mendelsohn J, 2009).
FLORA	The area lies within the sparse Dwarf Shrub Savanna of the Nama-Karoo where overall plant diversity has been estimated by those authors as 50-99 species and plant endemism is low.

4 IMPACT ASSESSMENT

The impact assessment is based on the key sensitivities identified in the baseline description. The criteria for the assessment is described below (Table 3) and the Impact Assessment application table follows (Table 4).

Standard low key impacts such as water conservation and management, pollution and waste management, as well as health and safety is directly carried forward to the Environmental Management Plan.

Table 3: Impact Assessment Criteria.

Description	
Nature	Reviews the type of effect that the proposed activity will have on the relevant component of the environment and includes "what will be affected and how".
Extent	Geographic area. Indicates whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15 km of the area); regional (limited to ~100 km radius); national (limited to the coastline of Namibia); or international (extending beyond Namibia's boarders).
Duration	Whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.
Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether or not it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).
Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a "no-go" implication regardless of any possible mitigation (an alternative route should be used).
Status of the impact	A statement of whether the impact is positive (a benefit), negative (a cost), or neutral. Indicate in each case who is likely to benefit and who is likely to bear the costs of each impact.
Degree of Confidence	Is based on the availability of specialist knowledge and other information.

Table 4: Impact Assessment

PROJECT ASPECT	IMPACT STATUS/ NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE-MITIGATION	MITIGATION/ ENHANCEMENT (ELABORATED ON IN THE ESMP)	POST-MITIGATION
CONSTRUCTION, OPERATION AND CLOSURE PHASE [1]									
Tourist accommodation facility	Negative Loose soils lead to erosion	Local	Long term	Low	Improbable	High	Medium	Plan and restrict the final site. Restrict construction activities to defined areas.	Low
	Negative Proliferation of tracks and other scars.	Local	Long term	Medium	Probable	High	Medium	Use existing roads only.	Low
	Negative Alien invasive species.	Local	Long term	Medium	Improbable	Low	Medium	Identify and restrict planting of alien invasives that can proliferate in arid environments.	Low
	Negative Groundwater resource	Local	Long trem	Medium	Probable	Medium	High	Implement water saving measures. Recycle water in future.	Medium

[1] The activities of the construction phase are similar to the operation phase. Therefore , the impact assessment for the former also applies to the latter phase.

PROJECT ASPECT	IMPACT STATUS/ NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE-MITIGATION	MITIGATION/ ENHANCEMENT (ELABORATED ON IN THE ESMP)	POST-MITIGATION
	Negative Poaching or illegal harvesting of specifically sought after fauna and flora species.	Local	Short	Low	Improbable	medium	Medium	Poaching of fauna and flora is strictly forbidden and should be penalized via reporting actions to MEFT and the police.	Low
	Negative Uncontrolled harvesting of firewood.	Local	Medium	Medium	Probable	high	Medium	Restrict and manage hard wood harvesting.	Low

5 MANAGEMENT ACTIONS: CONSTRUCTION AND OPERATION

This EMP is intended to guide the construction and operations of the facility on the immediate and surrounding areas in a sustainable manner. The facility must also ensure an appropriate budget is developed for the implementation of the EMP.

The objectives of this plan is to:

- Ensure all environmental safeguards are carried out correctly.
- Minimise adverse impacts on the environment.
- Conserve the biodiversity of the site and surrounds.
- Meet the requirements of all relevant legislation.
- Monitor the project for environmental and social impact.

The strategies to achieve the objectives are:

- Control waste generated from the operation.
- Minimize disturbance to surrounding vegetation, fauna, and environmentally sensitive areas.
- Control and monitor water usage and monitor waste water quality.
- Monitor and review environmental procedures and audit compliance to ensure standards are being maintained whilst highlighting potential areas for improvement.
- Reduce the environmental impacts and their effects by adopting reasonable controls for preventing ground, water, or physical pollution and keeping sites clean and tidy.
- Make use of opportunities to minimize waste and to re-use or recycle materials.
- Train employees and promote environmental awareness and commitment.
- Keep abreast of and comply with legislation, regulations and codes of practice on environmental matters relevant to the operational activities of the tourist villas.

WHO IS RESPONSIBLE?

The overseer and implementing agent of the EMP, will appoint an in-house environmental coordinator to ensure compliance to the EMP in all operational facets of the tourist villas to which its provisions apply. This person must preferably have a technical background of the operating systems to ensure proper implementation of its provisions as well as a personal interest in protecting the environment. This person will regularly give feedback to the owners on the progress made, highlight crisis areas, and enhance positive results.

PERMIT REQUIREMENTS

The following section provides the proponent with permit requirements applicable to specific aspects of his business to enable a sustainable and eco-friendly tourism operation.

Table 5: Legal Compliance and Permit Requirements

THEME	LEGISLATION INSTRUMENT	MANAGEMENT REQUIREMENTS
ENVIRONMENTAL	Environmental Management Act 7 of 2007. EIA Regulations (EIAR) GN 57/2007 (GG 3812).	The amendment, transfer or renewal of the Environmental Clearance Certificate (EIAR s19 & 20).
FORESTRY	Forest Act 12 of 2001 Nature Conservation Ordinance 4 of 1975.	Protected plant species and any vegetation within 100 m from a watercourse may not be removed without a permit.
LABOUR	Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.
WATER	Water Management Act 54 of 1956, R (4 of 1971).	Water licenses are required for water abstraction and use. It is advised that this be verified with the Dir. Of Water Affairs
SEWAGE DISPOSAL	Water Management Act 54 of 1956	Permit required for construction of a wastewater and effluent disposal treatment system. No untreated effluent must be discarded onto open soil through which it can reach underground reserves. The proponent must engage conditions to facilitate proper operation of different sewage treatment systems and their methods of disposal.

The following section provides an overview of the various themes that must be managed effectively to promote environmentally friendly operations at the tourist villas.

6 CONSTRUCTION AND OPERATIONS MANAGEMENT DETAILS

The following table provides a large-scale overview of all the major environmental management themes pertaining to both generic and site-specific construction mitigation details. This table serves to act as quick reference, for the detailed mitigation details that follow below, for the implementation of this operation component of this EMP.

Table 6: Summary of themes included in the management actions of the EMP

THEME	OBJECTIVE	MITIGATION DETAIL	
		GENERIC	SITE-SPECIFIC
WASTE MANAGEMENT	Avoid and where not possible minimise all pollution associated with tourist villas operations.	Section A	Yes
HEALTH AND SAFETY	Safeguard health and safety of labourers and tourists.	Section B	Yes
ENVIRONMENTAL TRAINING AND AWARENESS	Awareness creation regarding the provisions of the EMP as well as importance of safeguarding environmental resources.	Section C	Yes
DUST	Avoid and where not possible minimize dust associated with transport operations	Section D	Yes
ENVIRONMENTAL CONSERVATION	Minimise destructive activity footprint and safeguard biodiversity in ecologically sensitive areas.	Section E	Yes
CORPORATE COMMUNICATION	Provide a platform for staff and management to raise grievances and receive feedback and hence minimise negative conflict	Section F	Yes
SOCIAL SUPPORT CONSIDERATIONS	Ensure due consideration is given to matters regarding the cultural and general wellbeing of the affected community and matters incidental thereto.	Section G	Yes
REHABILITATION	Ensure that due regard is given to reverse any disturbance footprints in the area to as near as possible to its original pre-constuction condition	Section H	Yes

SECTION A: WASTE MANAGEMENT

Effective waste management (including effluent) is essential if the natural ecosystem functions of the concession area are to be protected.

The table below provides mitigation measures in terms of effective waste management at the tourist accommodation facility.

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Waste management plan	Compile a Waste Management Plan that address as a minimum the mitigation measures included below:
Hazardous waste (includes oil, any fuel type, lubricants, paint thinners, paint, acids, etc.)	• A Hazardous waste spill clean-up kit should be kept on site and its stock replenished as needed. The kit will consist of the following items, the numbers of each item is up to the tourist villas management's discretion: o Mid-sized shovels, strong plastic bags, drip trays, dust masks, heavy-duty gloves, and a biodegradable hand wash (degreasing) agent. • Washing of vehicles contaminated with hydrocarbons and maintenance of all vehicles and equipment should take place as far as possible at a designated workshop/wash-bay area: Criteria for a wash bay/workshop area: o The wash bay area should be fitted with a concrete slab with a width not less than 100mm. o This area must be bunded and fitted with an oil trap to collect run-off. • In the event of a hazardous waste spill (fuel, oil, sewage, corrosive materials etc.) from any facility, vehicle or equipment on site : o the spill should be scooped up/collected immediately with a shovel; o disposed of in the marked, sealable and impermeable hazardous waste containers on site; o hazardous waste should always be disposed of in separate containers designated specifically for such items; and o all stored hazardous waste should be transported at least once every two months to the nearest official/recognised hazardous waste treatment facility or whenever these containers are filled to capacity.
Sewage and grey water	• All sewerage systems to be inspected for leakage periodically and fixed immediately and the affected area cleaned up. This is to prevent pollution through direct inflow and/or penetration into the underground water system. • Regular inspection for sludge and scum accumulation in all drains must take place. • Plan dual grey water system separate from black water systems before construction. • If available, restaurant facilities should be equipped with a fat trap to separate biological waste from the grey water. • Grey water from accommodation units can be recycled in the following ways: o Used for dust suppression. o Used to clean equipment. • Grey water can be removed along with the black water on a regular basis provided a formal sewage treatment system or in future, a biological filter septic tank. • Inspect waste water pipes regularly and fix immediately if needed.

ASPECT	MITIGATION MEASURE
General waste	• Personnel should categorise their domestic waste according to types, i.e. Glass, Plastic, Paper, Cans, and Organics. • The faciltiy should be provided with sufficient waste bins and be kept tidy at all times. All domestic and general domestic waste produced on a daily basis should be contained daily. • No inorganic or organic waste may be buried or burned. • All waste containers (bins) should be emptied regularly and its contents disposed of in the allotted skips, and removed from site to the designated waste facility • Plan to upgrade the waste system to recycling and disposal at a municipal system in future. • All recyclable waste needs to be re-used on the site itself, or in future be disposed of in proper waste disposal containers until ready to be taken an appropriate recycling depot. • Fat traps fitted if there is a restaurant kitchen the kitchen must be inspected and cleaned once a week. The fat residues trapped must be removed with other general waste. • All staff members should be sensitive to dispose of waste in a responsible manner and not to litter.
SPECIFIC MITIGATION DETAILS	
Sewage treatment and disposal	• Install a formally designed effluent treatment plant at the tourist villas to cater for all black and grey water treatment needs. • If French drains are used the treatment of the effluent should comply to discharge standards.
Hazardous waste	• The stationary vehicles and generators should be provided with drip trays to prevent further leakages of hydrocarbons onto open soil.
General waste	• Building rubble and waste should be centralized to one small area, kept enclosed, and removed off site for disposal at a designated waste site.
MONITORING REQUIREMENTS	
The following should be done by the environmental coordinator on-site and the report forwarded to the tourist villas directors: A quarterly operational report should be compiled. The report should provide feedback on the following items: ▪ hazardous spill occurrences; ▪ inventory of spill prevention kits; and ▪ capacity levels reached of waste disposal containers and septic tanks and system.	

SECTION B: HEALTH AND SAFETY

This section addresses all health and safety requirements to be fulfilled by the tourist villas.

ASPECT	MITIGATION MEASURES
GENERIC MITIGATION MEASURES	
HIV/AIDS and Malaria training	Approach the Ministry of Health and Social Services to co-opt a health officer to facilitate HIV/AIDS wellness programmes periodically for staff members.
Guest safety	• Enough fire extinguishers should always be available, especially in high fire risk areas i.e. kitchens, etc. • Each accommodation unit should have a full fire extinguisher present at all times. • First aid kits should be readily available in the general guest areas at the tourist villas in the event of an emergency occurring. • General safety procedures should be explicitly displayed in a suitable format (posters, etc.) at risk areas involving guests and staff members.
Ablutions	• All ablution facilities should be kept clean, sanitary and in working condition at all times.
Open fires	• No open and unsupervised fires may be made anywhere on site, except in formal fire designated areas. • Limit and manage wood collected within the. Wood collected for managed fires should be from dead invasive tree species as far as possible.
Road safety	• Off-road driving should not be allowed anywhere outside the demarcated tracks and roads. • All vehicles that transport materials to and from the tourist villas must be road worthy. • Drivers that transport materials should have a valid driver's license and should adhere to all traffic rules. • No new access roads will be allowed. • A speed limit of 30km/ h should be enforced on all two-tracked gravel roads. • Use vehicles in 4x4 mode to assist with track protection.
Personnel safety	• No person should be allowed to smoke close to the designated fuel storage area. • No workers should be allowed to drink alcohol during work hours. • No workers should be allowed on site if under the influence of alcohol.
SPECIFIC MITIGATION MEASURES	
Guest Safety	• A set of two fire extinguishers should be placed at a designated fuel storage area, the kitchen, restaurant and lounge area (if available) as well as cooking facilities and at staff accommodation units. • Appropriate direction signage must be displayed for guests and staff to safe points in the event of a fire outbreak. • Prepare a fire drill protocol for the tourist villas and train staff members to execute such fire drills.

ASPECT	MITIGATION MEASURES

Ablutions	• Staff ablution facilities should comply to the same criteria set out for the tourist facility.
	• The staff ablution facilities must be kept clean by the staff members themselves. Failure to do so will negatively affect human health (spread of e-coli and other harmful microbial agents and bacteria).
	  ○ Workers responsible for cleaning the toilets should be provided with latex gloves, masks, and biodegradable cleaning agents.
	  ○ Cleaning schedules along with the responsible staff members should be compiled and available daily for implementation.
	• The tourist facility should embark on a health awareness campaign highlighting the importance of personal and workspace hygiene to its staff members, and that it contributes to a healthy natural environment.

Open fires	• A designated cooking facility must be provided at the staff housing units. • A fire extinguisher should also be available at the cooking facility.
MONITORING ACTIONS	
The EC should compile a checklist of all health and safety aspects contained in this section and once a quarter do a compliance assessment. The findings should be discussed at management meetings, and all recommendations for improvements proposed to be implemented with immediate effect.	

SECTION C: ENVIRONMENTAL TRAINING AND AWARENESS

This section describes training employees to consider the environment better in their daily activities at the tourist villas and raise awareness of the need to keep the tourist villas operating sustainably.

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Environmental induction (training)	All personnel are to undergo environmental induction (training), which should include as a minimum the following: • Explanation of the importance of complying with the EMP. • Discussion of the potential environmental impacts of the operating activities. • Employees' roles and responsibilities, including emergency preparedness. • Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities. • Explanation of the specific mitigation measures within this EMP especially unfamiliar provisions.
MONITORING REQUIREMENTS	
The EC to request attendance registers be completed by all personnel attending induction training sessions.	

SECTION D: DUST AND SUBSTRATE PROTECTION

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Dust	• A speed limit of 30 km/hour to be enforced on all gravel tracks, to reduce excessive dust creation and track deterioration • Use vehicles in 4x4 mode to assist with track protection. • No new tracks may be created.
SPECIFIC MITIGATION DETAILS	
	• Major tracks are prone to erosion and should be stabilised and protected against water erosion. • Only use one designated borrow pit as a source of road maintenance material and fill for construction.
MONITORING REQUIREMENTS	
The manager must monitor the road condition and provide an annual budget for road maintenance. Monitor erosion at the tracks and the borrow pit.	

SECTION E: ENVIRONMENTAL CONSERVATION

The following are mitigation measures prescribed to manage the sustained functioning of the ecosystem in which the tourist villas is situated.

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
Conservation of vegetation and ecology	• Without a harvesting permit (See Table 5), no protected trees or plant species may be permanently removed, cut down or felled. • No alien and/or invasive species that thrive in arid climates must be introduced on the tourist facility grounds.
Conservation of fauna (includes livestock)	• No harvesting of protected species are allowed. • No hunting, trapping, setting of snares, or any other disturbance of any fauna species allowed.
Sustainable water use	• The tourist facility should develop a written water management policy that will aid in the reduction of water use and discourage water polluting activities, and should include the below principles as a minimum: o Washing of vehicles as a principle should be done with a bucket of water and not a hose, to prevent unnecessary water wastage. However, heavy muds soiled vehicles can be hosed down to loosen mud. o Fitting low flow shower heads. o Use toilet cisterns with small volume flush capacity. o Gardens to be watered in the evening only. o Avoid big lawns. o Cover swimming pools frequently to prevent excessive evaporation of water out of it. o Backwash water from swimming pools can be used to water gardens. Consider the quality of the water first. o Use only biodegradable washing agents for the laundry services. o Only use the washing machines with full loads at a time. o Front loader washing machines manufactured with European standards (and not American standards) use much less water.
SPECIFIC MITIGATION MEASURES	
Conservation of vegetation and ecology	• Limit the footprint of any road building to only essential sections. • Relocate protected succulent and aloe species affected by road building or facility construction process to it's immediate safe vicinity, mark position (physically and with gps) and monitor it's survival. If needed, take additional corrective action to assure survival. • Prohibit harvesting of protected species. • Establish an awareness campaign to highlight the conservation importance of the area among guests and staff members. For example, have someone from staff host a "visual presentation" to this effect; develop pamphlets, or even conversationally engage with guests, etc.
MONITORING REQUIREMENTS	
• Monitor the construction activity stays within the designated footprint. Penalise the contractor for negligence. • Monitor tourist facility grounds and track area and record all negligent plant destruction sightings, and apply the penalty system to all guilty parties.	

ASPECT	MITIGATION MEASURE
	• Monitor relocated specimens quarterly and assess relocation success. • Ensure all additional planting on tourist facility grounds is done with the correct indigenous flora and ensure that responsibility for successful establishment is provided for. • Establish an accurate water consumption measuring system at the tourist facility (in all high water demand areas, i.e. kitchens, gardens, staff accommodation and guest accommodation areas, etc.). Monitor the readings on these devices on a monthly basis to ascertain progress made in reducing water use. Implement water savings programmes when you see excessive and unsustainable use of water.

SECTION F: CORPORATE COMMUNICATION

This section mitigates the lack of a functioning communication structure amongst tourist villas personnel, from management to normal staff. The effective implementation of this plan rests with those made responsible to carry it out and those using it, to repair the observed weak workplace cohesion amongst employees at the tourist villas.

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION DETAILS	
General communication matters	• The EC shall take responsibility for the management and implementation of all provisions of this EMP. • The EC shall at designated management meetings report on the status of the implementation of all provisions of the EMP. • The EC should implement the environmental awareness training as stipulated in **Section D**. • The EC must list the stakeholders with whom the tourist facility will liaise and their contact details with whom ongoing communication would be required for duration of the financial year. This list, together with the Communication Plan must be agreed upon and given to the EC before the EMP is implemented. • The Communication Plan must be reviewed annually and improvements made to it only upon the approval of the owners. • A copy of the EMP must be available at the tourist facility office and should be accessible to everyone. • Key representatives from the staff committee need to be invited to attend general meetings to provide input into plans undertaken by the tourist facility that will affect workers and to provide progress updates of ongoing projects. • The EC should liaise with the staff representatives regarding all issues related to community. • A procedure should be put in place to ensure that concerns raised have been followed-up and addressed. • The EC should inform all staff about the availability of the complaints register in writing.
SPECIFIC MITIGATION DETAILS	
Communication plan	The proponent should draft a Communication Plan, which should outline as a minimum the following: • How employees and management will be consulted on an ongoing basis; • Make provision for grievance mechanisms – i.e. how concerns can/ will be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event feedback is deemed unsatisfactory.
MONITORING REQUIREMENTS	
• Keep constant updated records of all concerns and issues logged during the course of the year. • Monitor the speed and effectiveness of remedial actions taken upon concerns and issues raised by the workforce.	

SECTION G: SOCIAL SUPPORT CONSIDERATIONS

This section highlights community inclusivity/ participation in benefit sharing as an off spin from operating the tourist villas. The section below is meant as a value addition to their current efforts and not a complete re-invention of their current strategy.

ASPECT	MITIGATION MEASURE
GENERIC MITIGATION MEASURES	
Social responsibility	• Initiate a programme that advocates staff development through character development. • Encourage workplace skills development amongst staff members of all ranks. • Assist in local enterprise developments through the following approach: ○ Have a policy in place that identifies the kind of projects that will be supported as a priority depending on existing deficiencies in the community.
SPECIFIC MITIGATION MEASURES	
Social responsibility	• Allow for children living in this remote area that may require assistance to attend school. • Assist with access to heath services for workers and their families.
MONITORING REQUIREMENTS	
• The EC in collaboration with the staff committee representative to monitor and manage any social responsibility project initiated by the tourist faciltiy, and provide progress feedback as the project develops to management.	

SECTION H: REHABILITATION

This section aims to illustrate the need to return the "site" to as close to its natural conditions as possible with rehabilitation measures to the biophysical environment in the event of the tourist villas closing down.

ASPECT	MANAGEMENT REQUIREMENT
Closure Plan	• The tourist facility must develop a closure plan and in that plan describe how they will rehabilitate the site and what should happen to the facilities.
EMP Implementation Record during operations closure	• Filing and dating of all Bi-annual ECC compliance reports including: o Waste management plan records. o Wastewater discharge quality records. o Water management and savings records. o Plant relocation monitoring records. o Erosion inspection records. • A final site inspection to be conducted and documented 6 months after all activities associated with the exploration initiative has been completed.
Financial Provisions	• Allocate appropriate budgetary allowances for all possible rehabilitation activities and initiatives (including such requirements for a communication strategy).

7 CONCLUSIONS AND RECOMMENDATIONS

From the findings of the study done the following conclusions were made:

- The position of the tourist facility will be within a less sensitivity habitat.
- The impacts will be further managed by means of footprint restriction, relocation and monitoring, is likely the most important aspect of the EMP.
- Groundwater resource and pollution risk should be managed by means of discharge monitoring or treatment systems that provide re-usable garden water.
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It is recommended that the JEB Guest Farm receive environmental clearance provided it implements the provisions set in the EMP and adheres to any additional recommendations listed on the clearance certificate.

8 REFERENCES

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Mendelsohn J, J. A. R. C. R. T., 2009. *Atlas of Namibia.* 3rd ed. Cape Town: Sunbird publishers (Pty) Ltd.

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9 APPENDIX A: EAP CV

CURRICULUM VITAE

Name:	Norman van Zyl
Profession:	Environmental management; project/engineering development and management, feasibility studies
Date of birth:	27 July 1968
Years with firm/entity:	since July 2009
Nationality:	Namibian
Membership in professional societies:	Environmental Assessment Practitioner Association of Namibia. (EAPAN); International Association for Impact Assessment South Africa (IAIASA)

Key Qualifications:

Norman van Zyl is an environmental project management consultant based in Windhoek. He has over 20 years of experience in environmental management, project evaluation, planning and management, engineering planning and design as well as business strategy and transformation.

Norman was the lead project coordinator on various environmental assessments, feasibility studies, engineering development projects, and business transformation projects. These include environmental assessments and feasibility studies in the engineering and project development fields.

Education:

Graduate Studies:

Bachelors of Arts (African Studies), *University of Stellenbosch, South Africa, 1989*

National Diploma (Civil Engineering – S-Stream), *Free State Technicon, South Africa, 1997*

Post Graduate Studies:

BA Honours (Psychology/Industrial Psychology), *University of the Orange Freestate, South Africa, 1997*

Master of Science (Project Management), *University of Cape Town, South Africa, 2004*

Employment Record:

2009	**Enviro Dynamics** : Environmental Assessment Practitioner
2008	**Consult Buro**: Associate with Consult Buro Business Consulting Unit
2004 – 2008	**Roads Contractor Company** : Project Manager for the RCC Turnaround Project
1998 – 2004	**Windhoek Consulting Engineers** : Senior Civil Engineering Technician.
1994– 1998	**Buhrmann & Partners** : Civil Engineering Technician
1990 – 1990	**Youth for Christ**. Y–One Team Member, Namibia.

Languages:

Language	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
German	Poor	Fair	Fair
Afrikaans	Excellent	Excellent	Excellent

Keynote Professional Experience in Environmental Impact Assessments:

2020	**Nampower Wind Parks Lüderitz (40MW and 50 MW) Rosh Pinah (40MW)**
	NamPower
2019	**Divundu Bulk Water Supply – Extension Divundu East**
	Namwater
2017	**11kha solar park and industrial area site alternatives screening process.**
	SOLARFACTOR
2016	**EIA and EMP for the Ondangwa District Hospital**
	Client: MOHH
2015	**Lead practitioner on the 3 EIAs (marine, pipeline, gas power station) for Proposed Xaris Walvis Bay Power Plant and Gas Supply Facility.**
	Client: Xaris
2014	**ESIA for the 450 km 400kV line between Kunene and Oshivelo substations**
	Client: Nampower
2013	**Otjivalunda mine EIA.**
	Client: Gecko mining
	2012 **Sandpiper Namibia Marine Phosphate Terrestrial EIA**
	Client: Namibia Marine Phosphate
2011	**EIA for the proposed Lüderitz Wind Farm**
	Client: Sojitz International / United Africa Group
2009	**Environmental Impact Assessment for Oujere Lifestyle Village at Von Bach Dam .**
	Client: Tungeni/NWR

By my signature below I certify the correctness of the information above.

Norman van Zyl

Signature of Staff Member