ENVIRONMENTAL MANAGEMENT PLAN

BOULDERS SAFARI CAMP, NAMIBRAND NATURE RESERVE

Prepared for NamibRand Safaris (Pty) Ltd in support of an application for Environmental Clearance for Boulders Safari Camp in the NamibRand Nature Reserve.

February 2026

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT, 2007 (Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE

Revenue stamp or revenue franking machine impression

APPLICATION NO 6539

PART A: DETAILS OF APPLICANT

PROPONENT	
1. Name	NamibRand Safaris (Pty) Ltd
2. Business reg no/ID no	69/15837
3. Correspondence Address	PO Box 5048, Windhoek
4. Name of Contact Person	Jacques Junius
5. Position of Contact Person	Operations Manager

ENVIRONMENTAL ASSESSMENT PRACTITIONER	
1. Name	Henriette Potgieter
2. Correspondence Address	PO Box 11867, Klein Windhoek
3. Name of Contact Person	Henriette Potgieter
4. Position of Contact Person	Environmental Assessment Practitioner
5. Telephone No	081 312 1606
6. Fax No	n/a
7. Email Address	hoenspotgieter@gmail.com

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. The environmental clearance certificate is for:

BOULDERS SAFARI CAMP

2. Details of the activity(s) covered by the environmental clearance certificate:

Title of Activity	TOURIST ACCOMMODATION
Nature of Activity	LODGE
Location of Activity	NAMIBRAND PRIVATE NATURE RESERVE, HARDAP REGION
Scale and Scope of Activity	EMP WITH PROJECT DESCRIPTION ATTACHED

PART C: DECLARATION BY APPLICANT

I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental clearance certificate may be suspended, amended or cancelled if any information given above is false, misleading, wrong or incomplete.

	JACQUES JUNIUS	OPERATIONS MANAGER
Signature of Applicant	Full Name in Block Letters	Position

On behalf of NAMIBRAND SAFARIS (PTY) LTD

3 FEB 2026
Date

Declaration of authorship

APPLICATION NUMBER: 6539
Project title:
ENVIRONMENTAL CLEARANCE FOR THE MANAGEMENT OF AN EXISTING LODGE IN THE NAMIBRAND PRIVATE NATURE RESERVE: BOULDERS SAFARI CAMP

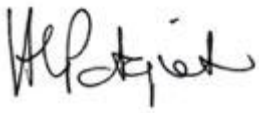
I, Henriette Cornelia Potgieter, (full name of Environmental Assessment Practitioner - EAP) understand and agree that the information I have furnished in this submission will be reviewed by the Office of the Environmental Commissioner (OEC). I accept that the Environmental Commissioner will hold me accountable in terms of Section 43(1)(b) of the Environmental Management Act, Act No. 7 of 2007 for any inaccurate or misleading information knowingly provided in the following documentation.

Tick the box(es) applicable to your submission:

- ☐ Pro Forma Environmental Contract for Mining Claims
- ☐ Environmental Questionnaire For Mining
- ☐ Scoping Report
- ☐ Environmental Impact Assessment (EIA)
- ✔ Environmental Management Plan (EMP)
- ☐ Consent from relevant authority

I certify and acknowledge that the provision of such information will impede the lawful carrying out of the duties, responsibilities and functions of the Environmental Commissioner. I declare that the information submitted is my own work. All direct or indirect sources used are acknowledged as references.

Consultancy Name: Henriette Potgieter

EAP Signature: 

Date: 5 February 2026

NB- To be submitted jointly with Scoping Report, EIA, EMP documents to the Office of the Environmental Commissioner

Project information

Application 6539

PROJECT	**ECC for Boulders Camp**
PROPONENT	**NamibRand Safaris (Pty) Ltd**
DOCUMENT NAME	**Background Information Document**
DOCUMENT VERSION	1
DATE	4 February 2026
AUTHOR	Henriette Potgieter

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DISCLAIMER

This document was prepared by Henriette Potgieter with all reasonable skill, care and diligence, utilising resources devoted to the project by agreement with the proponent. Information contained herein is based on the best professional interpretation of data at the time of writing. Data was collected by the author and provided by the proponent, accepted in good faith as being accurate and valid at the time of writing.

This report, either in part or in entirety, may not be relied upon by other parties without written consent from Henriette Potgieter. This report may be used by the proponent only in the application for environmental clearance, and any other use of this document, either parts of it or in its entirety, must be pre-approved in writing by Henriette Potgieter.

No warranties or guarantees are expressed or should be inferred by any third parties. Henriette Potgieter disclaims any responsibility to the proponent and others regarding any matters outside the agreed terms of reference and declares that she has no material interest in the outcome of the project nor any financial interest in the project, she does not hold shares in the project and is not employed by the proponent.

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ABBREVIATIONS

Abbreviations used in this report.

DOE	Department of the Environment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
IAP	Interested and Affected Party
MAWF	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
NHC	National Heritage Council
Regulations	Environmental Impact Assessment Regulations, GN 30 of 2012
The Village	The proponent's base of operations on farm Wolwedans

1 INTRODUCTION

The proponent, NamibRand Safaris (Pty) Ltd, is applying for an ECC for Boulders Camp, an existing tourist lodge on farm Aandster in the NamibRand Nature Reserve. The proponent owns Boulders and three other lodges in the Reserve, marketed under the collective name Wolwedans.

In accordance with the Environmental Management Act (7 of 2007) (EMA) and the EIA Regulations GN 30 of 2012 the construction and operation of a tourist lodge outside a municipal area is a listed activity that requires an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT).

1.1 This document

This Background Information Document (BID) was compiled with the purpose of informing the Department of Environmental Affairs (DEA) of the scope of the activity so that they can screen the project and decide what level of EIA is required to obtain environmental clearance.

This EMP is part of a scoping level Environmental Impact Assessment (EIA) and is submitted to MEFT in support of an application for an Environmental Clearance Certificate (ECC). It was compiled in accordance with the Environmental Management Act (7 of 2007) (EMA), the EIA Regulations of 2012, and provisions in the HCC and COC.

A Scoping study with impact assessment was conducted for this project and found no highly significant impacts that cannot be prevented and/or mitigated to a low significance. The potential impacts identified in the Scoping Report are listed in this EMP together with prevention and/or management actions.

1.2 Land use and ownership

The NamibRand Nature Reserve (NRNR) consists of 13 privately owned, former livestock farms that dropped their internal fences and signed management contracts to rehabilitate the land for conservation. It was registered as a non-profit private nature reserve in 1992, and 15% of the reserve is set aside as a wilderness where no development is allowed. Development and management regulations are in place, limiting the total number of tourists and determining the types of development and land use regimes allowed. Infrastructure such as roads (except public roads) is controlled by NRNR.

Farm Aandster is owned by the Aandster Trust, and tourism is the only commercial activity that takes place on the farm.

NRNR has been declared a Dark Sky reserve by DarkSky International, and it is a Wilderness Quiet Park, awarded by Quiet Parks International. Both these international non-profit organisations conduct regular audits in NRNR, including Boulders Camp, to ensure compliance with their criteria.

1.3 Methodology

The standard methodology for an existing tourism lodge obtaining an ECC was followed. The first step was to register the project with the Department of the Environment (DOE) of MEFT and submit a Background Information Document to inform their screening process. A screening notice was emailed to the practitioner stating the requirements for obtaining an ECC. These are given in Table 1, with the sections in this EMP that deal with each requirement.

Table 1. Requirements in screening notice

Screening notice requirements	This EMP
EMP	This document
Confirmation of screening notice received (through email)	APPENDIX I
Preliminary Site Map (Project boundaries) with coordinates (decimal degrees) and a Legend	Figure 2
CV of Environmental Assessment Practitioner (EAP)	APPENDIX II
Declaration for the Submission of Assessment Reports and other Support Documents	Front matter (before title page)

The practitioner's first step was a desktop study during which the proponent's existing protocols and the management plans of NRNR were examined. A site visit was conducted on 10 September 2025 to observe the operation, ecological factors and any potential impacts the project might have on the environment in situ. The final step was to compile this EMP using information obtained from the proponent and the site visit.

1.4 Aims of this EMP

The main aim of this EMP is to propose measures to prevent or mitigate any potential negative impacts.

The EMP demonstrates the commitment of NamibRand Safaris (Pty) Ltd to follow current best practices for sustainable tourism. It constitutes an environmental contract between the proponent and the Government of the Republic of Namibia: MEFT.

The EMP is a living document that will be updated as new information, policies, authority guidelines and technologies develop.

1.5 Eco Awards Namibia

Boulders Camp has a valid Eco Awards certificate. APPENDIX VI contains the front page of their latest assessment, showing that they were awarded 98% for their sustainability practices.

The Eco Awards Namibia certification programme is recognised by international sustainability certification schemes and most importantly, the Ministry of Environment, Forestry and Tourism (MEFT) is an active member of the Eco Awards alliance with a

dedicated representative attending management meetings, and serving on the assessment review committee.

Independent assessors go to a lodge for two days where they evaluate the sustainability and environmental sensitivity of the operation against an extensive set of criteria based on international best practice. The independence and status of the programme result in audits that provide reliable information on the sustainability practices of a lodge.

2 PROJECT DESCRIPTION

2.1 Location

The NRNR is located in the Hardap Region and shares a 100km border with the Namib Naukluft National Park to the west. Figure 1 shows the location of the project in NRNR.

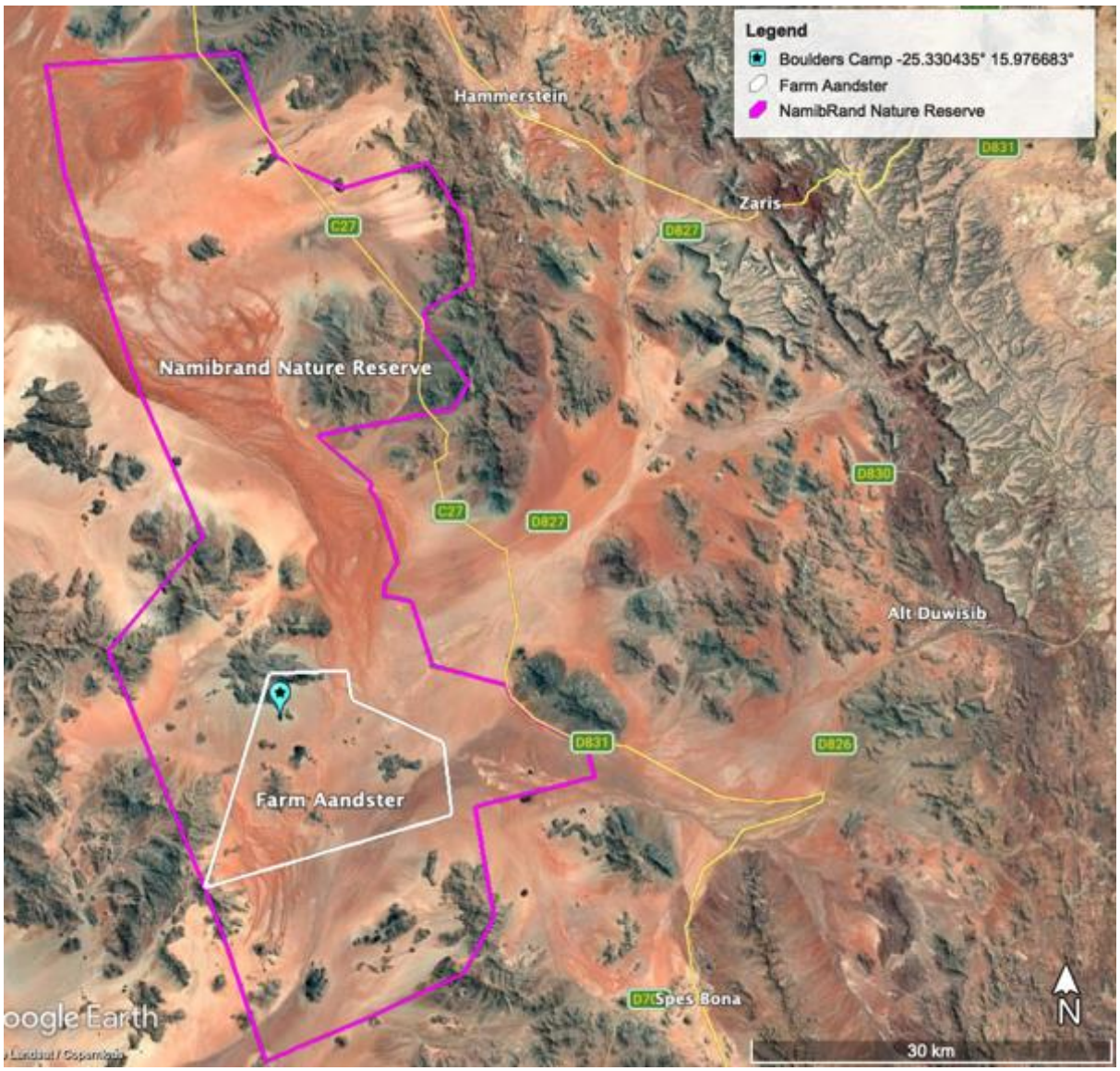

Figure 1. Location of Boulders Camp in the NamibRand Nature Reserve.

The layout of the infrastructure and coordinates of the footprint are given in Figure 2.

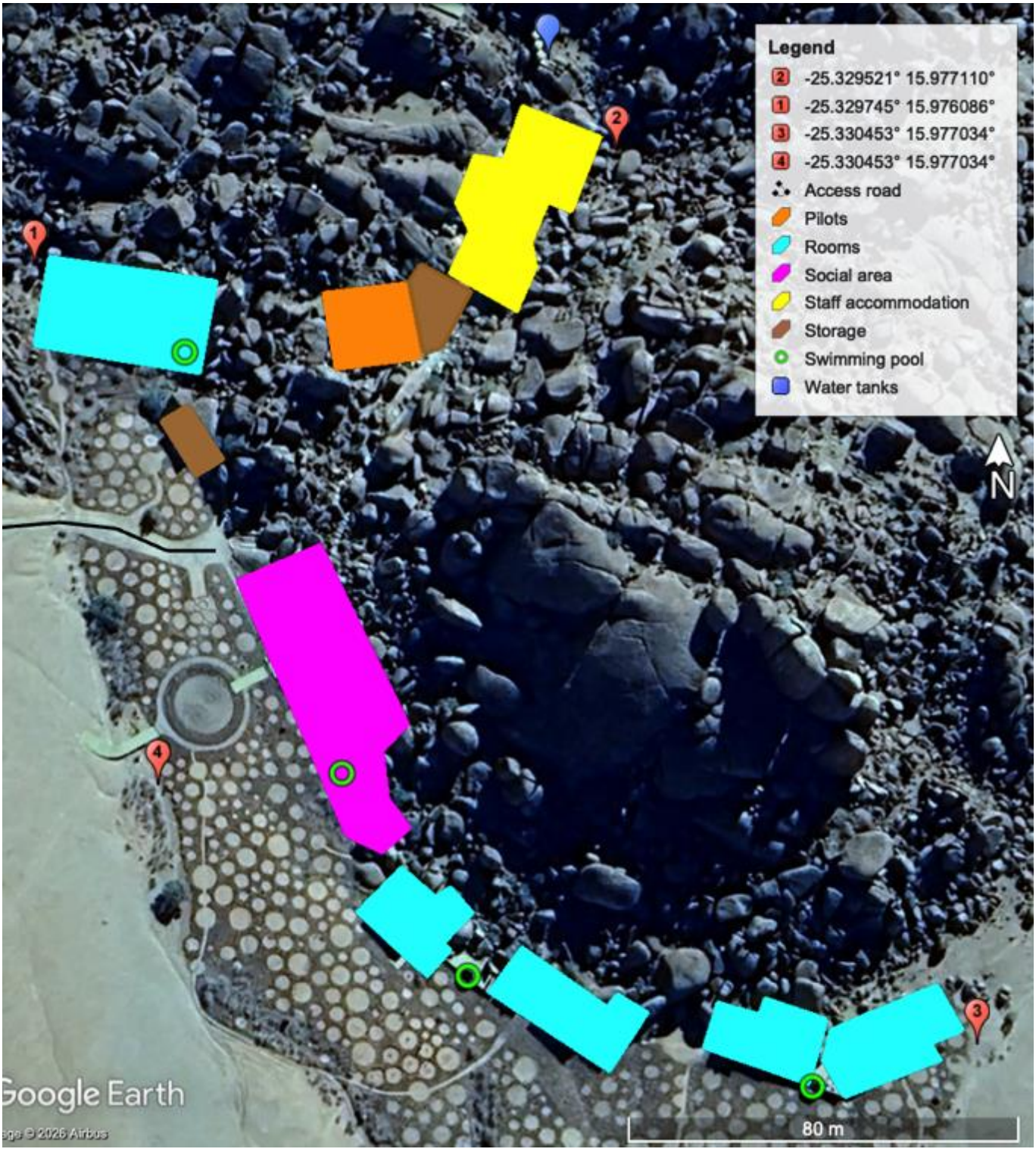

Figure 2. Boulders Camp footprint and infrastructure

2.2 Tourist activities

The following activities, led by professional guides, are offered to guests staying here:

- Nature drives
- Walk with a Bushman tracker
- E-bike riding
- Spa treatments

All guests drive or fly to the Aandster farmhouse where they are collected by a guide and taken to Boulders Camp 19 km away. No self-driving is allowed.

2.3 Operational system

Currently, Boulders Camp is opened specifically for the duration of every reservation. After the guests leave, the lodge is cleaned, emptied of supplies, and locked. The staff, vehicles and any remaining perishable supplies go back to the proponent's base of operations on farm Wolwedans, called the Village. Supply deliveries (food, beverages, maintenance and housekeeping) are made to the Village, all stock is stored there and issued to the lodge as needed.

Maintenance teams are despatched from the Village for routine and specialist maintenance to the infrastructure. All vehicles are taken to the Village for services and repairs.

2.4 Infrastructure

A total of 21 people can be accommodated at any one time: 12 guests and 9 staff members. The various buildings are given in Figure 2.

Structures consist of gumpoles supporting wooden decks. The walls are fibre cement panels on a wooden frame, covered with cement plaster. All supporting structures are wooden posts, and the roofs are canvas over a metal frame.

There are 5 en suite guest rooms, each with a veranda, outside shower, and sharing 3 splash pools, as well as two en suite rooms for paying pilots. The social area has a reception, bar, lounge, dining room, guest toilet, staff toilet, massage deck and outside lounge and dining areas. Back-of-house has a kitchen, scullery, food, housekeeping and basic maintenance storage.

The staff village has 6 bedrooms: 1 en suite room for the manager, 2 single rooms and 3 double rooms sharing two bathrooms. There is also a staff kitchen and dining room.

2.5 Services

Water is sourced from a borehole 3 km from camp and pumped to 2x 5,000 and 5x 1,000 litre holding tanks.

Solid waste is sorted at source and put in wheeled bins with lids. After every booking the solid waste is taken to a recycling and disposal plant at Wolwedans Village.

Sewage and wastewater go into the sewerage system (Figure 3). There are

- 3 x 3chamber cement catchment tanks,
- 4 septic tanks, 3 for the guest rooms, 1 for the social area,
- 1 x septic tank for the pilots' rooms and staff village.

A bacterial break-down product is used in the septic tanks and from there the effluent goes into a French drain.

A PV system putting out 30kW provides all the electricity for the lodge.

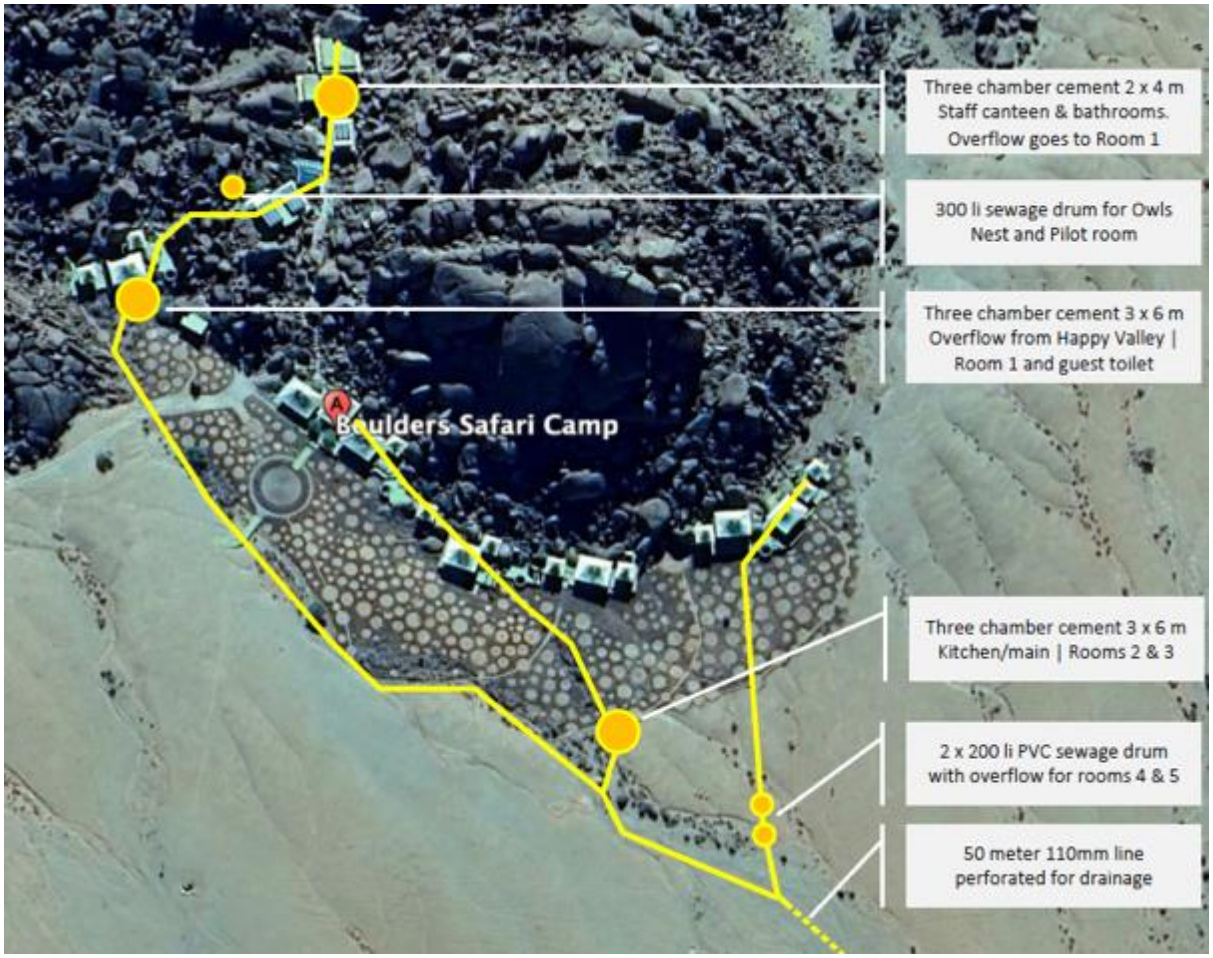

Figure 3. Sewerage plan

3 IMPLEMENTATION

NamibRand Safaris (Pty) Ltd is responsible for the day-to-day implementation of this EMP. All contractors, subcontractors, visitors and staff are made aware of the contents of the EMP and their roles in following it.

The objectives of the (EMP) include:

1. Assuring MEFT (the Environmental Commissioner) that suitable and sufficient mitigation and monitoring measures are in place
2. Identifying potential impacts associated with the project
3. Proposing measures to prevent or mitigate negative impacts and enhance positive impacts
4. Providing a monitoring tool for project management and MEFT
5. Providing a management tool to ensure a consistent approach to lodge management
6. Compliance with environmental legislation
7. Informing staff how to implement sustainable environmental practices

This EMP illustrates the commitment of NamibRand Safaris (Pty) Ltd to follow sustainable tourism best practices. It is a legally binding document and constitutes an environmental contract between NamibRand Safaris and the Government of the Republic of Namibia: MEFT.

The EMP is a living document that will be updated as new information, policies, authority guidelines and technologies are developed and become available.

3.1 Training

Appropriate training, education and experience for the tasks that are expected of employees will result in competence of the workforce. All employees will receive induction training upon arrival on site, and the manager on site will keep a register of completed training.

A site induction should contain at least the following components:

- Definitions of “environment”, “social”, “impact”, etc. in language that is understandable by the trainees
- The risks and potential impacts associated with the project
- How can risks and impacts be minimised
- Environmental rules of the project
- The roles and responsibilities of the trainee in relation to the environment and this EMP
- Procedures to follow in the event of an environmental incident
- The consequences of non-compliance (Section 3.3), including the possibility that the ECC may be withdrawn, and the project forced to close.

3.2 Compliance

- NamibRand Safaris (Pty) Ltd will avoid or minimise potential impacts on the by complying with the guidelines in this EMP.
- Immediate action will be taken if EMP measures are not followed.
- All required environmental authorisations, permits and licences have been obtained; their stipulations are implemented; and renewal will be done before expiry.
- Contractors and new employees will be informed of the high value placed on the environment and will be aware of the measures in the EMP and their responsibility in carrying out those measures.

3.3 Consequences of non-compliance

This EMP is a legally binding document. The consequences of non-compliance will be stipulated in every employment contract as well as in contracts with contractors and subcontractors and will include but are not limited to:

- Fines and penalties to the contractor
- Legal action
- Cancellation of contract
- Suspension of work
- Disciplinary action if the perpetrator is an employee of the proponent
- Withdrawal of ECC

3.4 Environmental incident reports

Construction phase: Environmental incidents will be reported to the construction supervisor and Operations Manager.
Operational phase: Environmental incidents will be reported to the Lodge Manager and Operations Manager.

3.5 Contractual obligations

The proposed project is regulated by two contracts, the HCC and COC. The HCC takes precedence in the event of discrepancies. The JMC, consisting of a representative of the WBD conservancies, NamibRand Safaris (Pty) Ltd and MEFT each and meeting quarterly, will monitor compliance with these contracts and the EMP.

4 IMPACT MANAGEMENT

4.1 Potential impacts

The NRNR is located in the pro-Namib, an area with highly sensitive ecosystems and habitats.

An overview of some potential environmental and socio-economic impacts that may result from the operations of a safari lodge, taking the sensitivities of the area into account, is given here. The impact management tables (Table 3 and Table 4) describe potential negative impacts and recommend prevention, management and mitigation measures for each described impact.

1. Over-abstraction of water may deplete the aquifer.
2. Soil and groundwater water contamination caused by sewage, hydrocarbon leaks and refuelling activities.
3. Soil damage and compaction caused by driving vehicles off-road and by digging trenches and pits for infrastructure.
4. Spread of invasive alien plants.
5. Light pollution.
6. Disturbance of animals in their daily movements and foraging behaviour caused by vehicles and general human presence.
7. Damage to plants and habitats.
8. Solid waste leads to pollution, ecological degradation, visual pollution and injury to animals.
9. Swimming pools pose a drowning risk to animals.

4.2 Management measures

Table 3 and Table 4 contain a register of potential impacts and management measures for each impact. The table headings are discussed here.

Nature of impact

Description of potential risk sources (impacting activities) and the mechanisms through which an impact may occur are described.

Management

Management measures are proposed for each identified impact. These measures take the form of specific management actions that aim to avoid, minimise or remedy negative impacts, together with adjustments to respond to unforeseen impacts.

Responsibility

Successful implementation of an EMP relies on defined roles and responsibilities. NamibRand Safaris (Pty) Ltd has allocated duties to the individuals and teams (Table 2) who are responsible for carrying out the management actions listed in the column *Mitigation*. The abbreviations used in Table 3 and Table 4 are given in brackets.

Table 2. Responsible individuals and teams.

Person/Team	Responsibilities
Director/Owner (Dir)	The director, owner or majority shareholder of the proponent who makes the executive decisions and is ultimately responsible for the lodge and this EMP.
Operations Manager (Ops)	Overall responsibility for implementation of this EMP in situ. Support to construction and lodge staff for the implementation of environmental management measures. Provide financial and technical resources for the project and implementation of the EMP. Keep a register of employees and contractor staff who completed site induction. Notify the relevant authorities in the event of a serious environmental incident. Ensure employees and contractors understand and comply with this EMP. Keep a record of environmental complaints and responses from the community, public and authorities. Induction training for contractors and new employees. Ongoing training for lodge staff.
Lodge Manager (Mgt)	Supervision of lodge staff. Responsible for staff & guest health and safety. Implement this EMP.
Maintenance team (Maint)	Maintenance of infrastructure. Repair of infrastructure.
Guides	Transport of guests on game drives and airstrip transfers. Safety of guests, staff and other visitors during transfers and on game drives. Ensure adherence to the guiding protocol. Sharing information with guests, working visitors and other employees about environmental responsibilities and sustainability.
Contractors	This refers to temporary employees and any specialist contractors. Ensure all contractor staff are familiar with the provisions in this EMP and how they pertain to each employee's tasks. Implement the measures in this EMP while on the reserve. Adhere to any relevant statutory and legal requirements. Report environmental incidents to the Operations Manager and the Lodge Manager. Identify potential risks and report them to the Operations Manager.

Tools/monitoring

This column refers to actions, equipment, procedures, protocols and/or guidelines that enable the implementation and monitoring of the management actions. The proponent is using the following documents at their four lodges in NRNR:

1. Wolwedans Development Plan 2030 and beyond, APPENDIX III
2. NamibRand Nature Reserve Management and Development Plan, APPENDIX IV
3. NamibRand International Dark Sky Reserve Lighting Management Plan, APPENDIX V

4.2.1 Construction impacts and management

No construction is currently planned, but ongoing maintenance and ad hoc construction projects are carried out by a permanently employed team residing at the Wolwedans Village. Table 3 is valid for maintenance work during the operational phase, as well as any future construction.

Tools referred to in this table: WDev – Wolwedans Development Plan 2030; Res Mgt – Reserve Management and Development Plan; DarkSky – NamibRand International Dark Sky Reserve Lighting Management Plan.

Table 3. Management actions during construction.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
BIODIVERSITY			
Destruction of organisms and their habitat. Mortality of amphibians, reptiles, birds, mammals. Snakes are particularly vulnerable because they are usually killed on sight. Loss of terrestrial flora.	Avoid any nests, burrows, dens and roosting sites.	Dir. Ops	Identify sites with nests, burrows, dens. Demarcation of sensitive sites.
	Educate contractor and their employees as well as lodge staff to avoid sensitive sites.		
	Venomous snakes should be removed by a specialist, and other snakes should be avoided.	Contractor	Induction. Construction contract.
	Educate staff in the ecological value of snakes and how to avoid them.		
	Speed limit for heavy vehicles is 20 km/h. Other vehicles keep to the NamibRand speed limit at all times.		Speed limit
Disturbance of animals and interference with their behaviour, daily foraging and movements.	Construction activities takes place only during daylight hours. Vehicles and machinery are fitted with noise minimising implements where possible. Confine all construction, driving and human movement activities to defined development and accommodation areas.	Dir. Ops. Contractor	Induction. Construction contract.
Poaching of wildlife. Tortoises and small mammals are particularly vulnerable.	The greater area around building sites should be searched for snares during the construction phase and after construction is complete.	Dir. Ops. Contractor	Induction. Inspections & sign-off by either Dir or Ops
	Restriction of contractor staff movement	Contractor	

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
	Inspection of contractor staff housing to check for animal parts and/or products	Contractor	
Damage to vegetation, leading to a loss of habitat integrity and disruption of ecosystem functions. Poaching of plants for trade.	Motorised access is limited to existing tracks and defined development areas.	Dir. Ops. Contractor	Induction. Inspections & sign-off by either Dir or Ops
	No off-road driving is allowed under any circumstances.	Contractor	
	Only existing, permitted access roads and paths are used by construction workers and vehicles at all times.	Contractor	
	No firewood may be collected.	Contractor	
	Carry out regular inspections of the staff village and staff transport, looking for poached plants or animal parts.	Dir. Ops. Contractor	
	Rehabilitate laydown areas, temporary construction facilities and construction tracks	Dir. Ops. Contractor	
Damage to/removal of protected species	Continuous monitoring to ensure that no protected species are impacted.	All	Demarcation of sensitive sites.
Spread of invasive vegetation	Introduced construction materials must be free from seedlings and seeds of alien invasive vegetation.	Contractor	Site inspections.
SOIL & GROUNDWATER			
Erosion, compaction of and damage to soils. Off-road driving damages the structure of the soil surface and causes soil compaction, which results in less water infiltration and availability, limited root penetration and less vegetation cover. Damaged soil crust makes the fine underlayer of soil vulnerable to wind erosion,	The boundaries of construction sites that extend beyond already impacted areas must be clearly demarcated. Where construction will take place within or close to sensitive features, these should be demarcated.	Dir. Ops. Contractor	Demarcation of construction areas. Demarcation of sites of particular sensitivity with “Do not Disturb” signs.
	No construction activities are to take place outside the defined infrastructure footprint areas.	Contractor	Site plans to clearly define construction areas.
	Quarries/borrow pits may not be dug without formal registration/permission.	Dir. Ops. Contractor	Approval. Demarcate sources.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
the resulting dust settles on plants, interferes with photosynthesis, and causes a decline in habitat quality.	The movement of construction crew must be within the demarcated site boundaries at all times.	Dir. Ops. Contractor	Site boundary demarcation.
	An area for mixing and stockpiling construction material must be demarcated. It must be located in an area that is either already disturbed or that will be developed.	Dir. Ops. Contractor	Selection of laydown area. Demarcate area.
	Access routes between the stockpiling areas and the building sites should be demarcated and their use enforced. Existing roads will be used.	Dir. Ops. Contractor	Clearly demarcated routes.
	Sand and rocks utilised for construction must be from defined and already impacted areas. These sites must be identified and approved by the Ops.	Dir. Ops. Contractor	Approval. Demarcate sources.
	Motorised access will be limited to existing tracks and defined development areas. No new roads or tracks will be made.	Dir. Ops. Contractor	Visual inspections
	No off-road driving is allowed. Regular road maintenance, erosion control and good drainage will prevent the need for off-road driving.	Dir. Ops. Contractor	Road building and maintenance plan
	Once construction work is completed, all building material and rubbish must be removed from NamibRand and the construction sites must be rehabilitated to a state as close as possible to its pre-construction condition.	Contractor	Induction. Inspections & sign-off by either Dir or Ops
Damage to roads and tracks	The contractor shall ensure that all vehicles remain on designated roads at all times. No off road driving under any circumstances.	Contractor	
	All vehicles used in the area must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	Contractor	
Soil and groundwater are contaminated by hydrocarbons, cement and other chemicals used in the construction process	The mixing and use of chemicals, concrete and hydrocarbons takes place in designated areas so as not to contaminate the sites in any way.	Contractor	Designated mixing areas. Lined and bunded storage areas. Identify storage and dispensing protocols. Spill kits, drums with sealable
	All hydrocarbons and chemicals must be stored, handled and dispensed on and over an impermeable surface and in such a way as to avoid contamination.	Contractor	

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
	Any spillage must be contained and cleaned up with 24hrs of occurrence. The resulting waste must be sealed in an appropriate container and taken off site for disposal.	Contractor	lids, and training in how to use them.
NEGATIVE VISUAL IMPACT			
Vehicle tracks	No new roads or tracks will be developed. No off-road driving or driving alongside tracks is allowed.	All	Visual inspections
Construction structures and facilities	Construction office, laydown areas and other facilities are dismantled and removed after construction.	Contractor. Dir. Ops	Site inspection after completion of construction
SOLID WASTE, SEWAGE AND WASTE WATER DISCHARGE			
Ecological damage from solid waste	Littering is not permitted and all waste must be placed in appropriate receptacles.	All	
	The contractor will provide a suitable, animal proof receptacle to contain all daily refuse. A waste holding cage that is bird and animal proof will be used to store the solid waste before it is transported to a municipal dump site.	Contractor	Suitable receptacles
	All building rubble is consolidated in a suitable location, removed from the area and disposed of in a suitable and legal location in an environmentally acceptable manner.	Contractor	Ops to identify suitable manner.
	Used oils and other workshop waste to be stored in suitable receptacles and dispatched to appropriate waste facility.	Contractor	Ops to identify suitable facility.
Ecological damage from sewage and waste water discharge	Fat/grease traps will be installed at kitchen outlets.	Contractor	Fat traps
	Adequate temporary ablutions to be provided for workers.	Contractor	
	Ablutions are in proper working order, regularly serviced, and the sewage disposed of at a suitable designated location and in an environmentally appropriate manner.	Contractor	Ops to identify suitable manner.
Unpleasant odours	Regular maintenance of sewerage system as per company policies & procedures	Contractor	Visual inspections

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
	Should unpleasant odours be identified, the source of the odours must be identified and remedied within 1 week.	Contractor	Visual inspections
CONSTRUCTION STAFF DAMAGE LOCAL ENVIRONMENT			
Disruption of ecological processes through physical acts and/or pollution	The contractor and his employees shall adhere to all rules and regulations prescribed by the relevant authority at all times, as well as to the management measures presented in this document.	Contractor	Induction. Inspections & sign-off by either Dir or Ops
	The contractor will ensure the proper supervision of employees at all times and their compliance with rules and regulations.		
	All employees will be educated to the need to refrain from the destruction of plants and animals, as well as from indiscriminate defacation, waste disposal and pollution of soil and water resources.		
	Access to the site is restricted to the contractor's employees only.		
HERITAGE & CULTURAL RESOURCES			
Construction activities damage and/or destroy sites of cultural significance.	Report any find that may be of cultural or archaeological value to the National Heritage Council.	Dir. Ops, Contractor	Heritage chance find procedure (Section 4.2.4)
BUSH FIRES			
Bush fires destroy habitats and animals, and present a risk to the life and health of humans.	Fire extinguishers and other firefighting equipment are strategically located throughout construction area. Staff are trained in their usage.	Contractor	Firefighting equipment
	Adequate firebreaks must be made around all infrastructure after consultation and agreement with NamibRand management.	Dir. Ops, Contractor	Grader
	Gas canisters to be housed in Bureau of Standards approved structures.	Contractor	Gas enclosures
	Staff are aware of the fire prevention measures, and know what to do should a fire break out.	Dir. Ops, Contractor	Induction
HEALTH AND SAFETY			

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
Injury to persons	Compliance with Health & Safety regulations: all persons on the construction site should adhere to industry Health & Safety regulations at all times.	Contractor	Protective clothing as prescribed by building regulations. First aid kit readily available on site. Med-evac protocol.
	Equipment and tools are handled only by persons qualified in their use.	Contractor	Specialised training.
Burn injuries	Fire extinguishers strategically located on construction site and staff are trained in usage. Person trained in first aid is always on site and has access to the first aid kit.	Contractor	Fire extinguishers. First aid kit readily available on site. Med-evac protocol.

4.2.2 Operational phase

Potential negative impacts during the operations of Boulders lodge are given in Table 4.
Tools referred to in this table: WDev – Wolwedans Development Plan 2030; Res Mgt – Reserve Management and Development Plan; DarkSky – NamibRand International Dark Sky Reserve Lighting Management Plan.

Table 4. Management actions for the operational phase.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
BIODIVERSITY			
Destruction of organisms and their habitat. Mortality of amphibians, reptiles, birds, mammals. Snakes are particularly vulnerable because they are usually killed on sight. Loss of terrestrial flora.	Avoid any nests, burrows, dens and roosting sites.	Ops. Mgt.	Identify sites with nests, burrows, dens. Demarcation of sensitive sites.
	Venomous snakes should be removed by a specialist, and other snakes should be avoided.		Induction. Construction contract.
	Educate staff in the ecological value of snakes and how to avoid them.		
	Keep within the NRNR speed limit at all times.	Guides, Mgt, Maint.	Speed limit
Disturbance of animals and interference with their behaviour, daily foraging and movements.	Game drives, horse rides, walks, cycling are led by qualified guides who are trained in the appropriate way to interact with animals.	Mgt. Guides.	Training
Poaching of wildlife. Tortoises and small mammals are particularly vulnerable.	The greater area around the lodge should be searched for snares.		Training. Visual inspections
	Inspection of staff housing and transport to check for animal parts and/or products		
Damage to vegetation, leading to a loss of habitat integrity and disruption of ecosystem functions. Poaching of plants for trade.	Motorised access is limited to existing tracks and defined development areas.		
	No off-road driving is allowed under any circumstances.		
	No firewood may be collected.		
	Carry out regular inspections of the staff village and staff transport, looking for poached plants or animal parts.		

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
Damage to/removal of protected species	Continuous monitoring to ensure that no protected species are impacted.	All	Demarcation of sensitive sites.
Spread of invasive vegetation	Remove any invasive species as they occur.	Ops. Mgt.	Visual inspections
Impacts associated with human-wildlife interaction	Guests and employees are made aware that they are in a sensitive environment, and are taught the appropriate way to interact with wildlife.	Mgt. Guides.	Training. Visual inspections
Damage to animal habitats and plants	Trained guides escort guests at all times, no self-drive or walking other than in designated areas in the lodge footprint.	Guides	
	No harvesting of plants or collection of firewood is permitted. No plants or animals may be disturbed, violated, destroyed or removed.	All	
	Employees are educated to refrain from the destruction of plants and animals, indiscriminate defecation, waste disposal and pollution of soil and water.	Mgt	
Protected animal species are affected by operational activities.	Avoid areas containing nests, burrows or dens. Identify protected species and educate staff how to avoid them and why they are important.	Mgt. Guides.	
Protected plant species are affected by operational activities.	Identify protected and rare species, educate staff why they are important. No protected, rare or endangered plants are disturbed, damaged or removed.	Mgt. Guides.	
Damage to plants	Only permitted access roads and paths are used by employees, guest and vehicles at all times.	All	
	No off-road driving is allowed.	All	
SOLID WASTE			
Large volumes of rubbish are generated, causing ecological damage including landfill, posing danger to animals, polluting the soil, increasing the risk of mortality to animals and plants.	Minimise waste by buying supplies in bulk and using re-usable packaging and transport options.	Ops	The Wolwedans solid waste disposal system.
	Minimise water bottle waste by promoting local tap water and providing re-usable water bottles to guests.	Mgt. Guides.	
	All physical waste is either recycled or appropriately disposed.	Mgt. Maint.	
	No waste is buried anywhere on the farm.	All	
	Appropriate waste bins are provided at the point of source. All waste bins are covered and secured to be animal proof.	Mgt. Maint.	

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
	A bird, animal and wind proof waste holding cage is used to store solid waste until it is transported to a municipal dump site. This area is secured and has a concrete floor for maintainance and to prevent ground seepage.		
	Recyclable waste (glass, cans, plastics, paper) is stored on site until there is sufficient volume to be transported for recycling.		
	All waste that cannot be recycled or sold is stored on site in suitable containers, then disposed at a permitted waste site.		
	Limited amounts of packaging is burned in an incinerator.		
	Organic waste is buried in suitably designed deep, animal proof pits.		
Hydrocarbons cause soil and groundwater contamination	Used hydrocarbons are collected at point of use and stored in sealed containers until it is despatched to an appropriate waste facility.	Ops. Mgt. Maint	
ENERGY			
Excessive use of fossil fuels	Energy use (electricity, diesel, petrol, paraffin, gas) is metered and monitored. Readings are compared with target usage to ensure optimum efficiency.	Mgt. Maint.	
	Generator is used as back-up only.	Mgt	
	Geysers are solar powered.	Ops	
	All cooking is done with gas.	Ops. Mgt	
	All electrical appliances are energy-efficient models. Fridge and freezer doors seal tightly and are kept closed.	Ops. Mgt	
Generator noise disturbs the natural quiet	Generator is housed in noise-limiting container; use generator only during daylight or for limited hours.	Ops. Mgt	
Firewood collection affects ecosystems and denudes the landscape	Firewood is bought from renewable sources. No firewood is collected on the farm.	All	
WATER RETICULATION AND CONSUMPTION			
Loss of water through leaks in reticulation system	Maintenance programme for pipes and tanks is in place. Leaks and faults are repaired immediately upon detection.	Maint	

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
Water conservation measures	Water conservation is actively promoted among guests and staff. Guests are informed of water scarcity and encouraged to participate in water conservation.	Mgt	
	Water usage is measured and recorded, then compared with targets to ensure optimum efficiency.	Mgt	
SEWERAGE AND WASTE WATER			
Contamination of soil, as well as surface and groundwater, due to sewage and waste water discharge	Sewerage system is maintained.	Maint	
	Bio-degradable toilet cleaners are used to preserve bacteria in the septic system	Mgt	
Ecological impacts	Fat/grease traps are installed at kitchen outlets and maintained.	Maint	
	Septic tanks and soak-aways are maintained.	Maint	
Unpleasant odours	Qualitative monitoring of odours.	Maint	
	The source of unpleasant odours are identified and remedied within 1 week of identification.	Mgt. Maint	
SOIL AND GROUNDWATER			
Erosion, compaction of and damage to soils. Off-road driving damages the structure of the soil surface and causes soil compaction, which results in less water infiltration and availability, limited root penetration and less vegetation cover. Damaged soil crust makes the fine underlayer of soil vulnerable to wind erosion, the resulting dust settles on plants, interferes with photosynthesis,	No off-road driving is allowed. Only permitted access roads and paths are used by employees, guests and vehicles at all times.	Dir. Ops.	Demarcation of construction areas. Demarcation of sites of particular sensitivity with “Do not Disturb” signs.
	Quarries/borrow pits may not be dug without formal registration/permission.	Dir. Ops.	Approval. Demarcate sources.
	New roads or tracks may be made only with the written permission of the NRNR and the Director	Dir. Ops.	Written permission
	Making tracks next to a road is not allowed. Taking shortcuts is not allowed.	Dir. Ops.	Visual inspections
	Regular road maintenance, erosion control and good drainage will prevent the need for off-road driving.	All	
	Vehicles are parked only in designated parking areas.	All	

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
and causes a decline in habitat quality.			
Erosion of roads and tracks	Regular maintenance of roads and tracks.	Maint	
	Implement measures to disperse concentrated water flow and repair erosion at such locations.	Maint	
Damage to roads and tracks	Low tyre pressure on all operational vehicles.	Mgt. Guides.	
	Operational vehicles are 4-wheel drive and of standard width.	Mgt	
Soil and groundwater are contaminated by hydrocarbons, cement and other chemicals. Operational practices that cause this include fuel storage and vehicle refuelling, vehicle servicing and workshop activities.	The mixing and use of chemicals, concrete and hydrocarbons takes place in designated areas so as not to contaminate the sites in any way.	Contractor	Designated mixing areas. Lined and bunded storage areas. Identify storage and dispensing protocols. Spill kits, drums with sealable lids, and training in how to use them.
	All hydrocarbons and chemicals must be stored, handled and dispensed on and over an impermeable surface and in such a way as to avoid contamination.	Contractor	
	Any spillage must be contained and cleaned up with 24hrs of occurrence. The resulting waste must be sealed in an appropriate container and taken off site for disposal.	Contractor	
OPERATIONAL ACTIVITIES			
Toiletries and cleaning chemicals cause contamination of the soil, as well as surface and ground water	Kitchen and housekeeping soaps and detergents are biodegradable and eco-friendly.	Ops. Mgt.	Soaps, detergents, guest amenities.
	Biodegradable and eco-friendly guest amenities are provided.		
Machinery use disturbs the natural quiet	Graders, tractors and power tools are used during daylight only. Adhere to the Quiet Park guidelines.	Mgt	International Quiet Park guidelines
Exhaust emissions cause air pollution	Vehicles are serviced regularly and monitored for excessive exhaust emissions.	Maint	Vehicle maintenance schedule
DESIGN AND LANDSCAPING			
Light pollution at night	Only subdued or directional lighting is used. Follow the Reserve Lighting Plan. Maintain Dark Sky certification	Ops. Mgt	International Dark Sky certification

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS
Towers, raised tanks, telecomms and other support infrastructure have negative visual impacts	Building and maintenance structures and equipment are out of sight of public roads, and below the skyline of ridges and koppies.	Ops. Mgt	Visual inspection
HEALTH AND SAFETY			
Labour policies	The company is in compliance with all national legislation and regulations governing workplace equity and diversity.	Ops	Legislation
Staff and guest health and safety	The company is in compliance with all national legislation and regulations governing health and safety measures.	Ops	Legislation
	Protective clothing, as appropriate to operations, is provided to employees.	Ops	Personal Protective Equipment
	Adequate first aid kits are available and regularly maintained. A suitable number of employees is trained in first aid.	Ops	First aid kit. First aid training
	On-site staff housing is large enough, secure, clean, and provided with water, sanitation and energy.	Ops	Visual inspections
	Employees and guests are made aware of procedures to follow in the event of an emergency, e.g. which person to contact, how to contact him/her during the night; evacuation routes.	Mgt	Emergency protocol
	Employees responsible for guest transport have valid licences and public driving permits.	Mgt	Driver's licences
Fire	All precautions are taken to prevent the outbreak and spread of fires. Employees are aware of the necessary precautions.	Mgt	Fire protocols. Firefighting equipment. Training.
	Firefighting equipment is available, regularly maintained, and employees are trained in fire safety.	Mgt	
	Gas canisters are stored in Bureau of Standards approved structures.	Mgt	Gas storage
IMPLEMENTATION OF EMP			
Eco Awards Namibia assessment every 3 years	Valid certificate and regular assessments according to the programme guidelines	Ops	Latest Assessment (Appendix VI)

4.2.3 Closure and decommissioning

Tourism is a non-consumptive activity with an indefinite projected lifespan and after 25 years the business and immovable assets will become the property of the WBD conservancies, as stipulated in the HCC and the COC. The airstrip remains the property of MEFT.

However, should closure and decommissioning be required, an extensive decommissioning plan will be drawn up and meticulously followed according to the highest standards of environmental management best practices. The priority for closure will be to return the land as closely as possible to the pre-construction condition. Measures will be taken to prevent soil erosion and provide protection for colonising vegetation. A site assessment will be carried out after closure to ensure that no structures remain, and that site rehabilitation has been fully achieved.

There would be four primary closure objectives.

1. Protect public health and safety, as well as health and safety of fauna and flora.
2. Alleviate or eliminate environmental damage.
3. Return the site to its original, pre-development condition.
4. Ensure that social and economic benefits are sustainable after closure.

Table 5. Decommissioning plan at concept level.

NATURE OF IMPACT	MITIGATION
Infrastructure	
Buildings and support infrastructure	All structures will be completely removed to the satisfaction of NRNR.
Roads and tracks	As required by NRNR, roads and tracks will be rehabilitated.
Pathways	All pathways will be rehabilitated to a state as close as possible to the pre-construction condition.
Vegetation: destruction of & damage to plants; disturbance of soil	
Soil erosion	The site will be suitably re-vegetated. If this is not appropriate, then it will be covered with scrub to prevent soil erosion and to provide protection for colonising vegetation.
Alien plant invasion	Follow-ups will be done to ensure that alien or invasive plants and weeds have not flourished.
Damage to vegetation	Construction guidelines will apply to ensure limited impact.
Soil	
Compaction of and damage to soils, contamination	Construction guidelines will apply to ensure limited impact.
Hydrology	
Contamination of ground and surface water, erosion of river banks	Construction guidelines will apply to ensure limited impact.
Animals: habitat disturbance; death of animals	
Death of animals, poaching, habitat or behaviour disturbance	Construction guidelines will apply to ensure limited impact.
Negative visual impact	

NATURE OF IMPACT	MITIGATION
Sewerage system	Septic tanks will be drained and removed. The area (including soak-away) will be filled with rubble or with fill from an environmentally acceptable source.
Water pipes	All pipelines will be removed and trenches filled.
Electricity lines	All electricity infrastructure will be removed from the Reserve.
Foundations, concrete slabs, holes in ground	All structures in or on the ground will be removed. All holes, pits and depressions will be filled.
Ground surface retains signs of development	Ground surface will be raked, swept and levelled as appropriate. Rocks, stones and vegetable matter will be scattered as appropriate to return the ground to a state as close as possible to its original condition.
Construction structures and facilities	Construction site office, facilities and structures to be dismantled and removed once decommissioning is completed
Solid waste, sewage and waste water discharge	
Large volumes of rubble, materials and equipment	Everything will be removed from the reserve.
	Nothing will be burnt or buried on the reserve.
Ecological damage	Construction guidelines will be applied.
Machinery & vehicles: noise, contamination of soil and water by liquids, erosion of roads	
Noise, contamination of soil and water, erosion	Construction guidelines will apply.
Construction staff damage local environment	
Disruption of ecological processes through physical acts and/or pollution	Construction guidelines will apply.
Bush fires: destruction of habitat and death of animals	
Outbreak of fire	Construction guidelines will apply.
Health and Safety of staff	
Injury to persons	Construction guidelines will apply.

4.2.4 Heritage chance find procedure

When a heritage site or item of cultural significance is discovered during any phase of the development, it has to be reported to the National Heritage Council to ensure compliance with the National Heritage Act (27 of 2004), section 55: “a person who discovers any archaeological object must as soon as practicable report the discovery to the Council”.

There is a specific process to follow when a potential heritage item is found, whether by a contractor, guest or lodge staff member, and it is given in Table 6. The proponent will make all employees aware of the procedure, and it will be included induction training for contractor employees.

Table 6. Heritage chance find procedure

1. Responsibilities	
Finder	The person who discovers archaeological or heritage items
Supervisor	Secure site and advise management
Senior manager	Report finding to NHC. Determine safe working boundaries
Archaeologist	Inspect, identify, advise management, and recover the items
2. Actions	
Person	Actions
Finder	If operating machinery or equipment, stop work
	Demarcate the site
	Take GPS coordinates if possible
	Report findings to supervisor
Supervisor	Report findings, site location and actions taken to superintendent.
	Cease any works in immediate vicinity
Senior manager	Visit site and determine whether work can proceed without damage to findings
	Determine and mark exclusion boundary
	Site location and details to be added to Archaeological Heritage Geographical Information System (GIS) for field confirmation by archaeologist
Archaeologist	Inspect site and confirm addition to GIS
	Advise NHC and request written permission to remove findings from work area
	Recovery, packaging, and labelling of findings for transfer to National Museum
3. Discovery of human remains	
	Actions as above
	Advise and liaise with NHC and Police
	Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed by the police and NHC

5 CONCLUSIONS AND RECOMMENDATIONS

This Environmental Management Plan describes the management measures that can prevent or mitigate negative environmental impacts and enhance positive impacts that may result from the construction and operation of the lodge. It is a legally binding document that compels NamibRand Safaris (Pty) Ltd to comply with the management measures presented in this document. The EMP will be implemented throughout the lifetime of the lodge, including closure and decommissioning should that become necessary.

No fatal flaw was identified, and the lodge applies sound sustainable practices.

It is recommended that an Environmental Clearance Certificate be issued to the proponent.

APPENDIX I. Screening notice

Gmail

Henriette Potgieter <hoenspotgieter@gmail.com>

Your application is verified
1 message

Ministry of Environment and Tourism <noreply@meft.gov.na>
To: Potgieter Consultancy CC <hoenspotgieter@gmail.com>

16 October 2025 at 13:13

REPUBLIC OF NAMIBIA
Ministry of Environment, Forestry & Tourism

2025-10-16

Dear Potgieter Consultancy CC,

This email serves to inform you that your application **APP-006539** has been verified

Taking the following into considerations:

- Location of the project
- Polution potential
- Scale of operation of the project

Please upload the following documments:

- EMP
- Confirmation of screening notice received (through email) in terms of assessment procedures (Section 35 (1)(a)(b) of the Environmental Management Act, No 7 of 2007)
- Preliminary Site Map (Project boundaries) with coordinates (decimal degrees) and a Legend
- CV of Environmental Assessment Practitioner (EAP)
- Declaration for the Submission of Assessment Reports and other Support Documents (upload Declaration Form from www.eia.meft.gov.na (downloads)

APPENDIX II. CV of practitioner

Professional Profile

An Environmental Assessment Practitioner in Namibia since 2014, focusing on biodiversity baseline studies and biodiversity impact assessments. Avifauna is her speciality taxon, and she also surveys and assesses mammals, reptiles, amphibians and vegetation.

She does Environmental Impact Assessments (EIAs), compiles Environmental Management Plans (EMPs) and gives environmental guidance, specialising in the eco-tourism industry.

Before 2014, twenty years in management, guiding and community capacity building in wilderness areas in Namibia, Botswana, Zambia and Uganda for high-income, low-impact tourism ventures that place a premium on both conservation and community development.

Qualifications

M.Sc.
Environmental Sciences
Dissertation: Avian ecology of arid habitats in Namibia
Northwest University, Potchefstroom, South Africa. 2015

B.Sc. Honours
Subjects: Environmental Impact Assessment, Biodiversity, Conservation Biology, Systematics, Sustainable Ecosystem utilisation and restoration
Northwest University, Potchefstroom, South Africa. 2010

B.Sc.
Subjects: Zoology, Botany
University of South Africa, Pretoria, South Africa. 2001

B.A.
Subjects: Afrikaans, English, German
University of Pretoria, Pretoria, South Africa. 1988

Professional Membership

- Environmental Assessment Professionals of Namibia (EAPAN): member

Boards and committees

- Member of the EAPAN executive committee
- Eco Awards Namibia: management committee since 2010
- Industry Skills Committee (ISC) for Tourism and Hospitality, an executive committee of the Namibia Training Authority (NTA): extended term of service (past)
- Board member of the Namibian Academy for Tourism and Hospitality (past)

Work history

Environmental Assessment Practitioner
Self-employed, Windhoek, Namibia.
2014 - present

Training Supervisor
Namibia Wilderness Safaris, Windhoek, Namibia.
2006 - 2012

Director
Boneco Tourism, George, South Africa.
2002 - 2006

Concession Manager and Trainer
Okavango Wilderness Safaris, Maun, Botswana.
1997 - 2002

Lodge Manager, The Damaraland Camp
Namibia Wilderness Safaris, Windhoek, Namibia.
1996 - 1997

Reserve Manager
Kyambura Game Reserve, Uganda.
1993 - 1996

Office Manager
Sobek Expeditions, Livingstone, Zambia.
1993

Senior Reporter
South African Broadcasting Corporation, Johannesburg, South Africa.
1988 - 1992

Translator
State Language Service, Pretoria, South Africa.
1987 – 1988

Environmental Assessment projects

BIODIVERSITY BASELINE STUDIES & BIODIVERSITY IMPACT ASSESSMENTS				
Year	**Project name**	**Proponent**	**Description**	**Consultant**
2025	Corporate biodiversity programme	Rent-a-drum	High-level biodiversity assessment and action plan	Self
2024	Namwaste management facility	Namwaste (Pty) Ltd	General and hazardous waste management near Arandis	SLR
2024	Erindi KBA	Erindi Private Game Reserve (Pty) Ltd	Apply & obtain Key Biodiversity Area status for Erindi from the IUCN	Self
2023	Erindi Biodiversity assessment	Erindi Private Game Reserve (Pty) Ltd	Assess biodiversity value of the reserve	Self
2023	Namwater SS1	Namibia Water Corporation Ltd	Desalination plant and water supply	SLR
2023	Namdeb zero carbon	NamDeb	Oranjemund wind turbines	SLR
2022	Renewstable SWK	HDF Energy	EIA: PV energy generation and Hydrogen storage, Swakopmund	SLR
2021	Windhoek DPR2	City of Windhoek	EIA: new potable water reclamation	Namisun
2021	ML 40 Sodalite mine	KNL of Namibia (Pty) Ltd	EIA: mining sodalite, iron-titanium and rare earth minerals	Philip Hooks
2020	Springbokwasser gate	MEFT	EIA: gate and management station in Skeleton Coast National Park	SLR
2020	Mile 68 Salt mine	Gecko Salt	EIA: salt mine.	Philip Hooks
2019	Oruriwa Manganese mine	Mr J.P. Smit	EIA: Manganese mine on Claim 71267, EPL4347.	Philip Hooks
2019	Sinclair Copper mine	Tulela Processing Solutions	EIA: copper mine and processing plant.	Namisun
2019	Alten Keetmanshoop solar energy plant	Kokerboom Solar Generation (Pty) Ltd	Soping study	SLR
2019	Hope-Gorob EPL	Virgo Resources Limited	EIA: exploration for metals in Namib Naukluft Park	Alexandra Speiser
2019	Omatapati EPL3349	Teck Namibia Ltd	Rehabilitation plan for exploration site	Self
2018	Katima and Liselo Farm	Ministry of Agriculture Water and Forestry	EIA: irrigation scheme	SLR
2018	Gecko Cape Cross salt mine	Gecko Salt	EIA: salt mine	SLR
2016	Ohorongo cement: sand & stone quarries	Ohorongo Cement	EIA: new sand pit and stone quarry	SLR
2016	Zone Irrigation	Ministry of Agriculture Water and Forestry	Scoping study	SLR
OTHER PROJECTS				
Year	**Project name**	**Client**	**Description**	**Consultant**
2025	CMO Namibia (Pty) Ltd Forestry audit	SGS South Africa (Pty) Ltd	Local specialist Namibia: audits for Forest Stewardship Council certification	Self
2025	Cheetah Conservation Fund Forestry audit	SGS South Africa (Pty) Ltd	Local specialist Namibia: audits for Forest Stewardship Council certification	Self
2025	Legal action against EPL	Erindi Private Game Reserve	Review affidavit & documents for urgent application	Self
2024	Legal action against EPL in Doros area	Ultimate Safaris (Pty) Ltd	Review the project EIA & identify shortcomings	Resilient Environmental Solutions
2019	BEE	BEE Biofuels Manufacturing	Renewal of ECC	Self
2013	Farm Vergenoeg	Namibia Development Corporation	Business Proposal for Hardap Regional Council	Nicolaas Links

TOURISM INDUSTRY PROJECTS: Scoping, EMP, Env Clearance, Tenders			
Year	**Project name**	**Proponent**	**Role**
2025	!Gobaub Hai//om Lodge EIA	Ongava Hai//om Tourism (Pty) Ltd	EAP: Scoping level EIA with EMP, Public consultation, ECC application
2025	Airstrip Nkasa Linyanti Camp EIA	Natural Selection Safaris (Pty) Ltd	EAP: Scoping, EMP, ECC application
2025	Ngepi EMP	Ngepi Camp	EAP: New ECC for existing lodge
2025	Ondudu Lodge EMP	Ondudu Safari Lodge CC	EAP: New ECC for existing lodge
2024	Nkasa Linyanti Camp	Natural Selection Safaris (Pty) Ltd	EAP: Renewal of ECC
2024	Ongava lodges x3 ECC	Ongava Game Reserve (Pty) Ltd	EAP: Renewal of ECC
2024	Mushara lodges x3 ECC	Mushara Lodges (Pty) Ltd	EAP: Renewal of ECC
2024	Grootberg Lodge & Hoada Campsite ECC	Journeys Namibia (Pty) Ltd	EAP: Renewal of ECC
2024	Hobatere Lodge ECC	Guineafowl Investment 28 (Pty) Ltd	EAP: Renewal of ECC
2024	Fish River Lodge ECC	Canyon Nature Park (Pty) Ltd	EAP: Renewal of ECC
2023	Skeleton Coast Shipwreck Lodge ECC	Skeleton Coast (Pty) Ltd	EAP: Renewal of ECC
2023	Hoanib X Lodge EIA	Natural Selection Safaris (Pty) Ltd	EAP: Scoping, EMP, ECC application
2022	Hoanib Valley Camp ECC	Natural Selection Safaris (Pty) Ltd	EAP: Renewal of ECC
2022	Kwessi Dunes Lodge ECC	Natural Selection Safaris (Pty) Ltd	EAP: Renewal of ECC
2021	Nkasa Linyanti Camp ECC	Natural Selection Safaris (Pty) Ltd	EAP: Renewal of ECC
2021	Ongava lodges x4 ECC	Ongava Game Reserve (Pty) Ltd	EAP: Renewal of ECC
2021	Mushara lodges x3 EMP	Mushara Lodges (Pty) Ltd	New ECC for 3 existing lodges
2020	Skeleton Coast Shipwreck Lodge ECC	Trip Travel (Pty) Ltd	EAP: Renewal of ECC
2019	Hobatere Roadside Lodge and Campsite EMP	Oasis Adventure Travel and Lodging	New ECC: proposed lodge
2019	Kwessi Dunes Lodge EMP	Natural Selection Safaris (Pty) Ltd	New ECC: proposed lodge
2018	Etendeka Hiking Trail EMP	Etendeka Lodge Company	New ECC: proposed lodge
2018	Hoada Campsite EMP	Grootberg Lodge (Pty) Ltd	New ECC for existing lodge
2018	Fish River Lodge EMP	Canyon Nature Park	New ECC for existing lodge
2017	Ongava lodges x4 EMP	Ongava Game Reserve (Pty) Ltd	New ECC for 4 existing lodges
2017	Hobatere Lodge ECC	Journeys Namibia	EAP: Renewal of ECC
2017	Grootberg Lodge EMP	Grootberg Lodge (Pty) Ltd	New ECC for existing lodge
2017	Ada Khaibasen Tourism Concession tender	Natural Selection Safaris (Pty) Ltd	Manage tender process, write technical proposal

APPENDIX III. DEVELOPMENT PLAN

Wolwedans Development Plan 2030 & Beyond

Wolwedans

Wolwedans Vision 2030 & beyond, as well as all the envisaged development of the various entities comprising Wolwedans in its entirety (see fig.1 below) is documented in "The AridEden Project" (www.arideden.org) , a holistic vision seeking to address climate change, and wealth inequality well beyond Wolwedans and NamibRand. Balancing people, planet and profit and putting sustainability before profit has always been, and *will remain* the driving agenda of Wolwedans. In 2020 we have added happiness to the mix.

Vision: "Our purpose is the pursuit of happiness, and Wolwedans exists to inspire a new way."

Wolwedans comprises three entities with different development agendas as per below. Tourism development is driven by NamibRand Safaris (Pty) Ltd., which, after 15 years of 'nothing new' now seeks to develop a number of new projects. The Foundation Projects are all non-commercial, and if so, to the benefit of the Foundation. NamibRand Desert Trails will hold the brick-and-mortar assets at Wolwedans Village and earn rental to pay for developments.

Wolwedans Collection
(Operated by NamibRand Safaris (Pty) Ltd.

Apart from no 5-7 listed below, all projects (1-5) have been on the cards for years, but never materialized, also due to COVID disruption. It is Wolwedans' intention (within the tourism development and management plan) to see these projects through in the next 10 years. Except for the NaturePool idea, a massage pad and potential fly-camps nothing is new.
A major new development - the 16 bed Aandster Plains Camp which was already approved by the board in the past – has been 'shelved' for good at the expressed wish of John Bernstein. A trade-off of sorts in this regard – Wolwedans, instead of developing Aandster Plains, being granted the opportunity to do something at Eldorado/Gorab/Aukens (block) on then NamibRand East (now ProNamib) - seems to be in limbo at this stage. If an opportunity arises this will be gladly explored in the future, it is beyond NRNR though.

One strategic aim of Wolwedans is to keep people/guests at NamibRand for a week, and all our plans work towards this strategic goal. Like an island holiday, which is so much more sustainable than rushing through a country and staying in a new place every second night.
This can be in form of Retreats at one lodge/camp (going really going slow), or a carefully choreographed itinerary with a good mix of comfort (in existing camps and guest farms) and roughing it a bit (StarBeds and fly camps). It's not just about sleeping though; activities and experiences also need to be developed further to make a one week visit feasible and keep guests occupied. We do not believe that handing guests form one concessionaire to the next will do the job (i.e. hearing the same story again and again…).
In addition, it is Wolwedans' strategic aim is to feed guest exclusively with perishables from the Hardap region by 2028; from farm to plate. This will have an influence on the Wolwedans development agenda too, both at Wolwedans (testing things on a small scale), and beyond (scaling up successes at Wolwedans.

Envisaged Wolwedans Collection developments for the next five years are:

1. Villa Wolwedans (a private villa south of Plains Camp comprising two en-suite bedrooms plus a kids room with main area. Similar to original Private Camp before expansion. This will be another niche product positioned between Mountain View Suite (2 pax) and new Plains Camp (catering for 8 pax+). We would like to exploit that niche and hence scaling down Villa Wolwedans from original 4 rooms to two.
2. StarBeds: Already approved pre-COVID but halted due to COVID. Plan to revive last quarter of 2023 or early 2024. 12 beds (6 pods) sleep-out under the stars. Very basic and only bookable in combo with any of the existing camps.
3. Aandster Guest Farm: 4 bedroom up-market guest farm at Aandster Farmstead.Minimum stay 3 nights (like Boulders)
4. Completion of Chateau Namib: Just mentioned here as this is a pre-COVID project that was never completed. No additions bar a braai area and entrance stoep.
5. Wolwedans Wellness Pad: Concept is to make massage and associated treatments an activity and destination of sorts. You book (max 4 pax) the whole morning or afternoon. Facility - atop the dunes at Wolwedans Village (completely out of sight from camp and village) - would comprise two massage rooms (3 x 3 meters), a toilet, bathroom/shower and a small pool and shaded verandah. Layout would be similar to Keerweder airport lounge. Contemporary and classic safari at the same time. Facility would tap into Dune Camp pipeline.
6. NaturePools: Idea is to convert 2-3 old reservoirs which have ugly plastic tanks inside into feature pools where back-wash water is feeding waterhole, i.e. Horseshoe water (can be used by TokTokkie as well) and Prosopis (Aandster) and potentially one in the north. Concept to be developed and pitched. These pools could become destinations.
7. Future Fly-camps (max four tents on ground (no decks) - pitch/stay/move on) to accommodate horse safaris and eBike tours or a combination of both at two designated locations. No infrastructure whatsoever and zero footprint.

Experiences (which would need extra permission from NRNR)
- eBike rides to Boulders and back
- horse rides to Boulders and back
- Walks from Wolwedans or Bouders to StarBeds (and on or back)
- A combination of all above

Wolwedans Foundation Projects

1. Village Guest House: 6-bedroom guest facility (mainly catering for singles) integrated into the village with minimum 3-night stay (preferably 6). It is a cultural/people immersion offering and guests would

spend most of their time at the Village. This would be a Desert Academy project/facility and all income will be to the benefit of the Foundation Training programme. Funded by interest free soft loans.

2. Desert Academy Campus: Comprising classrooms, library, Hall (seating 100+), workshops (facility maintenance training) teacher and trainee accommodation and new training kitchen with canteen. The infrastructure will - after 10 years - be part of NamibRand Desert Trails fixed assets. Funded by interest free soft loans. Note: To limit trainee numbers at Wolwedans, and scale up training efforts (also for economy of scale) the plan is – as of 2025 – that training at Wolwedans will only be for Level III – V. All Level II training (bulk of trainees) will be shifted to Maltahöhe under the umbrella of the RuralRevive Project. In all three strands, to name Hospitality, Horticulture and Facility Maintenance.
3. Art & Craft Center: Conversion of old car park/shed into an art and craft center (wood/pottery/textile/leather/art and general handicraft) in the heart of the village is underway with no additional footprint. This feeds into the 'Building a Desert Based Economy' theme. See:
4. Butchery: Small farm butchery to process (own) pigs, sheep, game and beef (all from farmers in the valley), with aim to add value (ham/salami/ cold cuts/burger patties/sausages/ etc.). The butchery links into commercial cookery training, cements self-sufficiency and saves Desert Academy and Wolwedans Collection a lot of money.
5. Small animal holding pens (where animals are held for max 2 weeks before being butchered). Concept is like with garden, to slaughter as needed (say 3 animals/week) and reducing cooling needs significantly and hence CO2 (food miles and cooling).
6. Organic chicken farm: Raise organic free-range chicken for meat (eggs already happening) so we stop importing chicken from SA, Brazil or if Namibia then from NamChicken which is industrial mass production. If feasible and working, scale up at Maltahöhe and i.e Nuwerus. Use Wolwedans to tell the story and prove that there can be another way.
7. Dairy production: Controversial but if possible/granted, we would like to hold some 8 to 10 milk cows (Dexter breed), in order to make cheese at Wolwedans. Fodder would be from Nuwerus (lucern and grass) or Hardap scheme. If successful, the concept could be scaled up further East (Maltahöhe/Nuwerus) to produce cheese for the whole tourism industry at Sossuvlei and NamibRand. Why do we buy cheese from SA truckes vis Windhoek? It should be tried and tested on a small scale first at Wolwedans, also to drive the narrative (from farm to plate) with the aim of reducing food miles. And importantly, solicit donor funding (seeing is believing).
8. Restauration of Verweg house as a DesertRunner bus stop (as well as Old Wereldend).

NamibRand Desert Trails (Pty) Ltd. (NRDT)

1. Wolwedans EcoVillage development: All brick-and-mortar building projects at the village as per above, with funding (loans) attracted through foundation work
2. New (signature) Reception Building shared by Wolwedans Collection and Foundation - including curio shop, new office block and art gallery/info center. Building will be developed by NRDT and then rented out.

Whilst there might be new ideas in the next 25 years, going with the time/trends, this is as comprehensive a list we can imagine for the next 10 years. Wolwedans is not chasing the buck (profit-driven), but seeking to "inspire a new way" and make a profound impact by supporting and generating income for NamibRand, scaling up beyond NamibRand through RuralRevive and addressing climate change and wealth inequality.

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APPENDIX IV. NAMIBRAND MANAGEMENT PLAN

The Management and Development Plan of the NamibRand Nature Reserve is updated regularly by the reserve management, and it is a key component of the contract between the reserve and member farms. Only the title page and table of contents are given here since the document is confidential, but it will be made available to MEFT upon request.

NamibRand
Nature Reserve

Management and Development Plan

23 November 2024

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NamibRand International Dark Sky Reserve
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External Lighting Management Plan

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Preamble

As recent measurements have demonstrated, the NamibRand Nature Reserve (NRNR) has some of the darkest skies in the world. Because of this, the views from the Reserve of celestial objects are superb and are a valuable resource for both the Reserve and Namibia. As development increases in Namibia, light pollution could threaten these skies.
The purpose of this Exterior Lighting Management Plan is to provide a foundation for the preservation of the night skies of the NamibRand Nature Reserve (NRNR) by outlining methods for mitigating light pollution originating from both within the Reserve and beyond its boundaries.

Keys to this effort are adoption of Exterior Lighting Guidelines for the Reserve, improvement in existing exterior lighting, development of public awareness of the issue, and application to the International Dark-Sky Association (IDA) for designation as an International Dark Sky Reserve (IDSR).

With a comprehensive and proactive plan, these pristine skies can be preserved and the NRNR's strategy can serve as a model for similar initiatives in the region.

Introduction to Namibia

Namibia, located in southwestern Africa, covers an area of approximately 824,000km^2 and has a population of just over 2 million inhabitants, resulting in the second-lowest population density among sovereign countries. The country gained its independence from South Africa in 1990 after an extended armed struggle. Although it is a developing nation, lawmakers took the opportunity to enshrine environmental protection into Namibia's progressive new constitution.

Namibia's landscape consists of five terrestrial biomes: Namib Desert forms almost the entire west coast, Nama Karoo covers the south and the eastern border of the Namib Desert, Succulent Karoo is restricted to the far southwest, Acacia Tree-and-shrub Savanna covers the north central regions with Broadleaved Tree-and-shrub Savanna dominating the northeast. The eastern border of the relatively narrow coastal Namib Desert belt is the transitional escarpment zone. The escarpment extends into a high central plateau covering the majority of Namibia. In the east, the plateau descends into the Kalahari basin. The country's only perennial rivers are located on its northern, southern and far northeastern borders, with only ephemeral rivers feeding the rest of the country.

Annual rainfall in Namibia ranges from 0mm at the hyper-arid desert coast to 700mm in the sub-humid northeastern woodlands. Rainfall is not only low, but highly variable and is thus the limiting factor for agriculture and livestock activities throughout the country. Due to Namibia's arid climate very little land is converted for arable agriculture. Extensive grazing by livestock and wildlife is provided by natural vegetation.

Mining, tourism, agriculture and fishing industries form the basis of the Namibian national economy. Namibia's rich wildlife and unique landscapes and geology are major attractions, bringing over almost 240,000 overseas and 690,000 regional tourists to the country in 2007 alone. Namibia's climate, ranging from hyper-arid to semi-arid with small pockets of sub-humid areas in the northeast, supports rich biodiversity, including numerous desert-adapted and endemic species.

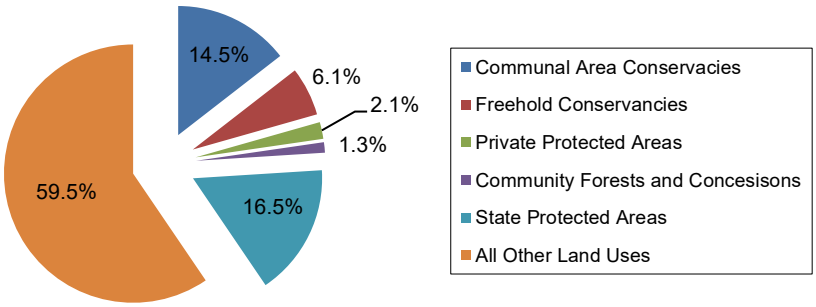
CONSERVATION IN NAMIBIA

The Nature Conservation Ordinance of 1975 passed ownership of and responsibility for common plains game to individual, freehold landowners. This legislation saved wildlife in Namibia. Previously, when wildlife was state owned, freehold farmers accrued no benefits from the wildlife on their land. This often led to resentment and hostility, as wildlife was seen to compete directly with livestock. Once farmers were able to benefit financially though the sustainable utilization of wildlife (i.e. game farming, trophy hunting and tourism), the decline in wildlife populations was reversed Freehold farmers can now enter into joint management initiatives, establishing freehold or commercial conservancies for the benefit of creating large open areas where wildlife can migrate freely and natural resources are cooperatively managed.

Communal area residents were, however, unable to benefit directly from wildlife until Namibia's Communal Area Conservancy Act was passed by parliament in 1996. This legislation devolved rights to community members to use, manage and benefit from wildlife on their land, further enhancing the protective landscape for biodiversity conservation in Namibia. Today, Namibia's Community Based Natural Resource Management (CBNRM) Program is internationally renowned not only as a successful conservation philosophy, but as a tool to achieve rural development, poverty alleviation and democracy. A new, revised Wildlife Act is being formulated. It is expected this comprehensive legislation will enable private land in Namibia to be officially registered and proclaimed as protected areas. This would enhance their legal status and further protect wildlife throughout the country.

Namibia's conservation landscape is so effective that over 40% of land in Namibia is under intensive conservation status. As Figure 1 illustrates, this 40.5% is made up of communal area and freehold conservancies, private protected areas such as the NamibRand Nature Reserve, community forests and tourism concessions and state protected areas, including national parks and game reserves. The remaining 59.5% represents land which is used for agriculture, mining, urban settlement and all other land which is not under any kind of conservation status.

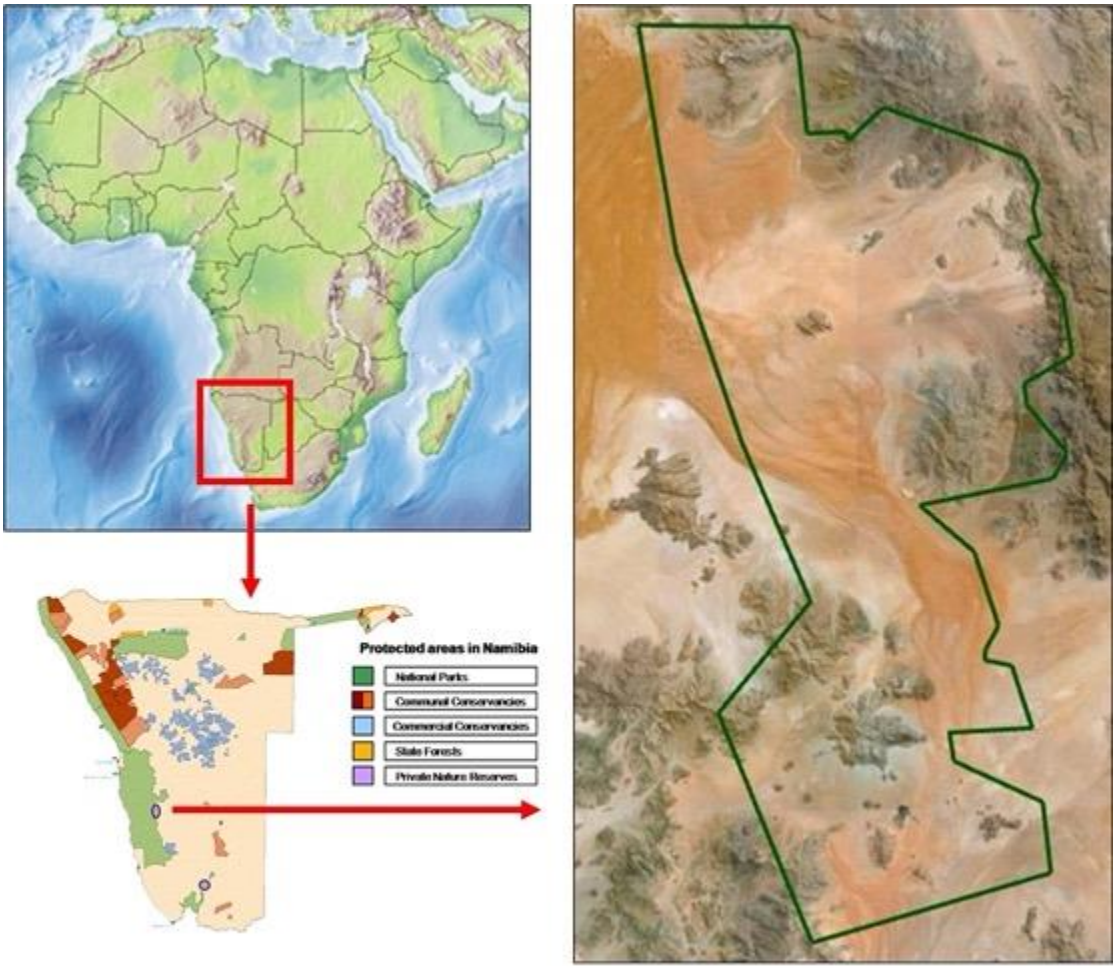
Figure 1: Conservation on Namibian Land



Introduction to the NamibRand Nature Reserve

The NamibRand Nature Reserve, located in southern Namibia, is a private not-for-profit nature reserve established to help protect and conserve the unique ecology and wildlife of the south-west Namib Desert (Figure 2). Conserving the pro-Namib, the area along the eastern edge of the Namib Desert, is critically important in order to facilitate seasonal migratory wildlife routes and to protect biodiversity.

Figure 2: Map of the NamibRand Nature Reserve, illustrating its location in Namibia and Africa



The NamibRand Nature Reserve is probably the largest private nature reserve in southern Africa, extending over an area of 172,200ha (665mi^2). The Reserve shares a 100km border with the Namib-Naukluft National Park in the west and is bordered in the east by the Nubib Mountains.
The aims of the NamibRand Nature Reserve are:

- To conserve for the benefit of future generations and to protect the sensitive and fragile environment and its rich biodiversity.
- To create a nature reserve with a healthy and functioning ecosystem, providing a sanctuary for flora and fauna and to facilitate seasonal migratory routes in partnership with neighbors.
- To promote sustainable utilization – through ecologically sustainable and high-quality level tourism products and other projects.
- To achieve a commercially viable operation to ensure continuance and financial independence.

The Reserve originated as the dream of J.A. (Albi) Brückner to extend desert frontiers by integrating a large number of former livestock farms and developing a wildlife sanctuary. Mr. Brückner purchased the first farm, Gorrasis, in 1984. Initial attempts at indigenous livestock farming soon proved unsustainable in the hyper-arid climate – the area receives a mean annual rainfall of 70 mm.
The conservation context in which the NamibRand Nature Reserve developed began in 1979 when the Namib-Naukluft National Park was proclaimed as a single integrated reserve, comprised of an amalgamation of several large portions of existing national parks, unoccupied public land, diamond mining areas and purchased farm land. Heavy poaching of wildlife resulted in the fencing of the eastern boundary of the Namib-Naukluft National Park in the late 1970s and early 1980s. However, due to the vastness of the area and distances involved, monitoring of the border fence by nature conservation authorities proved extremely challenging.

In the late 1980s, the then Department of Nature Conservation encouraged the formation of the NamibRand Nature Reserve as an additional conservation area between the park and livestock farming areas, which would not only benefit wildlife directly by re-establishing natural migration routes, but would also act as a buffer to keep poachers out. In 1991, a strategic plan was formulated to change the primary land use of NamibRand to conservation. While the then Department of Nature Conservation did not provide any kind of federal financial support, it did grant political support for the project.
In 1993 NamibRand was declared a game reserve, a conservation warden was employed and the primary form of sustainable resource utilization focused on trophy hunting. The first eco-tourism concession was granted in 1994 and eventually pressure from the tourism operators prompted the decision to suspend trophy hunting in favor of eco-tourism activities by the end of the 1990s. A tourism concession allows outside tourism operators to make use of land set aside for conservation for tourism purposes. This is usually in the form of a lease or rental agreement.
Between 1988 and 2000 several more farms were purchased by Mr. Brückner and resold as needed to philanthropists in order to inject capital into the project. The Reserve currently consists of thirteen former livestock farms rehabilitated into a single continuous natural habitat. Joint management initiatives and agreements with neighbors, allowing for the opening of border fences were signed in 2008. These partnerships allow for the establishment of larger conservation areas critical to achieving healthy ecosystems throughout the region.
At present there are six tourism concessions on the Reserve, five of them offering overnight accommodations to guests. They are:

1. Sossusvlei Desert Lodge, 10 guest villa and an observatory.
2. Wolwedans, a collection of five camps.
3. NamibRand Family Hideout, a self-catering house and small campsite.
4. Tok-Tokkie Trails, a safari company that offers guided walks on the Reserve.
5. The N/a'an ku sê Foundation, a conservation organization that offers volunteer tourism.
6. Namib Sky Adventures, a balloon flight company that only brings guests for daytime visits.

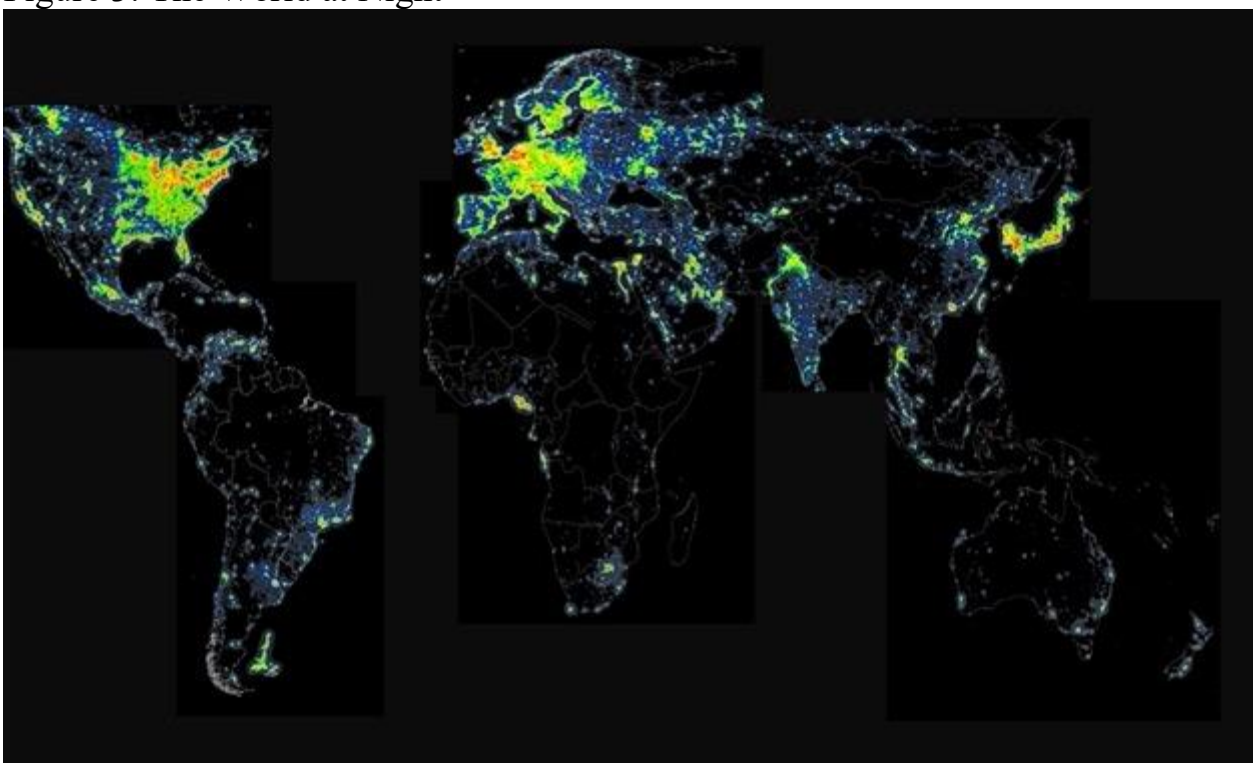
A seventh concession on the Reserve is the Namib Desert Environmental Education Trust (NaDEET), a small NGO that empowers and educates Namibians to live sustainably. NaDEET brings groups of learners, teachers, and community leaders to their Centre to participate in experiential environmental education programmes. It also provides outreach programmes and distributes educational material through Namibia.
The Reserve restricts the number of overnight tourists by placing a limit of one bed per 1000ha. With the current area of the NRNR at 172,000ha, this allows 172 total beds. In a further effort to minimize the impact of tourism, accommodation facilities are restricted to a maximum of 20 beds per location.
To deter poaching, any other public access to the NamibRand Nature Reserve is restricted. However there is a little-use public road, the C27, which runs through a section of the Reserve and provides public views of its wildlife and night skies.
Recently a detailed Tourism and Economic Development Plan (TEDP) was developed. The aim of this plan is to assist in the diversification and expansion of the Reserve's income sources and to ensure that any future tourism development is in line with existing conservation objectives. Tied to the TEDP and included in the Reserve's environmental management plan is a land-use zonation plan. This zonation plan is essential for planning and management, but also protects sensitive areas. Recognizing the importance of wilderness areas, the NamibRand Nature Reserve has exclusively set aside more than 15% of its total area for wilderness.
A wildlife census is conducted annually to monitor game populations. Additional management work centers around maintenance and improvement of infrastructure, focusing on water provision. The Reserve also contributes to a Southern African avifaunal atlas project as well as a national large carnivore atlas. Other projects focus on keystone species conservation such as the monitoring of the critically endangered Lappet-faced vulture and the re-introduction of cheetah. Outreach efforts focus on predator-livestock management on neighboring freehold farms.
Research conducted on the Reserve aims to directly benefit management of the Reserve and to contribute to the national scientific knowledge base. Established in 2006, the NamibRand Research

and Awareness Centre has hosted numerous researchers. During this time, researchers have conducted short and longer term studies on fairy circles, Grant's golden mole, the Cape ground squirrel, the Wedge-snouted lizard, elephant shrews and other desert-adapted species. The Reserve's ongoing work with the Cheetah Conservation Fund and N/a'an ku sê, has successfully re-introduced cheetah. Several social impact studies have investigated the impacts and benefits of alternative land use practices. Archeological studies and excavations conducted as part of a long-term regional study have yielded important artifacts and may eventually assist in further protection of the Reserve.
The Reserve is a leading member of the Greater Sossusvlei - Namib Complex (GSNC), a regional association whose goal is to co-manage the Greater Sossusvlei-Namib Complex for enhanced landscape and biodiversity conservation, and socio-economic development, for the sustained benefit of the people within the Complex and the Region. The NRNR is also a founding member of the Pro-Namib Conservancy, a local association of properties dedicated to conservation.

The NamibRand Nature Reserve's Night Sky

Views of the night sky from the NRNR are among the best in the world. The primary reason for this is because there is virtually no light pollution. Figure 3 is a composite image showing the Earth at night as viewed from a satellite. The brighter areas result from artificial lights shining upwards. Some of that light reflects downwards off particles in the atmosphere making the night sky glow to observers on the ground. The night skies of southern Africa are extremely dark when compared to those of the industrialized world.

Figure 3: The World at Night



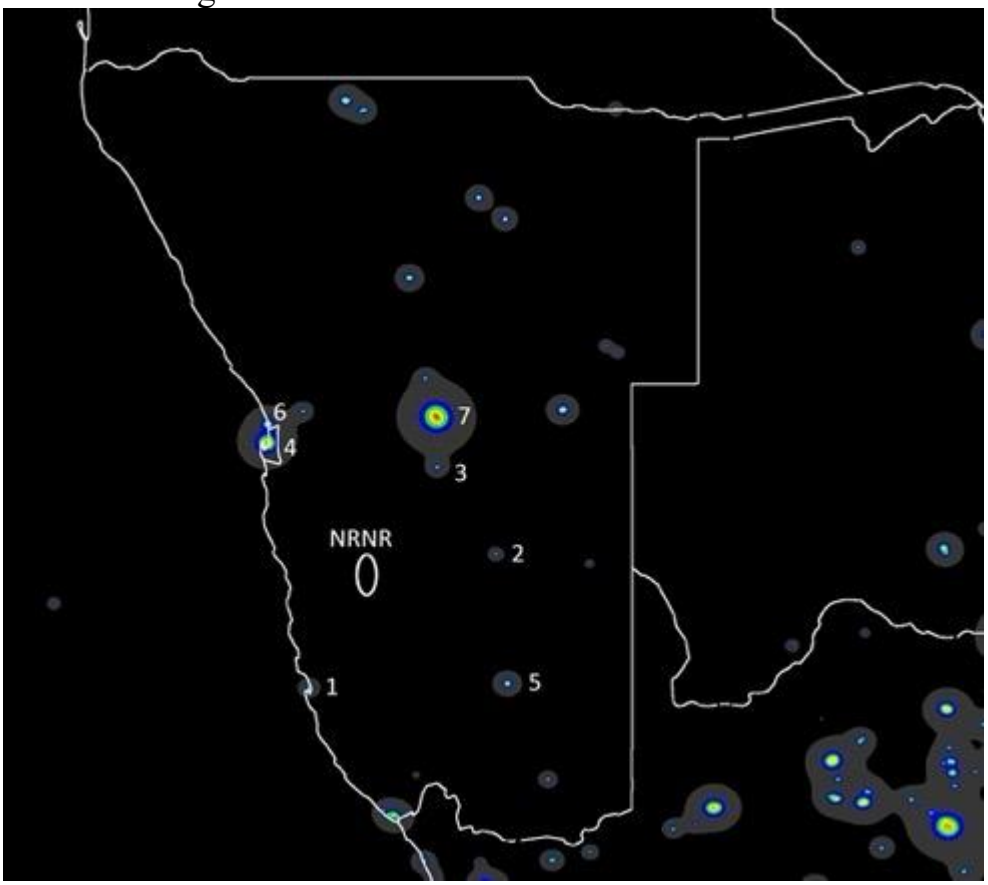
From the First World Atlas of Artificial Night Sky Brightness by Dr Pierantonio Cinzano and Fabio Falchi (both of the University of Padua, Italy) and Dr Chris Elvidge (NOAA National Geophysical Data Center, Boulder, Colorado)

The NRNR has some of the darkest skies within southern Africa because it is located far from any population centers. Table 1 lists the population centers nearest the NRNR and Figure 4 shows their location relative to the Reserve.

Table 1: Nearest Population Centres to the NamibRand Nature Reserve

Name	Distance from NamibRand (Miles)	Population	Figure X Label
Solitaire	60	<100	-
Maltahöhe	60	2,400	-
Lüderitz	120	14,000	1
Mariental	125	10,000	2
Rehoboth	125	21,000	3
Walvis Bay	150	85,000	4
Keetmanshoop	160	50,000	5
Swakopmund	170	120,000	6
Windhoek	170	350,000	7

Figure 4: Namibia at Night



Adapted from the First World Atlas of Artificial Night Sky Brightness by Dr Pierantonio Cinzano and Fabio Falchi (both of the University of Padua, Italy) and Dr Chris Elvidge (NOAA National Geophysical Data Center, Boulder, Colorado)

Figure 5 is a 360 degree panorama taken from NaDEET showing that there are no light domes (sky glows over distant populated areas) visible from the NRNR.

Figure 5: Panorama of Horizon at Night from NaDEET

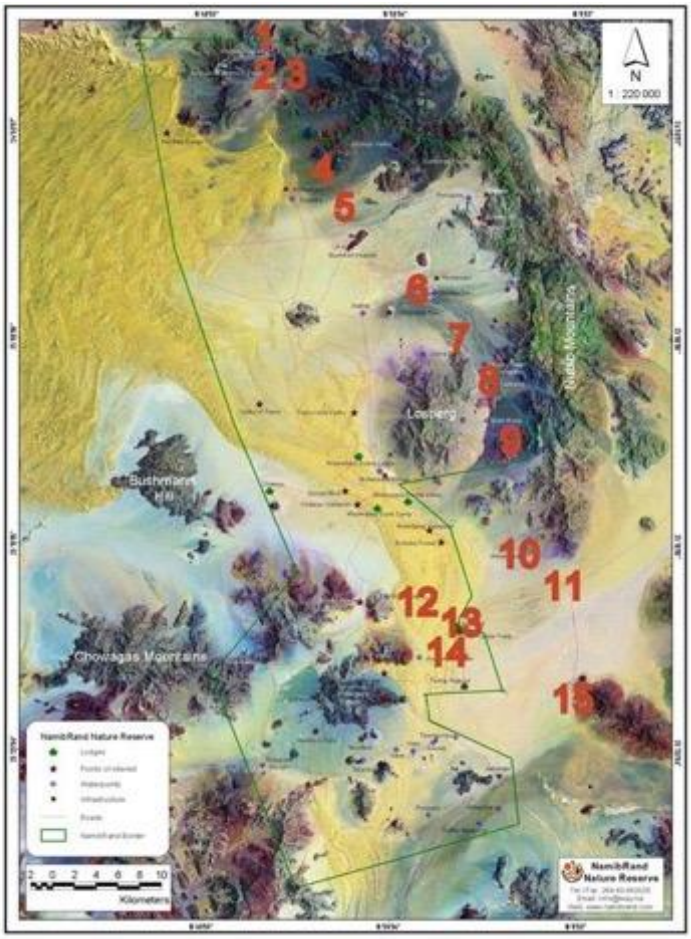
In addition, the area immediately surrounding the Reserve is very sparsely populated and high energy costs and low average income make the cost of exterior lighting prohibitive for most rural Namibians. Light pollution from lighting on the Reserve is minimal and will be discussed in detail in a separate section.

Quantitative measurements of the darkness of the sky can be made using a Sky Quality Meter (SQM). The meter displays the brightness of the sky in magnitudes/arcsecond^2, where the larger the number, the darker the sky. Heavily light polluted cities have reading of 17 or lower. Very dark sites will yield readings over 21.5. Confirmation of the darkness of the NRNR's sky can be seen in Figure 6 where Sky Quality Meter (SQM) measurements and the locations where they were made are presented. These readings average more than 22.0, demonstrating that the night sky over the Reserve is one of the darkest in the world. Details about the measurements can be found in Appendix A.

Figure 6: SQM Measurements

SQM Measurements (Average of 4 Readings)

1. 22.14
2. 22.11
3. 22.09
4. 22.14
5. 22.08
6. 22.13
7. 22.12
8. 22.11
9. 22.12
10. 22.08
11. 22.07
12. 21.96
13. 22.04
14. 21.72
15. 22.11



Another factor that makes viewing the night sky from the NRNR a special experience is the clarity of the air. This is because its location at the fringe of the Namib Desert results in very low humidity. Stars can be viewed right to the horizon, something that is not possible at most locations because their light would be extinguished by water vapor in the atmosphere. Figure 7 is a photograph of the horizon taken in July, 2011 from **NaDEET that demonstrates the air clarity.**

Figure 7: Horizon from NaDEET

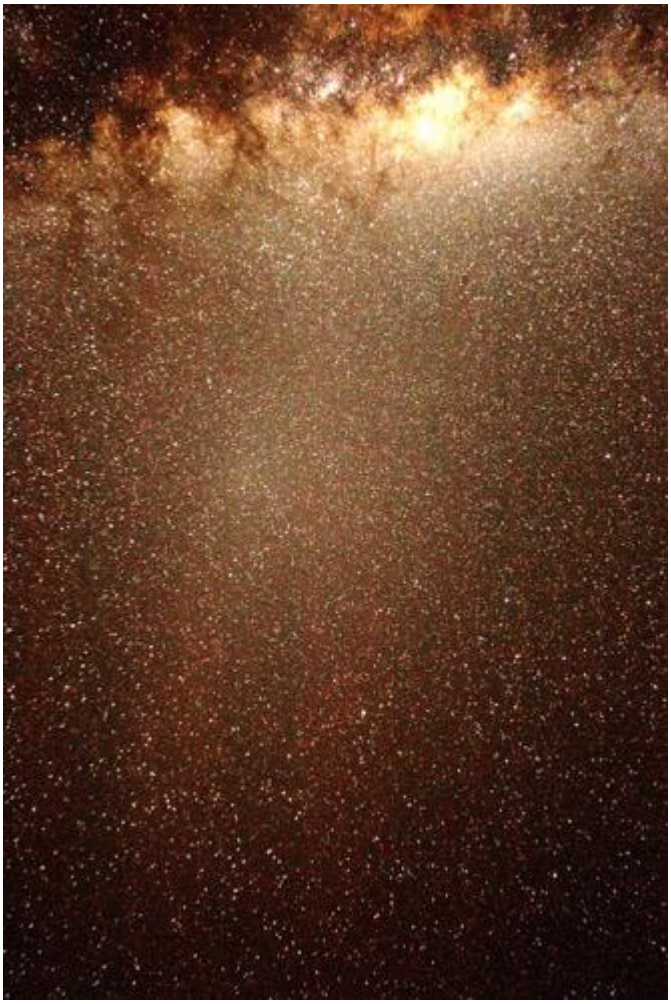
Not only does the NRNR offer excellent views of the night sky, but its very arid climate means that the night sky is cloud-free most nights of the year. Windhoek, which is cloudier than the Reserve, has over 300 sunny days each year.
Finally because of the NRNR's latitude, many of the most interesting objects in the sky including the center of our Milky Way Galaxy, the Magellanic Clouds (small companion galaxies of the Milky Way), the zodiacal light (sunlight scattered by dust in space), and the planets appear high in the sky offering superior views. This is also true for the gegenshein, a faint brightening of the zodiacal light overhead at midnight. Most sky watchers have never seen the gegenshein because to do so requires suburb viewing conditions. At the NRNR, it is possible to both see and photograph it on many nights. Figures 8-11 are photographs of some of these objects taken from the Reserve.

Figure 8: The Centre of the Milky Way

Figure 1: The Small (top) and Large (bottom) Magellanic Clouds

Figure 10: The Zodiacal Light

11: The Gegenshein (faint glow at center, Milky Way is at top)



The NRNR's exceptional skies are a valuable resource not only for the Reserve but also for Namibia and its people. For the reserve, the darkness of the night sky is an integral part of the environment vital to the continual health of its ecosystem. Studies have shown that light pollution can have serious negative effects on fauna. For example, it can reduce the hunting success of predators putting at risk their survival. On the NRNR this would impact a variety of species including leopards, bat-eared foxes, Cape foxes, jackals, African wild cats, hyenas, snakes, and owls. Flora can also be affected. When moths are attracted artificial lights, they do not pollinate flowering plants, interrupting the plants' reproductive cycle.
The night sky also contributes to the economy of the Reserve. To be financially self-sustaining, the Reserve must rely on tourism. Namibia has an international reputation as a tourist destination that offers magnificent views of the night skies and increasingly tourists plan their visits with this in mind. Recognizing this, all the Reserve's concessions are now including star watching as part of their guest activities. Both Sossusvlei Desert Lodge and Wolwedans also offer viewing of celestial objects through a telescope. As evidence of the value to these activities, at Sossusvlei Desert Lodge many guests note on their feedback forms that their visit to the Lodge's observatory was a highlight of their trip to Namibia
For Namibia, the NRNR's night sky is a valuable resource for the thousands of learners who visit NaDEET. Part of NaDEET's programming for the many school and community groups who stay there each year is an introduction to astronomy and a discussion of the threat posed by light pollution. The night sky has played an important role in the legends and traditions of many native groups in the country. Today with more and more of Namibia's youths growing up in light polluted cities, this

connection with celestial objects is being lost. When these learners visit NaDEET, they are able to experience the pristine skies that inspired their ancestors and in doing so help preserve this important part of their cultural heritage.

Threats to the NRNR Night Sky and Plans for their Remediation

Recognizing the value of its pristine night sky, the Reserve has initiated a program to preserve and protect it. It has done so in collaboration with the International Dark-Sky Association (IDA), the oldest and largest organization established to fight light pollution and whose mission is "*to preserve and protect the nighttime environment and our heritage of dark skies through environmentally responsible outdoor lighting.*" As a first step, potential threats have been identified. These threats can be classified into three categories based on their location.

1. **Development on the Reserve**

   Even before this project began, the NRNR had relatively few exterior lights and SQM measurements indicated there was little light pollution. However there was no comprehensive information on existing exterior lighting to use as a baseline. To rectify this, an audit of exterior lighting was performed. The complete inventory, including images of each type of fixture, is attached as Appendix B and a summary is included in Table 2.

   An analysis of this inventory revealed a significant number of lights that were not fully shielded (they emitted light at or above the horizontal) and were contributing light pollution. In coordination with the IDA, a program of lighting improvements was undertaken with the goal of reducing this light pollution. Some lights were removed, some had shielding added, some were repositioned so they were shielded by building structures, and some were replaced with new fully shielded fixtures. Figures 12 and 13 show sample before and after photos. Another audit was performed after the improvements were complete. This complete inventory, including images and descriptions of the improvements undertaken, is attached as Appendix C and a summary is also included in Table 2.

Table 2: Light Summary

	Total number of lights	Number of lights >500 lumens and not fully shielded	Number of lights >1000 lumens and not fully shielded
Before Improvements	433	116	29
After Improvements	402	10	0

Figure 12: Light Fixture Removed

Before

After

Figure 13: Light Fixture Moved and Shielded

Before

After

To summarize the results of the two inventories, initially on the entire 172,000 ha NamibRand Nature Reserve there were a total of 433 exterior lights. Of these 433 lights, 116 emitted over 500 lumens and were not fully shielded. Of these 116, 29 emitted over 1000 lumens and were not fully shielded. After completion of the program of lighting improvements in October, 2011 there were a total of 402 exterior lights. Of these 402 lights, only 10 emit over 500 lumens and are not fully shielded. These exceptions are the ten egress lights at Wolwedans Dune Camp. They have 9W compact fluorescent bulbs and are not fully shielded. However they are covered by the decorative shields shown in Figure 14 and cause negligible light pollution. They are scheduled to be upgraded in the near future and will then either be fully shielded or emit less than 500 lumens. All lights that emit over 1000 lumens are now fully shielded. Table 3 lists by location the changes in Reserve lighting that resulted from these improvements.

Figure 14: Wolwedans Dune Camp Egress Light

Table 3: Lighting Improvements by Location

Location	reduction in # of lights	reduction in # of lights >500 lumens and not fully shielded	reduction in # of lights >1000 lumens and not fully shielded
Sossusvlei Desert Lodge Staff Village	11	31	0
Sossusvlei Desert Lodge	12	26	3
Kwessiegat	0	2	0
Keerweder	0	16	7
Toekoms	0	4	4
Wolwedans Reception	5	13	13
NaDEET Centre	0	2	0
NaDEET (Die Dune)	0	2	1
Die Duine Tok Tokkie Trails Base	0	4	0
Family Hideout	0	2	0
Aandster	3	4	1
Totals	31	106	29

To ensure that future development on the Reserve does not adversely impact the sky darkness, in consultation with the IDA, the Reserve has adopted the following lighting guidelines

NamibRand Nature Reserve Lighting Guidelines

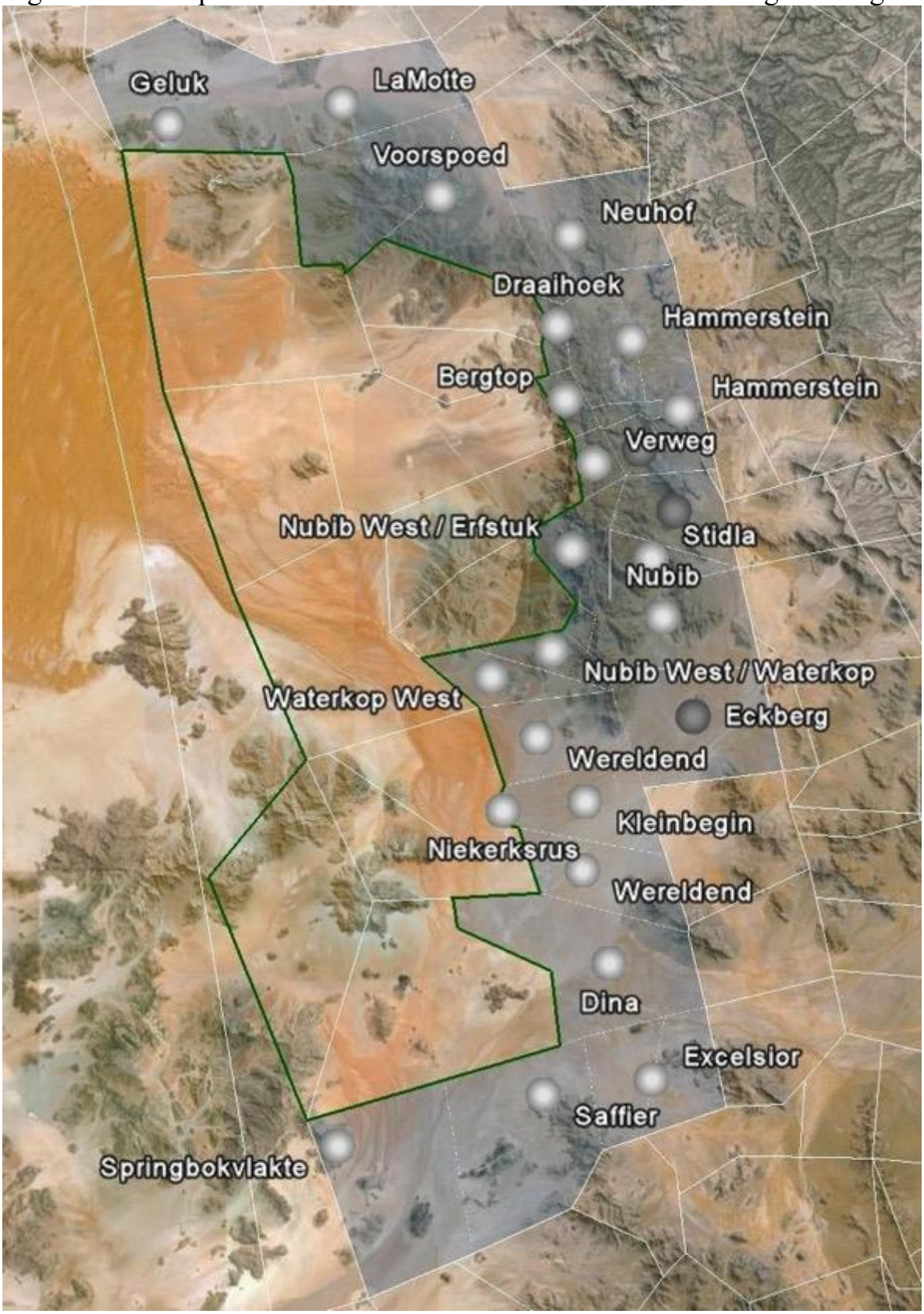
In order to preserve the magnificent views of the night sky above the NamibRand Nature Reserve, exterior lighting should be kept to a minimum. Whenever possible, amber or red bulbs should be used in exterior lights. Exterior lights should use bulbs with the minimum light output necessary to accomplish their purpose. Whenever possible, all exterior lights should be fully shielded. For a light to be fully shielded it must emit no light above the horizontal. Lights operated by motion detectors or timers should be used when practical to minimize the time the lights are on.

All exterior lights with an output of greater than 500 lumens must be fully shielded. In many cases the number of lumens emitted will appear on the bulb package or can be obtained from the distributor or manufacturer. If this information is not available, then the following guideline can be used. 500

lumens is produced by 30W incandescent bulbs, 30W halogen bulbs, 8W fluorescent bulbs and 7W compact fluorescent bulbs. The light output of LED bulbs of a given wattage varies from bulb to bulb so no conversion is applicable. If the output of a bulb is in doubt, contact the Control Warden for clarification.
Vehicles traveling on private roads on the NamibRand Nature Reserve should be operated in a manner to reduce light pollution. Headlights are not to be switched on until well after sunset and until such time as it is too dark for the vehicle to safely proceed without using lights. The slow speeds at which private roads on the Reserve are driven allow for the use park lights only during times when the moon provides light. Headlights on dim can be used when there is insufficient natural light to allow for safe navigation. Headlights on bright may never be used on private roads and may only be used on the public C27 road. Headlights should be turned off and only park lights used when the vehicle is near infrastructure or a tourism accommodation. Avoid shining headlights in the direction of any buildings or tourism accommodation infrastructure from any distance whenever possible. Exceptions to these guidelines can be made if there is a demonstrable need. A request for an exemption should be submitted in writing to the Control Warden, accompanied by any supporting documentation.

Regional Development
With the nearest significant population centers being 60 miles away and having few lights, the greatest potential threat to the Reserve's night sky would be regional development on private land. Figure 15 shows the neighboring properties to the NRNR and a description of each follows.

Figure 15: Map of NamibRand Nature Reserve and Neighbouring Properties



1) Geluk. Low density tourism only. Part of Kulala Wilderness Reserve.
2) La Motte & Voorspoed. Game Farm. Low density residence only.
3) Neuhof. Private Nature Reserve. Only one residence at present.
4) Draaihoek, Bergtop, Verweg, Nubib West and Waterkop. Private Nature Reserve. No residence.
5) Hammerstein, Stilda and Nubib. Mixed livestock and tourism. One lodge on Hammerstein. One lodge on Nubib. Stilda has one residence.

6) Eckberg & Wereldend. Livestock farms. One residence each.
7) Waterkop west, Niekersksrus, Kleinbegin and Wereldend south. Livestock farms with no residences.
8) Dina. Private nature reserve. Part of Pro-Namib Conservancy. Residence is east of main road (C27)
9) Excelsior. One residence, one campsite and six bed lodge operated by Drifters. Part of Pro-Namib Conservancy.
10) Saffier. Private Nature Reserve (negotiating to be part of NamibRand). No residence.
11) Springbokvlakte. Private Nature Reserve (negotiating to be part of NamibRand). One residence.

At present, these close neighbors have minimal exterior lighting and pose no threat to the NRNR's night sky. In the future the Reserve will cooperate with them on the issue and will provide advice and assistance when required.
Approximately 30 miles north of the Reserve's northern boundary the Sossusvlei/Sesriem area, a major tourist attraction shown in Figure 16, is undergoing development.

Figure 16: Location of Reserve relative to Sossusvlei/Sesriem

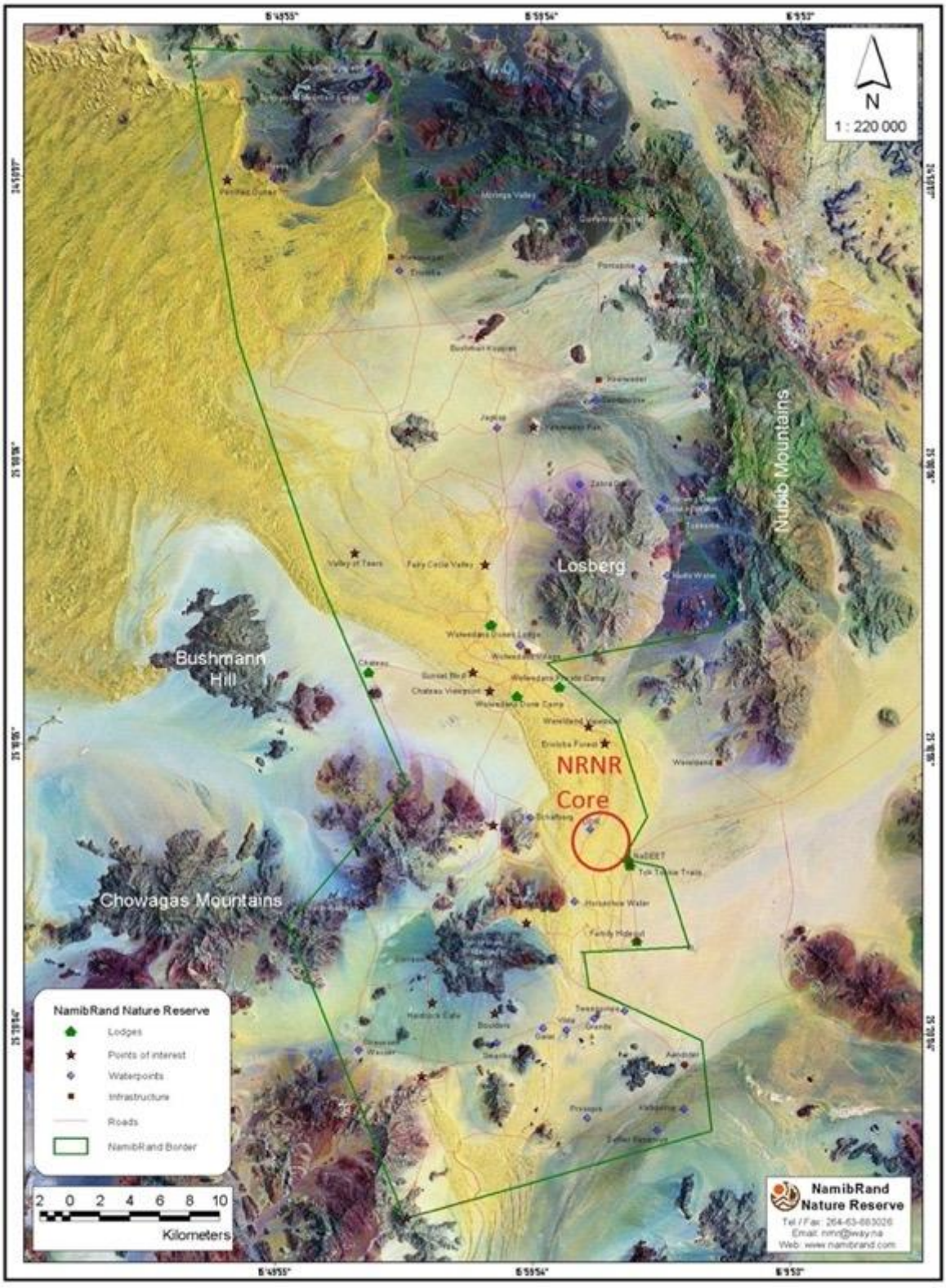
Recently a new fuel station and mini-market has opened in this area. Fortunately this facility was designed to be environmentally friendly and most of the lighting is fully shielded. However future construction may not be so benign. What is needed is regional awareness of the issue of light pollution.

NaDEET will play a key role in developing this awareness by presenting educational activities on the night sky and light pollution to the many groups of learners, teachers, and community leaders that attend their sustainable living programmes each year. To reach a wider audience, NaDEET has published an issue of their biannual magazine, the Bush Telegraph, devoted to the topic. It will be distributed in the fourth quarter of 2011 to teachers and learners throughout Namibia and to neighbouring landowners and tourism operators.

The NRNR will use its leadership roles in the Pro-Namib Conservancy and the Greater Sossusvlei - Namib Complex (GSNC) to focus these organizations' attention on the issue of light pollution. It has already assisted one Pro-Namib member with an exterior lighting inventory of its property.

In addition, the Reserve will apply to the IDA to be declared an International Dark Sky Reserve (IDSR). The NamibRand Dark Sky Reserve would generate national and international recognition and its existence could be used to argue for enacting lighting regulations in the region. The IDSR would consist of a core of national educational value, NaDEET, and a peripheral area consisting of the remainder of the NRNR. Figure 17 shows the core's location on the NRNR.

Figure 17: Location of IDSR on NamibRand Nature Reserve



Offshore Oil

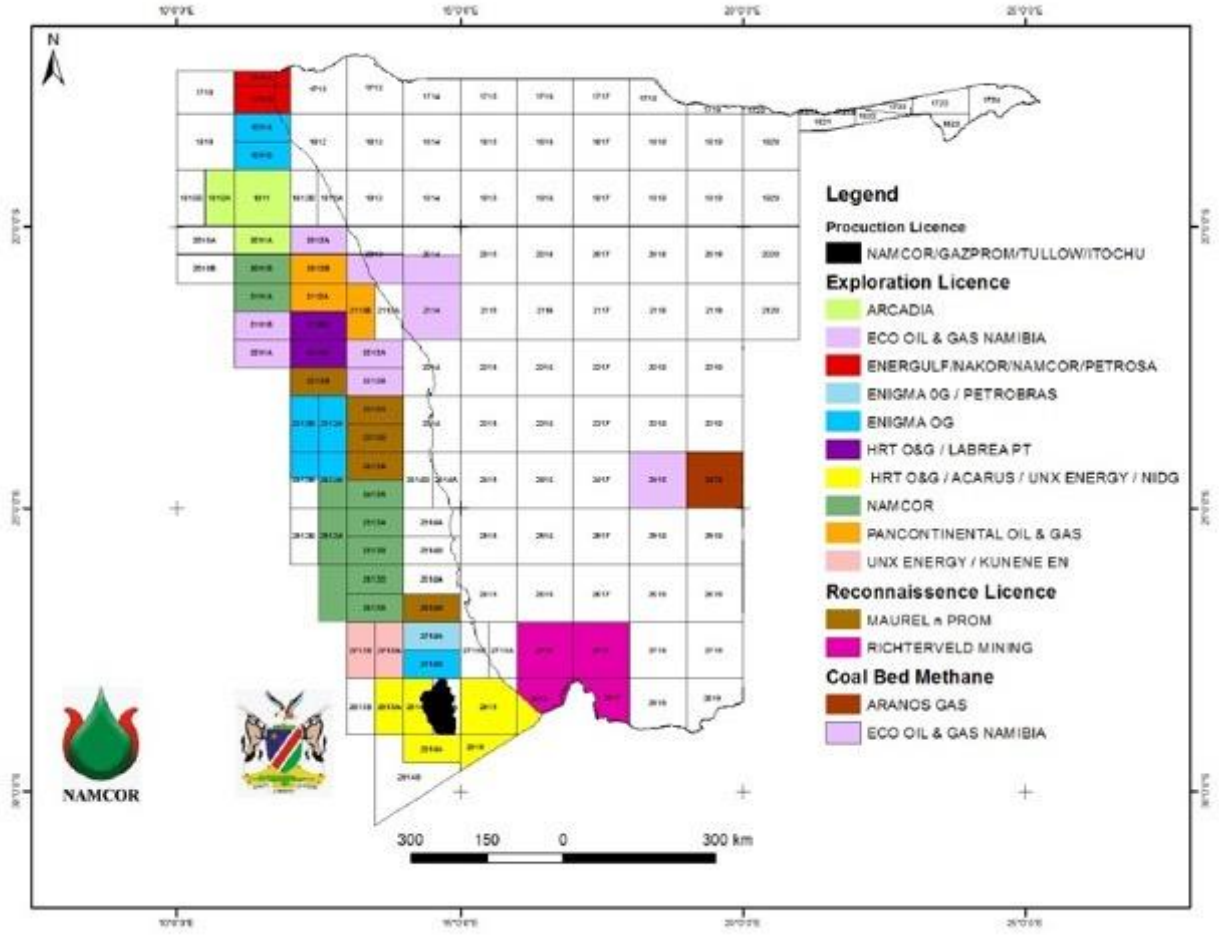
Production

In the last two years, oil exploration off the coast of Namibia has undergone tremendous expansion. Figure 18 shows the areas where companies have secured licenses. Early indications are that the largest oils reserves are located near the Angolan oil fields more than 500 miles north-west of the NRNR. Initial drilling will be in this area with production to begin as early as 2015. Subsequently it expected that oil drilling will be extended southward along the coast. If production is begun

immediately off the coastline west of the NRNR, these wells would be more than 60 miles west of the Reserve's western boundary.

Figure 18: Map of Oil Licences

When is brought to the surface, oil is usually accompanied by natural gas, consisting primarily of methane. Because methane is a stronger greenhouse gas than carbon dioxide it is harmful to release it into the atmosphere. The gas can be captured, liquefied, and transported to a market, but usually it is cheaper to simply burn it. In doing so a huge flame is created, producing a tremendous amount of light pollution. This process, called gas flaring, can be seen in Figure 19. It has resulted in areas of Nigeria where the sky is almost as bright at night as it is in the daytime and inhabitants never see the stars. The light resulting from gas flaring can be seen off the coasts of Nigeria and Angola in Figure 3. Unless the Namibian government prohibits gas flaring, the entire area of Namibia bordering the



ocean could suffer from severe light pollution. This area is made up off our Namibian National Parks and currently offers excellent views of the night sky. While the NRNR would be some distance from the flaring, there may still be some degradation of its night sky. If IDSR status can be obtained for the NRNR in the near future, this would be of great benefit to efforts to persuade the Namibian government to enact light pollution laws that would apply to the planned oil wells.

Figure 19: Gas Flare on Offshore Oil Rig

Monitoring

To ensure that the NRNR skies remain dark, the Control Warden will institute two monitoring programs. First, to ensure activities on the Reserve do not cause increased light pollution, biennially each concession will be required to check their exterior lighting and report by email if any changes that were not authorized by the Control Warden have been made. In addition, as part of their normal inspections of the reserve, the Control Warden and Rangers will note any deviations from the NRNR Lighting Guidelines.

Second, to ensure that external light pollution is not degrading the NRNR's night sky, the Reserve will install a SQM with a computer interface. It will monitor the sky continuously and its reading will be available in live-time on the Reserve's website and will also be archived. The Control Warden will periodically compare SQM readings on clear, moonless nights to similar nights from approximately the same date and time in previous years and record any significant increase in sky brightness so the Reserve management can investigate the causes and, in conjunction with the IDA, develop possible remediation actions.

Future Initiatives

Should the NRNR receive IDSR status, the next step would be to approach the government of Namibia with the idea of having the Namib-Naukluft National Park become an IDA Dark Sky Park (DSP). If it achieved this designation, that would further advance the national awareness of the importance of preserving the night sky. The NRNR could offer its expertise to the Park in preparing its application. Should this initiative be successful, then if the proposed Namibian super-park, a merger of the existing four coastal National Parks including the Namib-Naukluft National Park, becomes a reality, the DSP status could be extended to it. This would ensure the entire coastline of Namibia would have international recognition as a region whose night sky is worthy of protection and strengthen the case for prohibiting gas flaring.

APPENDIX VI. Eco Awards Namibia

The summary of the score that Boulders received in their latest Eco Awards assessment.

Eco Awards Namibia

Tel: +264 (0)61 306450
Fax: +264 (0)61 306290
Email: admin@ecoawards-namibia.org
Web site: www.ecoawards-namibia.org

Assessment Form:

Establishment details:

Name:	**Boulders Camp**	No of beds:	6
NTB Registration category	Permanent Tented Camp	Telephone:	+264816864379
And number:	TNC 0042		
Physical address:	Wolwedans (NRNR)	Fax:	
Postal address:	P O Box 5048	email:	sustainability@gmail.com
	Windhoek, Namibia		
Contact person:			
Name:	Kaino Angula	Telephone:	+26461230616
Position:	Sustainability Co-ordinator	Fax:	
Cell-phone:	+264815739109	email:	khosea02@gmail.com

	CRITERIA SUBSECTION	TOTAL SCORE POSSIBLE	TOTAL SCORE APPLICABLE	OWN SCORE	ASSESSORS SCORE	AWARDED SCORE
1.	Management	27	27	22	22	22
2.	Conservation	17	17	16	16	16
3.	Energy	16	16	16	16	16
4.	Water	20	20	20	20	16
5.	Waste, pollution, sewer	25	25	24	25	25
6.	Building & landscaping	18	17	17	16	16
7.	Staff & Health	36	36	36	35	35
8.	Guiding	6	6	6	6	6
9.	Social responsibility	13	13	10	13	13
10.	Legal/NTB Compliance	16	16	**12**	**16**	16
	SUBTOTAL	**189**	**193**	**179**	**185**	181
	PERCENTAGE	100%	100%	95%	96%	94%
	To calculate the percentage: divide total own score by total APPLICABLE score (i.e. exclude items not applicable to your establishment specifically and exclude bonus points), multiply the answer by 100.					
11.	Bonus points	10%	10%		2	4
	TOTAL FINAL SCORE	**110%**	**110%**		**98%**	98%
	TOTAL FINAL SCORE					

Number of Flowers applied for: *(Circle applicable category)*:

40% or more = One Flower	55% or more = Two Flowers	70% or more = Three Flowers	80% or more = Four Flowers	90% or more = Five Flowers

Date:	11 February 2024
Name of Assessor:	Hazel Milne
Signature:	
Date of MC approval:	03 April 2024
Signature of MC Chair:	