



**ECC**  
**ENVIRONMENTAL**  
COMPLIANCE CONSULTANCY



ECC-096-239-REP-05-B

# Environmental Scoping and Impact Assessment

OKAVANGO ADVENTURE LODGE

KAVANGO REGION

PREPARED FOR



SEPTEMBER 2019

## TITLE AND APPROVAL PAGE

<b>Project Name:</b>	Development of the Okavango River Adventure Lodge.
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### Environmental Compliance Consultancy Contact Details:

We welcome any enquiries regarding this document and its content: please contact:

#### Stephan Bezuidenhout

Environmental Consultant & Practitioner  
Tel: +264 81 669 7608  
Email: [stephan@eccenvironmental.com](mailto:stephan@eccenvironmental.com)  
[www.eccenvironmental.com](http://www.eccenvironmental.com)

#### Jessica Mooney

Environmental Consultant & Practitioner  
Tel: +264 81 669 7608  
Email: [jessica@eccenvironmental.com](mailto:jessica@eccenvironmental.com)  
[www.eccenvironmental.com](http://www.eccenvironmental.com)

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## EXECUTIVE SUMMARY

Southern Cross Adventure Lodges (Pty) Ltd propose to undertake construction activities for the development of Okavango River Adventure Lodge in the Kavango-West Region. The proposed development comprises a 15 en-suite units lodge. The area has significant sustainable tourism potential, which will expose tourists to the cultural experience in northern parts of Namibia. Kavango Region rises in the Angolan highlands and is a mass of perennially flowing water and the lifeblood of the Kavango people. The proposed development will also generate income for the indigenous community and open-up economic opportunities within the region. Agreements have been signed, finances are in place and contractors have been appointed for the lodge construction. The newly formed venture is designed to further spread financial, social and environmental benefits that eco-tourism can bring to previously marginalized communities.

The planned project triggers listed activities in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and Regulations (2011), therefore, an environmental clearance certificate is required. As part of the environmental clearance certificate application, an environmental impact assessment has been undertaken which satisfies the requirements of the Environmental Management Act, 2007 (EMA). This environmental scoping report and Environmental Management Plan (EMP) shall be submitted as part of the application for the environmental clearance.

The assessment has been carried out for the construction and operations of the Okavango River Adventure Lodge. The proposed development comprises of construction of water sewage tanks, water pipeline to import fresh water, powerline to import electricity, staff housing, room for back-up generator and sewage recycling plant

The planned development is located in an area consisting of the Kavango River valley, which is an important wetland system with some near-endemic plant species and riverine forests. Most of the vegetation in the Kavango is fairly homogeneous Kalahari woodland, comprised of broad-leafed, deciduous woodlands that vary according to topography and the nature of the soils. The majority of dune valleys have been cleared for agriculture and multiple sequences of regrowth of shrubs and trees mask the natural vegetation types. Omirambas in particular have been greatly altered by agricultural activities, so that there is a mosaic of recent and old fields, grassland and localised patches of shrubland.

The larger trees such as kiasat (*Pterocarpus angolensis*), teak (*Baikaea plurijuga*), silver terminalia (*Terminalia sericea*) and red seringa (*Burkea Africana*) constitute a valuable resource of timber. A number of species are valued for food, such as false mopane (*Guibourtia coleosperma*), mangetti (*Schinziophyton rautanenii*) and monkey oranges (*Strychnos cocculoides*)

The site and extent of the lodge infrastructure were selected so as to minimise the environmental footprint, minimise the distance to sources of water and electricity and use existing infrastructure as far as possible.

This environmental impact assessment (EIA) has been undertaken in terms of the requirements of the Environmental Management Act 7 of 2007 and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, 2007 (referred to herein as the EIA Regulations). The EIA was undertaken using a methodology developed by Environmental Compliance Consultancy, which is based on the International Finance Corporation (IFC) standard for impact assessments. Through the scoping process, a review of the site and surrounding environment was completed by undertaking desktop reviews and verification of site data.

Due to the nature and scale of the project no significant impacts were identified during the scoping phase. Measures to mitigate and manage potential impacts on the environment during the construction and operational phases are outlined in the EMP.

This assessment has assessed, potential, likely and identified impacts, through the process it was determined that the likely effects were not deemed significant due to the magnitude of change from the baseline environment, the duration of potential impacts and the reversibility of effects. On this basis, it is the opinion of ECC that an environmental clearance certificate could be issued, on conditions that the management and mitigation measures specified in the EMP are implemented and adhered to.

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## DEFINITIONS AND ABBREVIATIONS

ALARP	As Low As Reasonably Practicable
DEA	Directorate of Environmental Affairs
ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
IFC	International Finance Corporation
MET	Ministry of Environment and Tourism



# 1 INTRODUCTION

## 1.1 PURPOSE OF THIS REPORT

The purpose of this report is to present the findings of the EIA for the proposed project. The proposed project is to undertake development activities for the proposed Okavango River Adventure Lodge, which are described in detail throughout the report. The EIA has been undertaken in terms of the requirements of the Environmental Management Act, 2007 and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, 2007 (referred to herein as the EIA Regulations).

This scoping report plus impact assessment and appendices will be submitted to the Directorate of Environmental Affairs (DEA) at the Ministry of Environment and Tourism (MET) for review as part of the applications for environmental clearance certificate.

Environmental Compliance Consultancy (ECC) has prepared this report. ECC's terms of reference for the assessment is strictly to address potential effects, whether positive or negative and their relative significance, explore alternatives for technical recommendations and identify appropriate mitigation measures.

This report provides information to the public and stakeholders to aid in the decision-making process for the proposed project. The objectives are to:

- Provide a description of the proposed activity and the site on which the activity is to be undertaken, and the location of the activity on the site
- Provide a description of the environment that may be affected by the activity
- Identify the laws and guidelines that have been considered in the assessment and preparation of this report;
- Provide details of the public consultation process
- Describe the need and desirability of the activity
- Provide a high level of environmental and social impact assessment on feasible alternatives that were considered, and
- Report the assessment findings, identifying the significance of effects.

In addition to the environmental assessment, an Environmental Management Plan (EMP) (Appendix A) is also required in terms of the Environmental Management Act, 2007. An EMP has been developed to provide a management framework for the planning and implementation of construction activities. The EMP provides construction standards and arrangements to ensure that the potential environmental and social impacts are mitigated, prevented and/or minimised as far as reasonably practicable, and that statutory requirements and other legal obligations are fulfilled.

## 1.2 BACKGROUND OF PROPOSED PROJECT

Southern Cross Adventure Lodges (Pty) Ltd propose to undertake construction activities for the development of Okavango River Adventure Lodge in the Kavango West Region. The proposed development is a 15 en-suite units lodge. The area has significant sustainable tourism potential and exposes tourists to the cultural experience in northeast part of Namibia (see FIGURE 1).

The proposed development will also generate income for the indigenous community. Agreements have been signed, finances are in place and contractors have been appointed for the lodge construction. The newly formed venture is designed to further spread financial, social and environmental benefits that eco-tourism can bring to previously marginalized communities.

Activities of the lodge will include; hiking/nature walks, lodging, canoeing and cultural interactions with communities, swimming pool, and camping.





FIGURE 1 - LOCALITY MAP OF OKAVANGO RIVER ADVENTURE LODGE

### 1.3 ENVIRONMENTAL REQUIREMENTS

The Environmental Management Act No.7 of 2007 stipulates that an environmental clearance certificate is required to undertake listed activities in terms of the Act and its regulations. As such an environmental impact assessment (EIA) of the proposed project is required, and subsequent assessment report (this document) submitted as part of the Environmental Clearance Certificate application. Listed activities triggered by the proposed project in terms of the Environmental Management Act, 2007 and its regulations are as follows: **TABLE 1.**

**TABLE 1 - LISTED ACTIVITIES AND THEIR RELEVANCE TO THE PROPOSED DEVELOPMENT**

LISTED ACTIVITIES	EIA SCREENING FINDING
<p><b>ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES</b></p> <p>1 (b) The transmission and supply of electricity</p>	<p>A power line will be installed to provide electricity at the lodge site.</p>
<p><b>WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES</b></p> <p>(2.1) The construction of facilities for waste sites, treatment of waste and disposal of waste.</p> <p>(2.3) The import, processing, use and recycling, temporary storage, transit or export of waste</p>	<p>Household waste shall be generated during, construction and operations, which shall be collected and removed from the site for reused, recycling or final disposal at an appropriate facility.</p>
<p><b>TOURISM DEVELOPMENT ACTIVITIES</b></p> <p>(6) The construction of resorts, lodges, hotels or other tourism and hospitality facilities</p>	<p>The planned project is the construction of a lodge for tourism purpose.</p>
<p><b>WATER RESOURCE DEVELOPMENTS</b></p> <p>8.6) Construction of industrial and domestic waste wastewater treatment plants and related pipeline systems</p>	<p>Whilst the proposed project is not a dedicated facility for waste management, treatment or disposal, sewerage waste shall be produced on site and will require treatment prior to discharge. A sewerage treatment facility shall be installed.</p> <p>Water will be abstracted from the Okavango River and permits will be obtained as appropriate.</p>
<p><b>MINING AND QUARRYING ACTIVITIES</b></p> <p>(3.2) Other forms of mining or extraction of any natural resources whether regulated by law or not.</p>	<p>Minimal sand removal is required for construction activities. The sand will be sourced from an approved existing borrow pit.</p>
<p><b>FORESTRY ACTIVITIES</b></p> <p>(4) The clearance of forest areas, deforestation, forestation, timber harvesting or any other related activity that requires authorisation in term of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.</p>	<p>Minimal vegetation clearance is required in order to allow the construction of the proposed project. Specially protected plant species will not be cleared without approval from the competent authority.</p>

## 1.4 THE PROPONENT OF THE PROPOSED PROJECT

The proponent of the project is Southern Cross Adventure Lodges (Pty) Ltd as set out in **TABLE 2** below.

**TABLE 2 - PROPONENT DETAILS**

CONTACT	POSTAL ADDRESS	EMAIL ADDRESS	TELEPHONE	WEBSITE
Jochen Beckert	P O Box 5633 Windhoek	jochen@absoluttours.com	+264 61 308 675	www.absoluttours.com

## 1.5 ENVIRONMENTAL CONSULTANCY

ECC, a Namibian consultancy (registration number Close Corporation 2013/11401), has prepared this environmental scoping and impact assessment report on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa, in both the public and private sectors. ECC is independent of the proponent and has no vested or financial interest in the proposed project, except for fair remuneration for professional services rendered.

All compliance and regulatory requirements regarding this EIA report should be forwarded by email or posted to the following address:

### **Environmental Compliance Consultancy**

PO BOX 91193  
Klein Windhoek, Namibia  
Tel: +264 81 6697608  
Email: [info@eccenvironmental.com](mailto:info@eccenvironmental.com)

## 1.6 REPORT STRUCTURE

The scoping report plus impact assessment is structured as per the contents set out in **TABLE 3**.

**TABLE 3 - STRUCTURE OF THE REPORT**

SECTION	TITLE	CONTENT
-	Executive Summary	Executive summary of the EIA
-	Acronyms	A list of acronyms used throughout the report
<b>1</b>	Introduction	This chapter introduces the EIA and provides background information on the proponent
<b>2</b>	Regulatory Framework	This chapter describes the Namibian, international and relevant environmental regulatory framework applicable to the project
<b>3</b>	Approach to the EIA	Provides the assessment methodology applied to the EIA
<b>4</b>	Project Description	Technical description of the project
<b>5</b>	Alternatives	This chapter considers alternative options for the project that allow the objectives of the project to be met detailing the reasons for the selection and rejection of options
<b>6</b>	Description of the baseline environment	This chapter describes the existing environment through the analysis of the baseline data regarding the existing natural and socio-economic environment

SECTION	TITLE	CONTENT
7	Prediction and Evaluation of Impacts Methodology	This chapter presents the methodology applied to the EIA
8	Assessment Findings and Mitigation	This chapter predicts the potential environmental and social impacts arising from the project, the assessment of impacts including residual impact  This chapter also outlines the proposed management strategies for monitoring commitments to ensure the actual and potential impacts on the environment are minimised to “As Low As Reasonably Practicable” (ALARP) this informs the EMP
9	Environmental Management Plan	This chapter provides a short description of the EMP used to take proactive action by addressing potential problems before they occur and outline mitigation measures for each impact
10	Conclusions	Details the next steps for the EIA
11	References	A list of reference used for this report
12	Appendices	<ul style="list-style-type: none"> <li>– Appendix A: Environmental Management Plan</li> <li>– Appendix B: Non-Technical Summary</li> <li>– Appendix C: Evidence of Public Consultation, Site notice, Newspaper adverts</li> <li>– Appendix D: ECC CVs</li> <li>– Appendix E: List of plant species</li> </ul>

## 2 REGULATORY FRAMEWORK

The Constitution of the Republic of Namibia, 1990 clearly defines the nation’s position in relation to sustainable development and environmental management. According to the Constitution the State shall actively promote and maintain the welfare of the people by adopting policies aimed at the following:

*“Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future; ....”*

### ***The Constitution of the Republic of Namibia Article 95 (I)***

This chapter outlines the regulatory framework applicable to the proposed project. **Error! Reference source not found.** 4 provides a list of applicable legislation and the relevance to the project.

**TABLE 4- LEGAL COMPLIANCE**

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
<p><b>Environmental Management Act, 2007 (Act No. 7 of 2007) and its regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011)</b></p>	<p>The Act aim to promote sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment.</p> <p>It sets the principles of environmental management as well as the functions and powers of the Minister. The Act requires certain activities to obtain an environmental clearance certificate prior to project development. The Act states an EIA may be undertaken and submitted as part of the environmental clearance certificate application.</p> <p>The MET is responsible for the protection and management of Namibia’s natural environment. The Department of Environmental Affairs under the MET is responsible for the administration of the EIA process.</p>	<p>This Environmental Scoping Report (and EMP) documents the findings of the environmental assessment undertaken for the proposed project, which will form part of the environmental clearance application. The assessment and report have been undertaken in line with the requirements under the Act and associated regulations.</p>
<p><b>Water Act, 1956</b></p>	<p>This Act provides for “the control, conservation and use of water for domestic, agricultural, urban and industrial purposes; to make provision for the control, in certain respect and for the control of certain activities on or in water in certain areas”.</p> <p>The Ministry of Agriculture Water and Forestry Department of Water Affairs is responsible for the administration of the Water Act.</p> <p>The Minister may issue a Permit in terms of the regulations 5 and 9 of the government</p>	<p>The Act stipulates obligations to prevent pollution of water. The EMP sets out measures to avoid polluting the water environment.</p> <p>Measures to minimise potential groundwater and surface water pollution are contained in the EMP.</p> <p>Should the project require drilling and abstraction of water from surface and or underground sources, an application should be submitted to the Minister of Agriculture Water and Forestry.</p>



NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	notice R1278 of 23 July 1971 as promulgated under section 30 (2) of the Water Act no. 54 of 1956, as amended.	
<b>Soil Conservation Act No.76 of 1969</b>	Makes provision for the prevention and control of soil erosion and the protection, improvement and the conservation, improvement and manner of use of the soil and vegetation.	Whilst minimum vegetation disturbance will occur on site during construction, there is potential to remove some and disturb soil. The construction methods and final design have been considered in the design of the planned project to be undertaken within site boundaries. Measures in the EMP set out methods to avoid soil erosion.
<b>National Heritage Act, No. 27 of 2004.</b>	The Act provides provision of the protection and conservation of places and objects with heritage significance. Section 55 compels construction companies to report any archaeological findings to the National Heritage Council after which a heritage permit needs to be issued	There is potential for heritage objects to be found on site, therefore the stipulations in the Act have been taken into consideration and are incorporated into the EMP. Section 55 compels construction companies to report any archaeological findings to the National Heritage Council after which a permit needs to be issued before the find can be disturbed.

## 2.1 NATIONAL POLICIES

**Table 5 - NATIONAL POLICES AND APPLICABILITY TO THE PROJECT**

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
<b>Vision 2030</b>	Vision 2030 sets out the nation's development programmes and strategies to achieve its national objectives. It sets out eight themes to realise the country's long-term vision.  Vision 2030 states that the overall goal of the vision is to improve the quality of life of the Namibian people to a level in line with the developed world.	The planned project shall meet the objectives of Vision 2030 and shall contribute to the overall development of the country while building capacity in the local communities.
<b>Fifth National Development Plan (NDP5)</b>	The NDP5 is the fifth in the series of seven five-year national development plans that outline the objectives and aspiration of Namibia's long-term vision as expressed in Vision 2030. The NDP5 is structure on five pillars: economic progression, social transformation, environmental sustainability and good	The planned project supports meeting the objectives of the NDP5 through creating opportunities for ecotourism.

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	<p>governance. Under the social transformation pillar is the goal of improved education.</p> <p>A desired outcome of NDP5 is to have a diversified and competitive tourism sector with increased number of tourists from 1.4 million in 2015 to 1.8 million.</p>	
<p><b>The Environmental Assessment Policy</b></p>	<p>Approved by Cabinet in 1994, the Policy obliges Namibia to place a high priority on maintaining ecosystems and related ecological processes, and to uphold maximum biological diversity. The Policy recognises that environmental assessments are a key tool towards implementing integrated environmental management. The policy has also gained legislative support by the EMA.</p>	<p>Part of the planned projects vision is to maintain the ecosystems found on the planned site in order to integrate the facilities into the natural environment. An environmental assessment has also been undertaken as required under the EMA. The findings of which are presented in this report.</p>

## 2.2 ENVIRONMENTAL POLICY

Southern Cross Adventures Lodges personnel are committed to environmental management principles and to conduct all construction activities in such a way as to minimize the adversely impact upon the natural environment, to ensure the compliance with all applicable laws and to aim for continuous improvements. This will be achieved through the understanding by all personnel of the Southern Cross Adventure Lodges.

## 2.3 PERMITS AND ECO AWARDS

Environmental permits, in addition to an environmental clearance certificate may be needed in order to carry out operations of the lodge to ensure full compliance with the Namibian law. Potential permits that may be required for the operations of the lodge is tabled below.

Above and beyond compliance is the well renowned 'Eco Awards Namibia'. This is an alliance of private sector and government organisation that runs a sustainable tourism certification programme. It is a mark of distinction for accommodation establishments that are planned and managed according to eco-friendly principles. ECC encourages our tourism clients to participate in the Eco Awards programme.

Details of the permits and Eco awards are included in TABLE 6.

**TABLE 6 - PERMITS AND LICENSES**

PERMIT	RELEVANT AUTHORITY	VALIDITY/DURATION
<p><b>Waste Treatment Plant</b></p>	<p>Ministry of Water, Agriculture and Forestry</p>	<p>Permit dependent</p>
<p><b>Water Abstraction Permit</b></p>	<p>Ministry of Water, Agriculture and Forestry</p>	<p>Permit dependent</p>
<p><b>Eco Awards</b></p>	<p>NGO</p>	<p><a href="https://ecoawards-namibia.org">https://ecoawards-namibia.org</a></p>



## 3 METHODOLOGY AND APPROACH TO THE EIA

### 3.1 PURPOSE OF AN EIA

The EIA process in Namibia is governed and controlled by the Environmental Management, 2007 and the EIA Regulations, 2012, which is administered by the Office of the Environmental Commissioner through the Department of Environmental Affairs of the MET.

An EIA is a process of identifying, predicting, evaluating and mitigating the potential impacts of a proposed project on the natural and human environment. The aim of the scoping assessment and EIA process and subsequent report are to apply the principles of environmental management to proposed activities, reduce the negative and increase the positive impacts arising from a proposed project, provide an opportunity for the public to consider the environmental impacts of a proposed project through meaningful consultation, and to provide a vehicle to present the findings of the assessment process to competent authorities for decision making.

### 3.2 THE ASSESSMENT PROCESS

The EIA methodology applied to this EIA has been developed using the International Finance Corporation (IFC) standards and models, in particular Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017)(International Finance Corporation, 2012); Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008); international and national best practice; and over 25 years of combined EIA experience.

The process followed through the basic assessment is illustrated in **Error! Reference source not found.** and detailed further in the following sections.

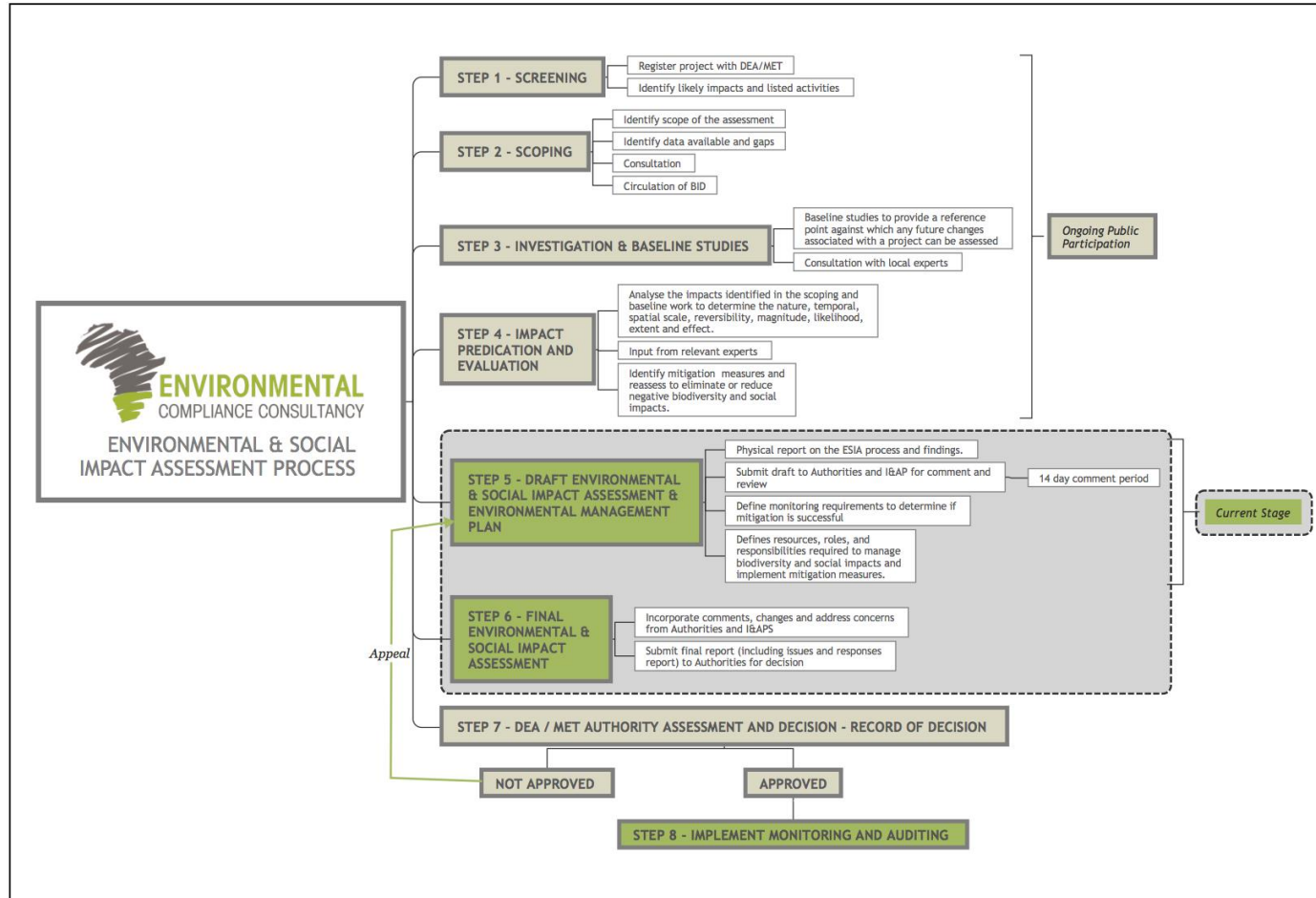


FIGURE 2 - ECC SCOPING

### 3.1 METHODOLOGY FOR THE IMPACT ASSESSMENT

ECCs methodology for environmental impact assessments is adopted and based on models for environmental and social impact assessments set out by the International Finance Corporation (IFC) principal 1 'Assessment and management of environmental and social risks and impacts. Furthermore, this impact assessment was undertaken for Okavango River Adventure Lodge in accordance with Namibian legal requirements.

This impact assessment is a formal process in which the effects of certain types of development on the biophysical, social and economic environments are identified, assessed and reported, so that the effects can be taken into account when considering whether to grant development consent or to provide financial support.

Desktop studies on the national database are undertaken as part of the scoping stage to get information of the current status of the receiving environment. This provides a baseline where changes that occur as a result of the proposed project can be measured.

The environmental and social topics that may be affected by the proposed project are described in this section. The baseline focuses on receptors could be affected by the proposed project.

### 3.2 SCREENING OF THE PROPOSED PROJECT

The first stages of the EIA process are to register the project with the Competent Authority and undertake a screening exercise. The screening exercise determines whether the proposed project is considered as a Listed Activity in terms of the Environmental Management Act, 2007 and associated Regulations, and if significant impacts may arise. During this process, the location, scale and duration of project activities are considered against the receiving environment to determine the approach to the EIA.

### 3.3 SCOPING OF THE ENVIRONMENTAL ASSESSMENT

The purpose of the scoping stage in the EIA process is to identify the scope of assessment, undertake a high-level assessment to identify potential impacts, and confirm if further investigation is required to assign the severity of potential significant effects and allocate appropriate mitigation.

This report presents the findings of the scoping phase and high-level assessment and confirms that no further investigation is required. This conclusion is presented in Section 6.

### 3.4 BASELINE STUDIES

Baseline studies are undertaken as part of the scoping stage, which involves collecting all pertinent information from the current status of the receiving environment. This provides a baseline against which changes that occur as a result of the proposed project can be measured.

For the proposed project, baseline information was obtained through a desk-top study, focussing on environmental receptors that could be affected by the proposed project and verified through site data. The baseline studies are presented in Section 4.

### 3.5 IMPACT PREDICATION AND EVALUATION

Impact prediction and evaluation involves predicting the possible changes to the environment as a result of the development/project. The recognized methodology was applied to determine the magnitude of impact and whether or not the impact was considered significant and thus warrant further investigation. The findings of the assessment are presented in section 6.

### 3.6 EIA DETERMINATION OF SIGNIFICANCE

The evaluation and prediction of the environmental and social impacts require the assessment of the project characteristics against the baseline characteristics, ensuring all potentially significant impacts are identified and assessed.

The significance of an impact is determined by taking into consideration the combination of the sensitivity and importance/value of environmental and social receptors that may be affected by the proposed project, the nature and characteristics of the impact, and the magnitude of potential change. The magnitude of change (the impact) is the identifiable changes to the existing environment which may be direct or indirect; temporary/short term, long-term or permanent; and either beneficial or adverse. These are described as follows and thresholds are provided in Table 7, 8, and 9

- The **sensitivity and value of a receptor** is determined by identifying how sensitive and vulnerable a receptor is to change, and the importance of the receptor (internationally, nationally, regionally and locally).
- The **nature and characteristics of the impact** is determined through consideration of the frequency, duration, reversibility and probability of the impact occurring.
- The **magnitude of change** measures the scale or extent of the change from the baseline condition, irrespective of the value. The magnitude of change may alter over time, therefore temporal variation is considered (short- term, medium-term; long-term, reversible, irreversible or permanent).

**TABLE 7 - SENSITIVITY AND VALUE OF RECEPTOR**

SENSITIVITY AND VALUE	DESCRIPTION
High	Of value, importance or rarity on an international and national scale, and with very limited potential for substitution; and/or very sensitive to change or has little capacity to accommodate a change.
Medium	Of value, importance or rarity on a regional scale, and with limited potential for substitution; and/or moderate sensitivity to change, or moderate capacity to accommodate a change.
Low	Of value, importance or rarity on a local scale; and/or not particularly sensitive to change or has considerable capacity to accommodate a change.

**TABLE 8 - NATURE OF IMPACT**

NATURE	DESCRIPTION
Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.
Direct	Impacts causing an impact through direct interaction between a planned project activity and the receiving environment/receptors.
Indirect	Impacts that result from other activities that are encouraged to happen as a result / consequence of the Project. Associated with the project and may occur at a later time or wider area
<b>Extent / Geographic Scale</b>	
On-site	Impacts that are limited to the boundaries of the proposed project site
Local	Impacts that occur in the local area of influence, including around the proposed site and within the wider community
Regional	Impacts that affect a receptor that is regionally important by virtue of scale, designation, quality or rarity.
National	Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.

International	Impacts that affect a receptor that is internationally important by virtue of scale, designation, quality or rarity.
<b>Duration</b>	
Short-term	Impacts that are likely to last for the duration of the activity causing the impact and are recoverable
Medium-term	Impacts that are likely to continue after the activity causing the impact and are recoverable
Long-term	Impacts that are likely to last far beyond the end of the activity causing the damage but are recoverable over time
<b>Reversibility</b>	
Permanent /Irreversible	Impacts which are not reversible and are permanent
Temporary / Reversible	Impacts are reversible and recoverable in the future
<b>Likelihood</b>	
Certain	The impact is likely to occur
Likely	The impact is likely to occur under most circumstances
Unlikely	The impact is unlikely to occur

**TABLE 9 - MAGNITUDE OF CHANGE**

MAGNITUDE OF CHANGE	DESCRIPTION
<b>Major</b>	Loss of resource, and quality and integrity of resource; severe damage to key characteristics, features or elements; or Large-scale or major improvement of resources quality; extensive restoration or enhancement; major improvement of attribute quality.
<b>Moderate</b>	Loss of resource, but not adversely affecting its integrity; partial loss of/damage to key characteristics, features or elements; or Benefit to, or addition of, key characteristics, features or elements; improvements of attribute quality.
<b>Minor</b>	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element; or Minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element; some beneficial effect on attribute quality or a reduced risk of a negative effect occurring.
<b>Negligible</b>	Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or Very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element.

The level of certainty has also been applied to the assessment to demonstrate how certain the assessment conclusions are and where there is potential for misinterpretation or a requirement to identify further mitigation measures, thereby adopting a precautionary approach. Where there is a low degree of certainty, monitoring and management measures can be implemented to determine if the impacts are worse than predicted and support the identification of additional mitigation measures through the lifetime of the proposed project. **TABLE 7** provides the levels of certainty applied to the assessment, as well as a description.

**TABLE 10 - LEVEL OF CERTAINTY**

LEVEL OF CERTAINTY	DESCRIPTION
High	<ul style="list-style-type: none"> <li>- Likely changes are well understood</li> <li>- Design/information/data used to determine impacts is very comprehensive</li> <li>- Interactions are well understood and documented</li> <li>- Predictions are modelled, and maps based on interpretations are supported by a large volume of data, and</li> <li>- Design/information/data has very comprehensive spatial coverage or resolution.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>- Likely changes are understood</li> <li>- Design/information/data used to determine impacts include a moderate level of detail</li> <li>- Interactions are understood with some documented evidence</li> <li>- Predictions are modelled but not yet validated and/or calibrated, and</li> <li>- Mapped outputs are supported by a moderate spatial coverage or resolution.</li> </ul>
Low	<ul style="list-style-type: none"> <li>- Interactions are currently poorly understood and not documented.</li> <li>- Predictions are not modelled, and the assessment is based on expert interpretation using little or no quantitative data.</li> <li>- Design is not fully developed, or information has poor spatial coverage or resolution.</li> </ul>

The significance of impacts has been derived using professional judgment and applying the identified thresholds for receptor sensitivity and magnitude of change (as discussed above) and guided by the matrix presented in **TABLE 11**. The matrix is applicable for impacts that are either positive or negative. The distinction and description of significance and whether the impact is positive, or negative is provided IN **TABLE 4**.

**TABLE 11 - GUIDE TO SIGNIFICANCE RATINGS**

		Magnitude of Change				Sensitivity
		Negligible	Minor	Moderate	Major	
Significance	High	Minor (3)	Moderate (6)	Major (9)	Major (12)	High
	Medium	Low (2)	Minor (4)	Moderate (6)	Major (8)	Medium
	Low	Low (1)	Low (2)	Minor (3)	Moderate (4)	Low

Significance is not defined in the Namibian EIA Regulations, however the Draft Procedure and Guidance for EIA and EMP states that the significance of a predicted impact depends upon its context and intensity. Accordingly, definitions for each level of significance has been provided in TABLE 12. These definitions were used to check the conclusions of the assessment of receptor sensitivity, nature of impact and magnitude of impact was appropriate.

**TABLE 12 - SIGNIFICANCE DESCRIPTION**

SIGNIFICANCE OF IMPACT	DESCRIPTION
<b>Major (negative)</b>	Impacts are considered to be key factors in the decision-making process that may have an impact of major significance, or large magnitude impacts occur to highly valued/sensitive resource/receptors. Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
<b>Moderate (negative)</b>	Impacts are considered within acceptable limits and standards. Impacts are long-term, but reversible and/or have regional significance. These are generally (but not exclusively) associated with sites and features of national importance and resources/features that are unique and which, if lost, cannot be replaced or relocated.
<b>Minor (negative)</b>	Impacts are considered to be important factors but are unlikely to be key decision-making factors. The impact will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value. Impacts are considered to be short-term, reversible and/or localized in extent.
<b>Low (negative)</b>	Impacts are considered to be local factors that are unlikely to be critical to decision-making.
<b>Low – Major (Beneficial)</b>	Impacts are considered to be beneficial to the environment and society:

To ensure the beneficial impacts are brought out in the assessment, green has been applied to ensure the different type of impact is clear. The description for each level of significance presented in TABLE 9 was also followed when determining the level of significance for a beneficial impact.

The significance of impacts has been derived using professional judgment and applying the identified thresholds for receptor sensitivity and magnitude of change, as well as the definition for significance. In most instances, moderate and major adverse impacts are considered as significant, and however, there may be some instances where impacts are lower than this but are considered to be significant. The following thresholds were therefore used to double check the assessment of significance had been applied appropriately; a significant impact would meet at least one of the following criteria:

- It exceeds widely recognized levels of acceptable change
- It threatens or enhances the viability or integrity of a receptor or receptor group of concern, and
- It is likely to be material to the ultimate decision about whether or not the environmental clearance certificate is granted.



### 3.7 EIA CONSULTATION

Public participation and consultation are a requirement in terms of in section 21 of the Environmental Management Act No.7 of 2007 and its regulations for a project that requires an Environmental Clearance Certificate. Consultation is a compulsory and critical component in the EIA process, aimed at achieving transparent decision-making, and can provide many benefits.

A key aim of the consultation process is to inform stakeholders and interested and affected parties (I&AP) about the proposed project. The methods undertaken for the proposed project are detailed as follows, which are in line with the requirements of the EIA regulations.

#### 3.7.1 NON-TECHNICAL SUMMARY

The Non-Technical Summary (NTS) presents a high-level description of the proposed project; sets out the EIA process and when and how consultation is undertaken. The contact details for further enquiries are made available to all registered I&APS and the NTS can be found in Appendix B.

#### 3.7.2 NEWSPAPER ADVERTISEMENTS

Notices regarding the proposed project and associated activities were circulated in two newspapers namely the 'Namibian' on the 16<sup>th</sup> July and 23<sup>rd</sup> July 2019 and in the 'Informante' on the 18<sup>th</sup> and 25<sup>th</sup> of July 2019. The purpose of this was to commence the consultation process and enable I&APs to register an interest with the project. The adverts can be found in Appendix C.

#### 3.7.3 SITE NOTICES

A site notice ensures neighbouring properties and stakeholders are made aware of the proposed project. The notice was set up at the boundary of the site as illustrated in Appendix C.

#### 3.7.4 CONSULTATION FEEDBACK

During the EIA process there were no I&AP registrations and no issues or concerns raised from consultations.

## 4 PROJECT DESCRIPTION

### 4.1 NEED FOR THE PROPOSED PROJECT

In economic aspects, Namibia is amongst the prime tourist destinations in Africa and home to a large number of wildlife species. Nearly 20% of employments in the country are directly or indirectly related to the tourism industry. The sector contributes to about 14.5% of the country's GDP and more than one million tourists flock the country's national parks and other tourist destinations each year. Lodges and hotels have increased to cater to the new emerging interests as well as accommodate tourists from all over the world.

As a renowned ecotourism destination, Namibia's economy is heavily reliant on its extensive tourism industry. Especially with the current environmental issues within the country such as the impact of drought and climate change together with economic crisis, the proposed development has a potential to improve the living standards condition of the community at the local and regional levels.

Consequently, the development of the Okavango River Adventure Lodge will provide a unique cultural tourism in conjunction with people and the available resources. As a result, the propose project will attract tourists to the region thereby presenting opportunities for development and other potential investors, whilst exposing tourists to a full experience of the Kavango river in north eastern Namibia forms part of the border between Namibia and Angola and also serves as the focal point of the Kavango people. The traditional home of the Kavango people is the Kavango Region in northeastern Namibia. Traditionally Kavangos make their living from fishing, cattle, and the farming of sorghum, millet and maize. The Kavangos are closely related to the Owambo people and both are thought to have originated in east Africa. The need to expand the tourism sector and ensure sustainability in the sector is highlighted in Namibia's 5th National Development Plan.

The most important economic feature of activities related to the tourism sector is that they contribute to three high-priority goals of developing countries: the generation of income, employment and foreign exchange units. Nature and heritage tourism development has investment needs that contributes towards complete growth and development of a country: one, by bringing numerous economic value & benefits; and, second, helping in build country's brand value, image & identity. Tourism industry goes beyond attractive destinations, to being an important economic growth contributor.

### 4.2 ALTERNATIVES

The proposed project has been subject to a process of design evolution, informed by both consultation and an iterative environmental assessment. In terms of the Environmental Management Act, 2007 and its regulations, alternatives considered should be analysed and presented in the scoping assessment and EIA report. This requirement ensures that during the design evolution and decision-making process, potential environmental impacts, costs, and technical feasibility have been considered, which leads to the best option(s) being identified.

#### 4.2.1 ALTERNATIVE CONSIDERED

The environmental assessment has taken a worst-case scenario into consideration, which includes a review of all likely construction activities and once the construction programme is further defined, the best available option for methods shall be identified to ensure the impacts on the environment and society are minimised. Other alternatives may be putting into consideration supplemental construction activities if any impacts are to be of serious concern.

### 4.3 THE PROJECT SITE AND LOCATION

Okavango River Adventure Lodge will be located about 76 km west of the Rundu town and approximately 255m north of the B10 road in Kavango West Region in the Northern Namibia and the Okavango River lies approximately 150 m north of the proposed lodge as well. The planned development will be situated within the Rupara settlement. Rupara is a former mission station of the Finnish Missionary Society in the Kahenge Constituency. (see FIGURE 3)

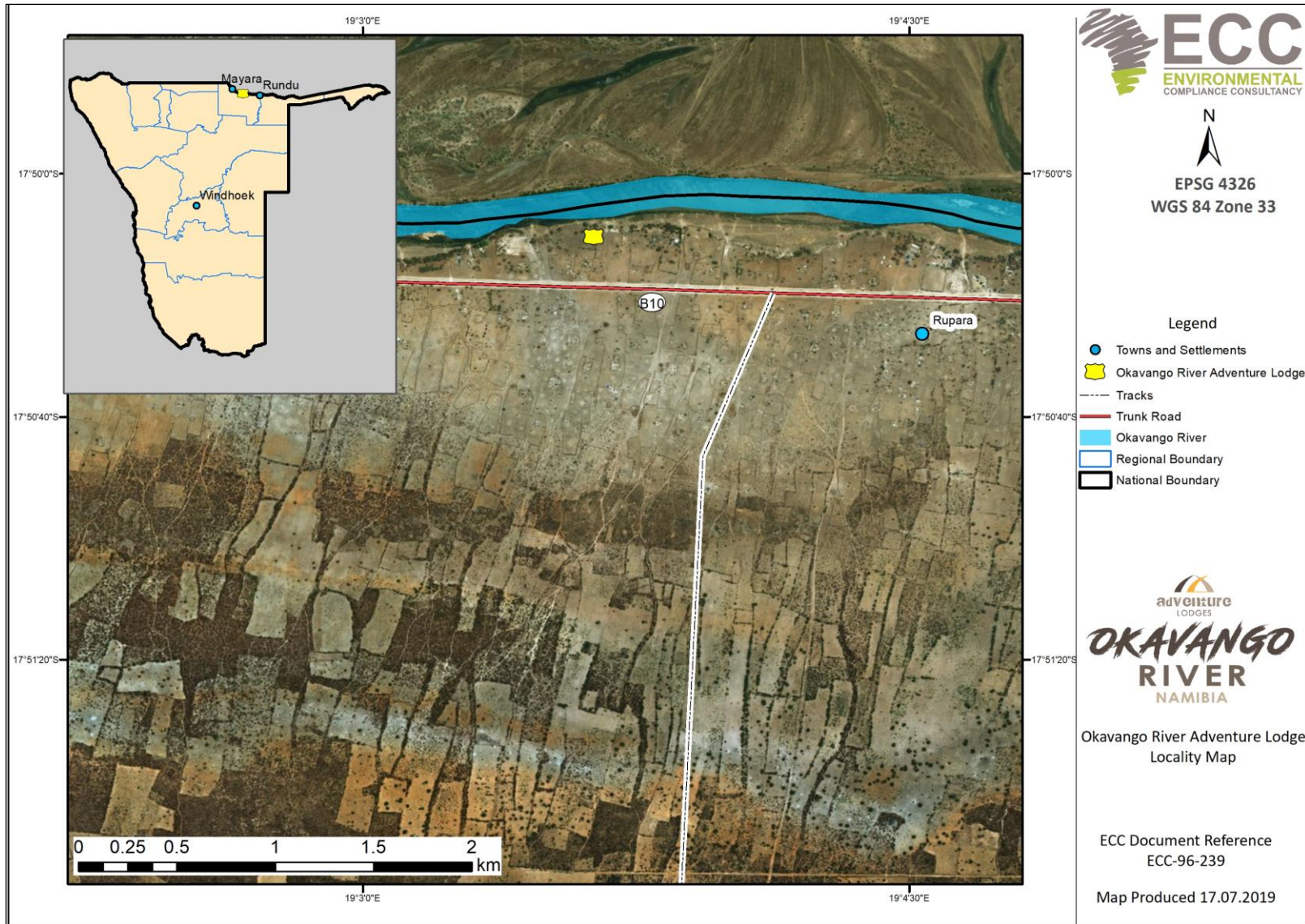


FIGURE 3 - PROJECT SITE AND LOCATION

#### 4.4 SITE AND SURROUNDING ENVIRONMENT

The proposed development, Okavango River Adventure lodge located in Kavango West Region forming the border between Namibia and Angola for more than 400 km is the Okavango River. The Kavango people, who make a living from fishing, cattle farming and cultivating sorghum, millet and maize on the wide fertile plains on either side. The proposed site can be accessed via the B10 road that lies approximately 255 m south FIGURE 4. The major center in this region is the town of Rundu. There are about 140 000 Kavango people in Namibia, divided into groups of five. The Okavango River Adventure Lodge will offer visitors an opportunity of an interactive program and acquaintance to the fifth Living Museum in Namibia, the Kavango Living Museum, situated in the Kavango region at Samsitu Lake, 14 km west of Rundu.

The fifth Living Museum in Namibia,, represents a traditional village of the Kavango people, who have lived in this area for centuries. With the demonstration and preservation of the fishing and land-cultivating culture of the Mbunza, the main focus of the Mbunza Living Museum is to provide visitors with a detailed insight into traditional, pre-colonial culture and at the same time a communal business for the local people of the Kavango. With this sustainable project they will be able to preserve their traditional culture and to generate an additional income.

Within the outreach of the proposed project the development will enhance the overview of activities, highlights and sights of the Kavango Region. Additionally, some of the touristic attractions are the Mahango National Park and the Buffalo Park. The Buffalo Game Park (the official name is Buffalo Core Area) is situated on the eastern side of the Kavango region in Namibia. The park has a size of 629 km<sup>2</sup> and belongs to the 2007 proclaimed Bwabwata National Park. The Mahango Game Park (the official name is Mahango Core Area) is situated on the western side of the Okavango along the C48 close to the Popa Falls. The park is small and has a size of only 245 km<sup>2</sup>. The Mahango Core Area is part of the 2007 proclaimed Bwabwata National Park. *Environmental Information Service (2013)*.



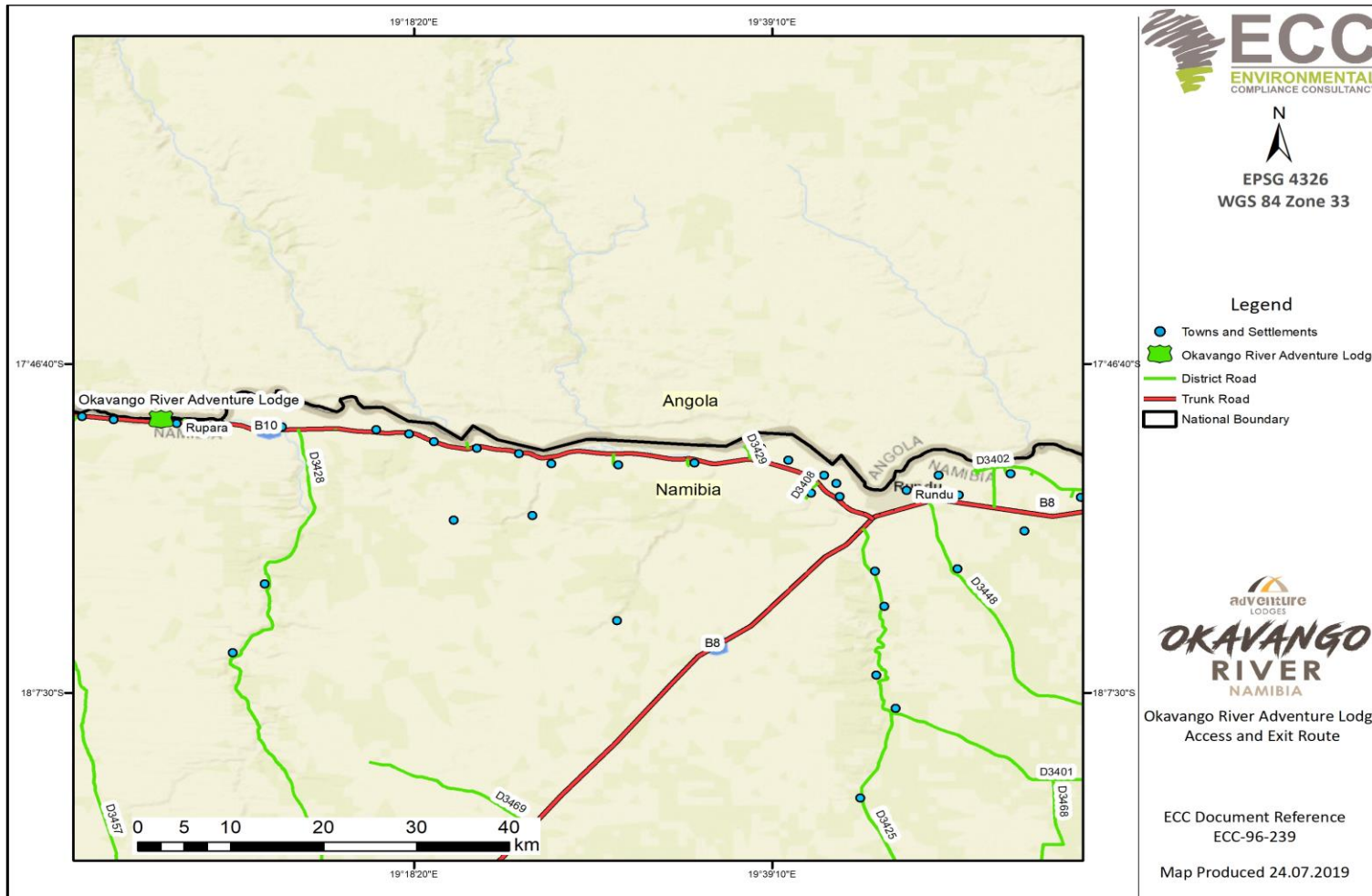


FIGURE 4 - ROADS AND ACCESS ROADS TO THE PROPOSED LODGE SITE

## 4.5 PROPOSED DEVELOPMENT ACTIVITIES

The planned development entails the construction of tourist accommodation consisting of the following:

- Accommodation rooms for maximum of 30 guests
- Fifteen (15) en-suite guest rooms
- Power line to provide electricity
- Water pipelines connections and water storage tanks
- 30 litres Swimming Pool
- Removal of natural resources (sand /soil) for construction if required

### 4.5.1 DESIGN AND BUILDING MATERIAL

The lodge will be constructed using platforms alleviated from the ground with wooden poles planted to support the structure. The flooring will be made from “everlast” building material, which is a recycling product. The walls will be covered with canvas wrapping. All building materials that will be used for the proposed development will be eco-friendly alternative and of low cost compared to other building materials such as bricks. This method of construction is also suitable for flood prone areas and have a non-permanent structure for easier relocation. In addition, the method will have a very low carbon footprint and requires unskilled local labour during the construction phase.

### 4.5.2 PLANNED PROJECT SCHEDULE

The proposed activities as discussed above are anticipated to be carried out once an environmental clearance certificate is granted by the MET. Construction activities are intended to commence in October 2019 and may last for up to January 2020. The environmental clearance certificate along with all required permits should be in place during the construction and operational phases of the project.

### 4.5.3 WORKERS AND ACCOMMODATION

During the construction phase, the project expects to avail 10-30 employment opportunities. Housing for staff will be in the existing village and not at the lodge. All workers are expected to commute from homes every day. Once the lodge moves into operation, up to five (5) people will be permanently employed. Employment will be sourced locally as far as practically possible.

### 4.5.4 RESOURCE AND WASTE MANAGEMENT

Water will be required for various uses including human consumption and for construction activities. The water will be sourced from the Okavango river with an approximate abstraction of 1 cm<sup>3</sup> per day. Therefore, a water abstraction permit will need to be applied for the Okavango River Adventure lodge, which shall be obtained from the Ministry of Agriculture, Water and Forestry.

Similarly, a discharge permit will be applied for at the Ministry of Agriculture Water and Forestry for the operations of the wastewater treatment system and the discharge of treated effluent to the environment. Regular water samples will be taken to ensure that the effluent treated, complies with the prescribed general water standards. Where water quality does not meet prescribed standards, effluent will be contained and pumped into the existing on-land waste water treatment plant for further management.

Waste will be produced on site, which will include sewage and solid waste. All solid waste shall be collected and transported to Rundu waste management site for disposal. The proponent will ensure that waste transport certificates are provided by the contractor. No waste shall be discharged into the environment.



## 5 ENVIRONMENTAL AND SOCIAL BASELINE

### 5.1 INTRODUCTION

This section provides an overview of the existing biophysical environment through the analysis of the baseline data regarding the existing natural and socio-economic environment. Desktop studies on the national database are undertaken as part of the scoping stage to get information of the current status of the receiving environment. This provides a baseline where changes that occur as a result of the proposed project can be measured. This section also incorporates consultation and public participation of the proposed project.

### 5.2 BASELINE OF THE BUILT ENVIRONMENT AND LAND-USE

Most land in Kavango is officially regarded as communal, a tenure system that leads to a variety of uses of land. The Kavango Region was split into the Kavango West and the Kavango East Regions in August 2013. The Kavango West Region covers an area of approximately 24,591.27 km<sup>2</sup> and lies directly south of Angola and the Kavango River. The boundary between Kavango East and West generally follows the Omatako-Omuramba river. *Environmental Information Service (2013)*

Kavango region is the centre for the majority of routes leading Angola, Botswana, Zambia and Botswana. Therefore benefits from trade along these routes, especially along the Trans-Caprivi Highway. Rundu is the only major economic centre within a huge expanse that stretches 900 km west to east from Ondangwa to Katima Mulilo, and about 1,000 km north to south from Menongue to Grootfontein and Maun. Rundu is thus a major supplier of goods and services to people spread across a very large area.

Finally, the region and its people are increasingly moving from a traditional, rural economy (based on farming and harvesting natural resources for domestic use) to a cash and urban-based economy. Rundu is reputedly the fastest growing town in Namibia, and a rapidly escalating proportion of the Kavango's residents now live in Rundu and other emerging towns.

The total number of rural households amounted to 36, 741 counted in the 2011 census.

### 5.3 CLIMATE AND RAINFALL

The Kavango Region experiences the highest rainfall with up to 600 mm to 800 mm annually. The humidity is the highest and a hot tropically humid climate dominates, making the region the greenest in the country. Rivers and swamps are plentiful and dominate the landscape. During the summer months the average temperature lies at 35° C during the day, dropping to about 20° C at night. Rainfall in summer months be up to of 8 – 10 rainy days a month, whilst during the months of June to August hardly any precipitation is received. In winter the temperatures during the day rises to 28° C, and drop to 7° C or even 1° C at night.

Rundu is the closest town to the proposed development, the Okavango River Adventure Lodge. The prevailing winds in the northeast Namibia is at an average speed of approximately 2.0m/s and 2.3% calm days since 02 October 2018 to 01 August 2019 (refer to FIGURE 5).

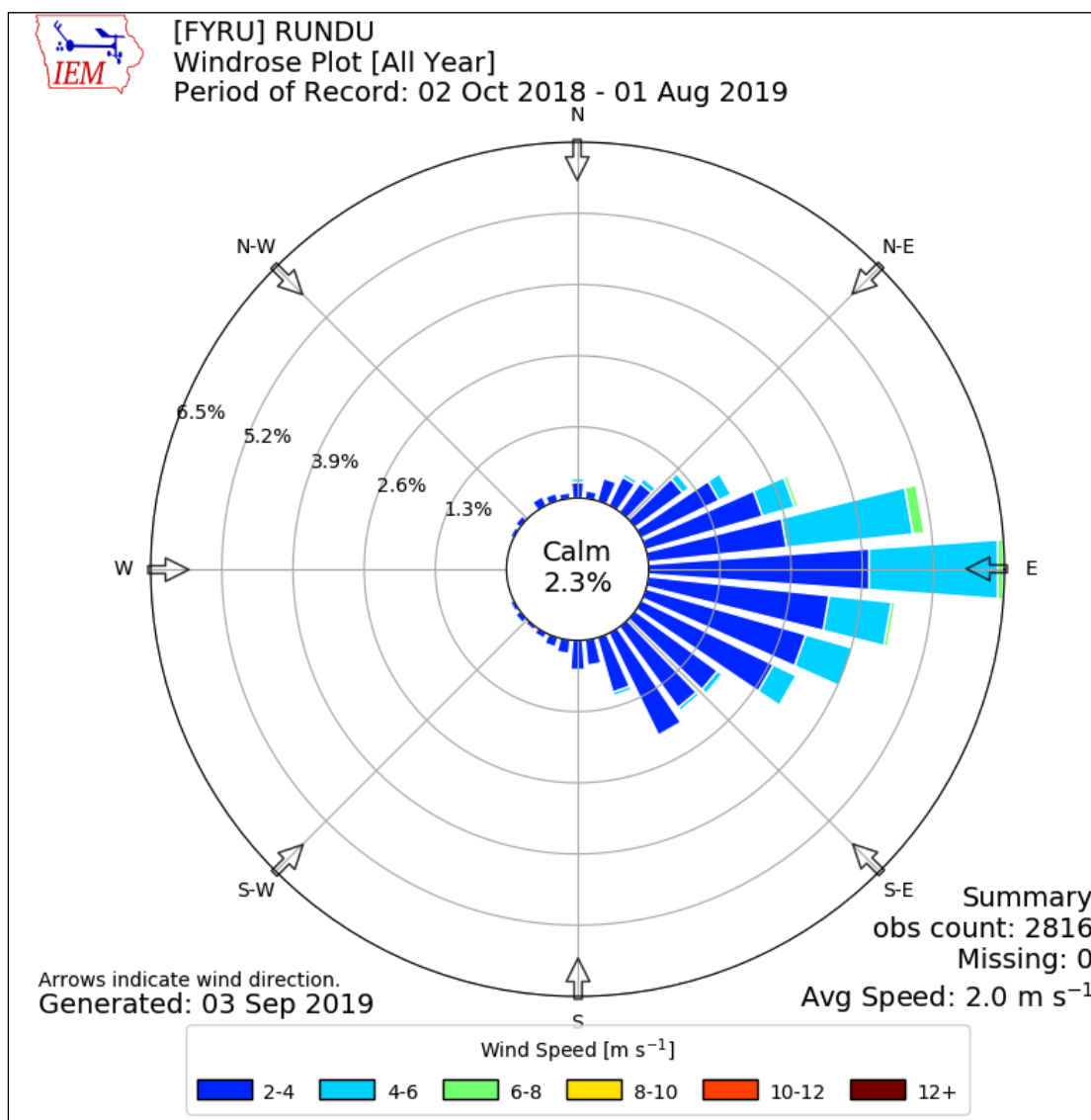


FIGURE 5 - WIND DIRECTION AND SPEED OF THE AREA OF THE PROPOSED DEVELOPMENT

#### 5.4 SOIL AND VEGETATION

Different kinds of soil are generally characterized by the way in which water, air and mineral and organic components are arranged within the soil body. Soils in Kavango are completely dominated by fine sands, loosely called Kalahari sands, or arenosols, less than 10% of the soil consists of clay and silt. The sandy texture allows water to drain away rapidly, leaving very little moisture at depths to which most plant roots can reach. The porous sand also holds very few nutrients, and the loose structure of sand means that there is little run-off and water erosion. *Environmental Information Service (2013)*.

There are two types of soils along the river. The first and closest to the river are fluvisols, which are sediments deposited during floods. Most of these soils are therefore on the floodplains where periodic flooding means that most areas of fluvisols cannot be used for crops. The sediments usually consist of a mixture of silt, clay and fine sands. The soils are not infertile but also not very productive. On higher ground within the river valley are so-called anthrosols, which are soils that have been modified by repeated ploughing and crop growth. The body of soil originally consisted mainly of two layers: a top layer of arenosols overlying deeper deposits of fluvisol sediments.

Most other crops are grown on calcisols in the omuramba and inter-dune valleys. A layer of calcium carbonate lying at some depth below the surface characterizes calcisols, which consist mostly of fine sand and smaller proportions of clay and silt. Many parts of the region are covered in dense woodland, while other areas are more open grasslands or have been cleared of trees (see **FIGURE 6**).

Plants are important to Kavango for many reasons: providing pastures for livestock, materials for building, weaving and wooden craft, fuel wood, fruits and nuts and traditional medicines. These are aspects of value to people, but plants are also the most important components of all natural habitats.

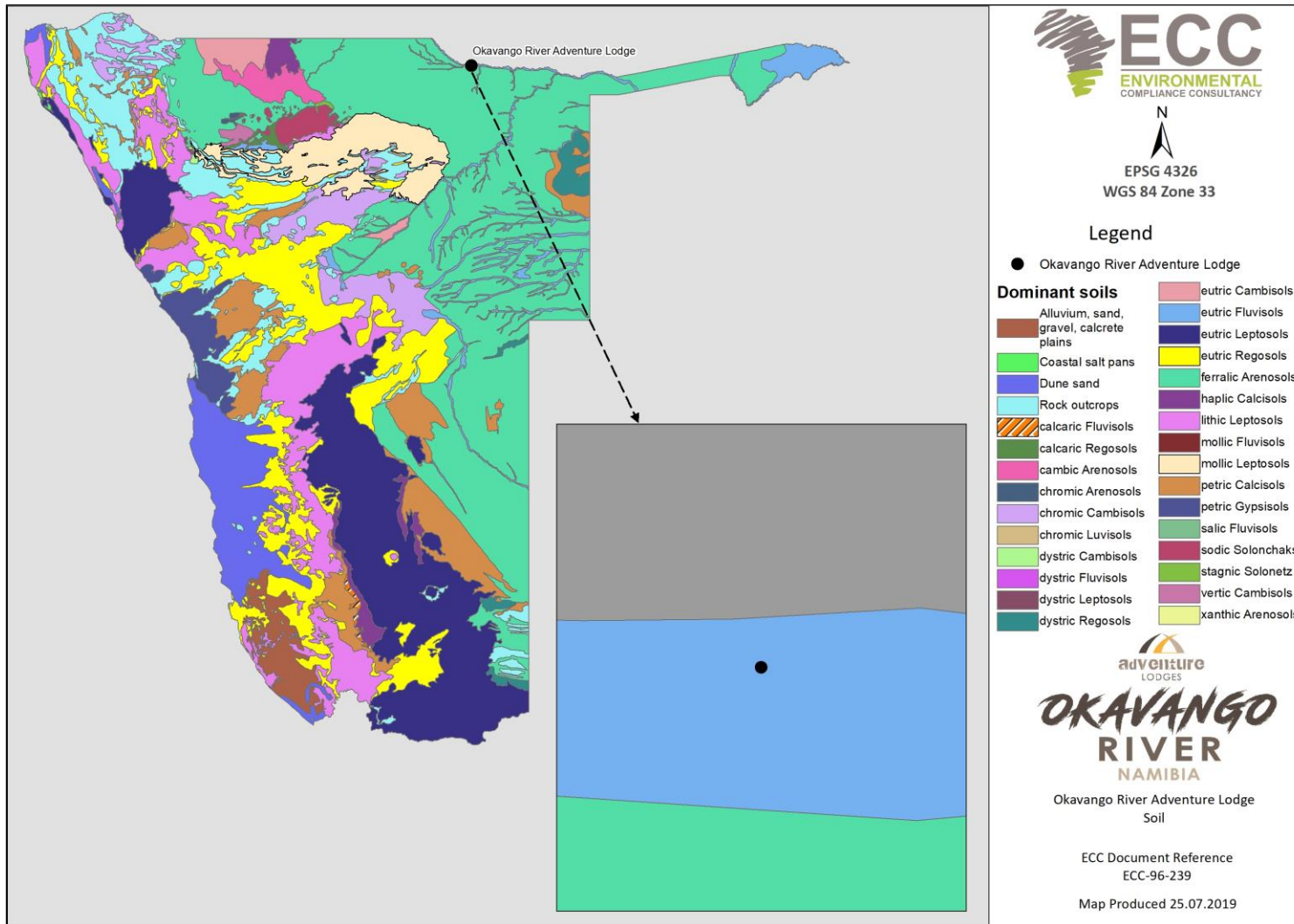


FIGURE 6 - SOIL IN THE AREA OF PROPOSED DEVELOPMENT

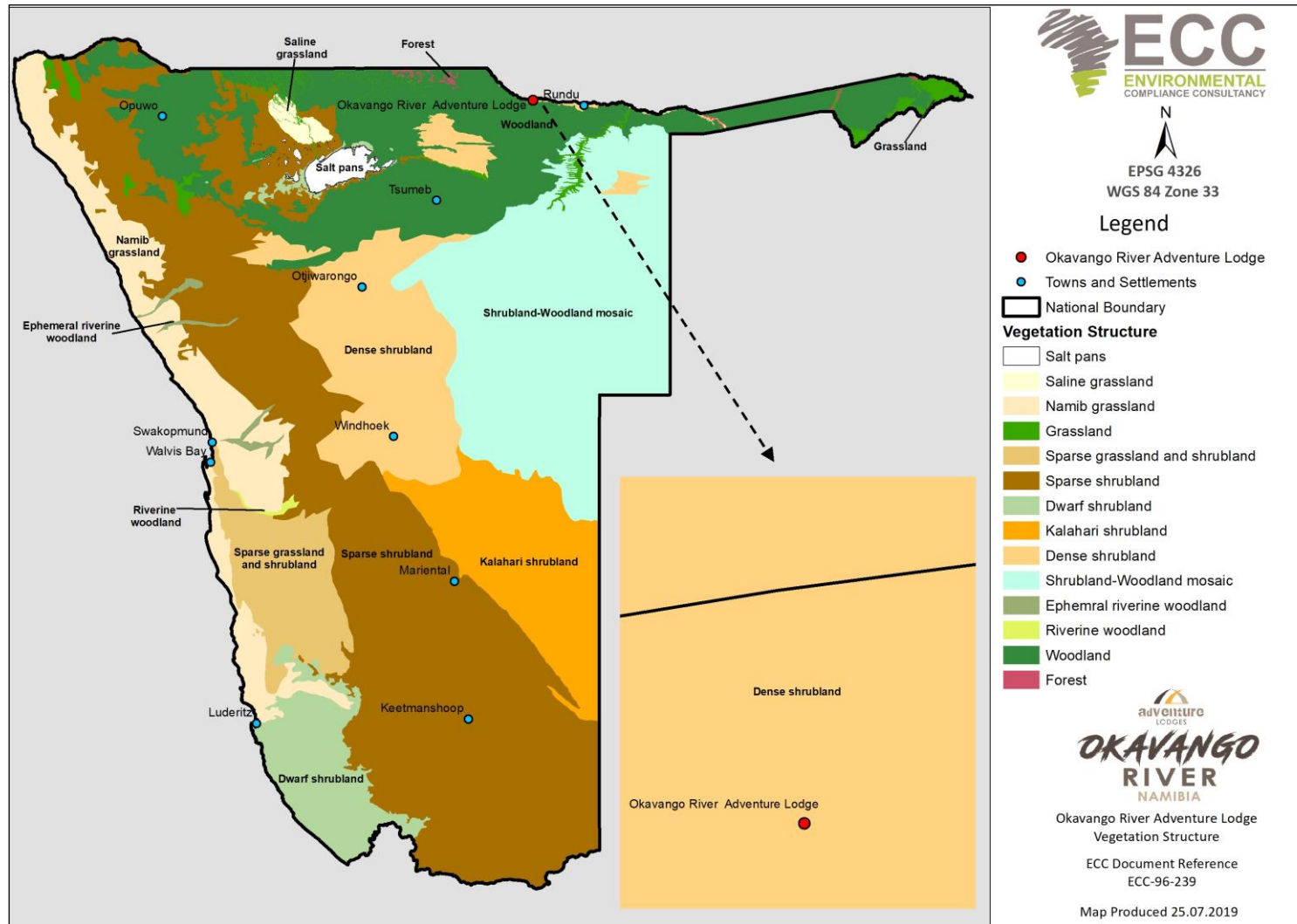


FIGURE 7 - VEGETATION IN THE AREA

## 5.6 BIODIVERSITY - FAUNA SPECIES

Kavango is home to a diverse community of animals in Namibia. Much of the diversity in Kavango is linked to the variety of habitats surrounding the Okavango River. This overall measure of diversity is based on the numbers of species of plants, birds, reptiles, mammals, frogs, termites and scorpions found in different areas of the country.

The plant and wildlife especially within the national parks along the Kavango is very abundant. Along the large flood plains of the Kavango stirring woodlands and baobabs can be discovered. Amongst many more the abundant wildlife consists of elephant, buffalo, zebra, giraffe, and hydrophilic antelopes like Rietbok and Letchwe, as well as crocodiles and hippopotamus. Although large areas of uninhabited woodland cover Kavango, there are few large animals in many of those areas. Indeed, most large mammals occur in the region's game reserves, particularly in the Mahango Game Reserve and Khaudum Game Park. *Environmental Information Service (2013)*.

## 5.7 SITE GEOLOGY

The geology of Namibia encompasses rocks of Paleoproterozoic, Mesoproterozoic and Neoproterozoic and Paleozoic to Cenozoic age. About 46% of the country's surface is bedrock exposure, while the remainder is covered by the young overburden sediments of the Kalahari and Namib deserts.

The Okavango Basin is part of the greater Kalahari Basin, which covers most of the northern and eastern parts of Namibia and extends across the Namibian border into Botswana and Angola. The bedrock underlying the basin filled with Kalahari Sequence deposits (See FIGURE 8) consist of basal rocks of the Damara Sequence, followed by the Karoo Sequence sediments, overlain and intruded by volcanics of Karoo age. The unconsolidated to semi-consolidated clay, sand and gravel of the Kalahari Sequence fill the Okavango Sub-basin, which deepens from the northeast towards the northwest, from 0 to >400 m along the north-west trending basin axis. The basin axis stretches from the northwest corner of former Bushmanland through the southwestern Kavango Region and from there into the Ohangwena Region. Sub-outcrops of volcanic rock occur at the Okavango River near Rundu and between Mukwe and Bagani. Damara Sequence rocks crop out in the southern part of the Kaudom Park within the Nhoma River drainage and at the border between the Kavango and Caprivi regions near Andara.



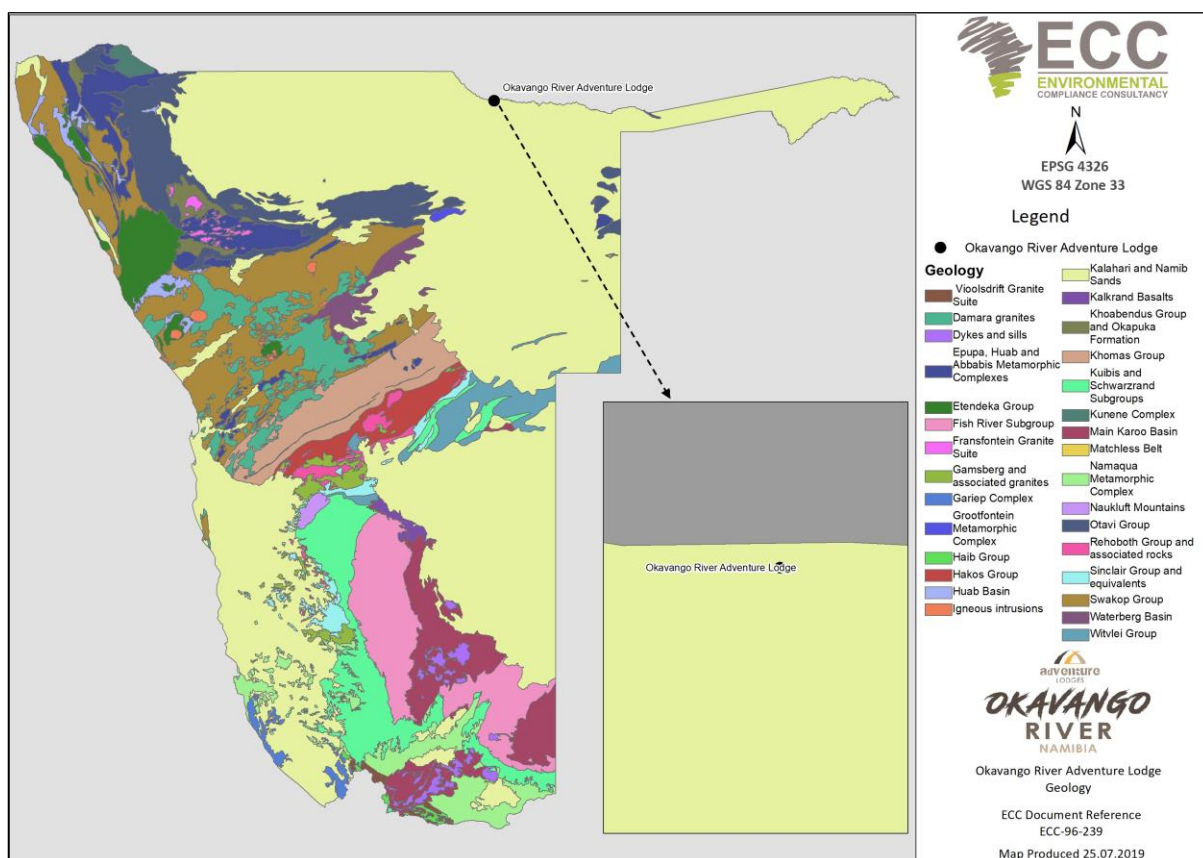


FIGURE 8 - GEOLOGICAL MAP OF THE AREA

## 5.8 HYDROLOGY AND TOPOGRAPHY

The aquifers in the proposed area can be sub-divided into two main groups, namely the primary (porous) aquifers and secondary (fractured) aquifers. The primary aquifers consist mainly of argillaceous and arenitic unconsolidated to semi-consolidated sediments of the Kalahari Sequence, which occur throughout the study area. As mentioned earlier, the thickness can however vary from nil in the east to in excess of 400 m along the main basin axis. The secondary aquifers comprise fractured and weathered pre-Kalahari bedrock. The secondary aquifers are only important in areas where the Kalahari sediments are absent or thinly developed such as in the north-eastern and south-eastern parts of the Kavango Region.

The Kalahari Sequence sediments constitute the most important aquifers in the region and the vast majority of boreholes FIGURE 9 drilled for rural and bulk water supply intersect the Kalahari aquifers. Boreholes drilled in close proximity to the Okavango River, intersecting paleo-channels, are often high yielding and most of the bulk water schemes are developed along the river.

In the eastern part of the Kavango Region and along the Okavango River the water table or depth to piezometric level is rather shallow with 10 – 40 m below surface and exceptionally up to 50 m below surface. This is much different along the Kalahari basin axis in the western part of the Kavango region where water level depths between 50 and 130 m below surface are observed.



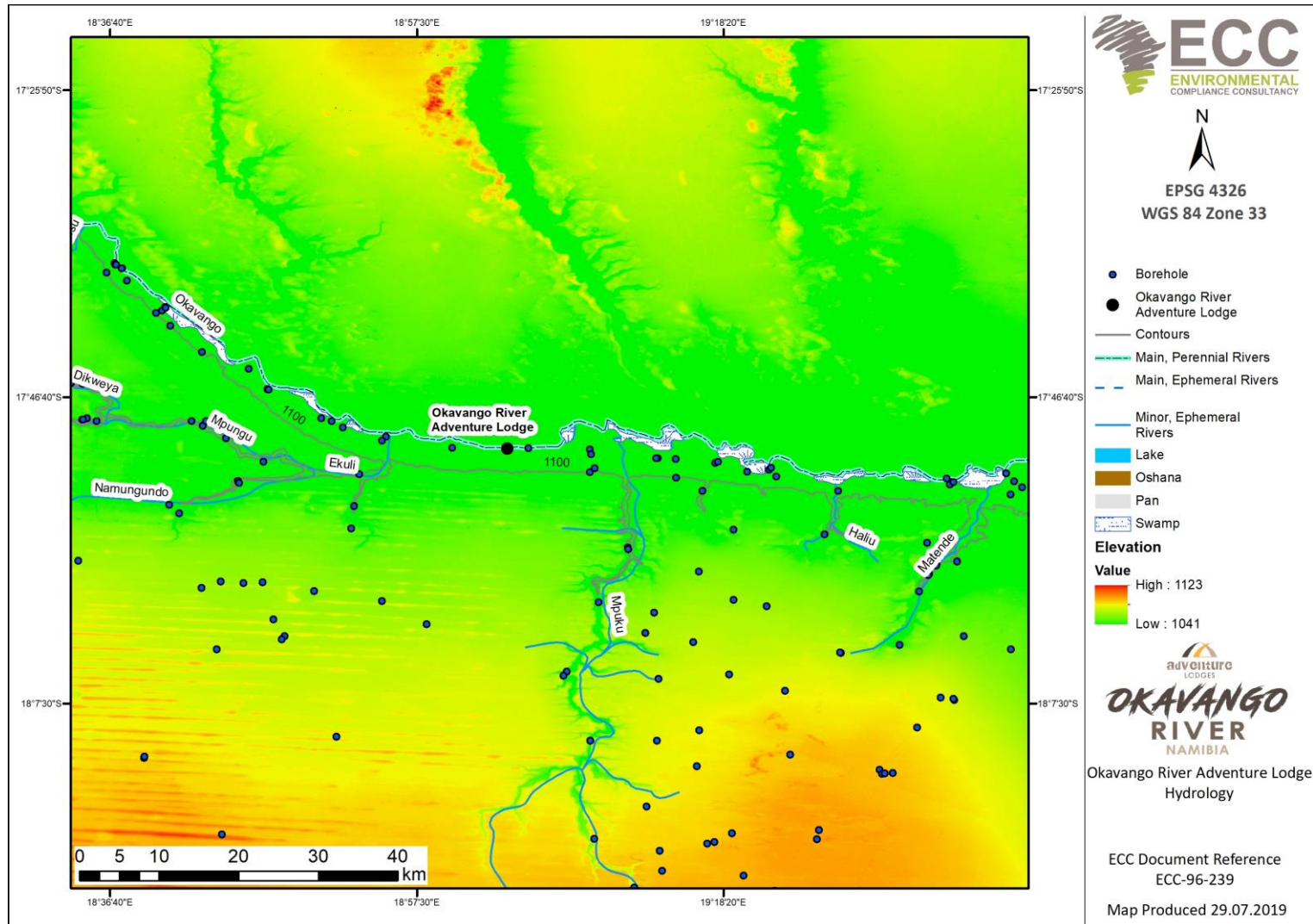


FIGURE 9 - HYDROLOGY AND ELEVATION MAP

## 5.9 SOCIO-ECONOMIC ENVIRONMENT

Namibia is an upper middle income country, one of only eight in Africa. The economy has grown substantially since Namibia's independence in 1990. This economic growth has made possible high living standards for many, but a large segment of the population has not yet been drawn fully into full participation in a modern economy, with all the benefits that it entails. This is one of the main reasons for poverty in Namibia today.

Majority of the people, most intensively use and greatly put pressures on natural resources along the Okavango River. Populations have grown rapidly over the past several decades as a result of immigration from Angola. The approximately 28,200 rural households largely use their land for low input-low output farming, but most of their income and food security comes from sources unrelated to agriculture. The government sees the river water as an important source of irrigation water to be harvested before it leaves Namibia, in so doing contributing to the assumption that the Kavango Region can be of sufficient supply of water for Namibia. Urban growth is substantial because increasing numbers of people seek cash wealth, which rural livelihoods cannot provide, and because a variety of economic activities related to sub-regional trade are based in Rundu and other towns.

Communal tenure limits long-term economic development while also encouraging the exploitation of commonage resources. However, over one-third of open communal land is being privatized into about 540 farms allocated to several hundred individuals.

Although agriculture – in the form of large-scale irrigation projects for cereals and traditional farming methods – is unlikely to offer useful prospects for future development, more intense cultivation of high-value products has potential. There is also scope to boost the wealth of rural farmers through the production of jatropha, as long as this is managed appropriately. Kavango can derive considerable benefits from tourism and wildlife, mainly by further development and the strengthening of conservancies and community forests.

### 5.9.1 DEMOGRAPHIC PROFILE

Historically, people settle where water and soils were most suited to farming. That created a pattern of unevenly distributed settlements within the region. A ribbon along the river, approximately 10 km wide, is densely populated, and approximately 70% of the whole population lives within this 10 km zone.

The expansion of settlement away from the river is one major change to have occurred to the population of Kavango over the past 40 years. Another substantial change has been the very rapid growth of the population, much of this being due to the many immigrants from Angola, especially during the 1970s and 1990s. As a result, more than half of all people in Kavango are immigrants or children of recent immigrants. Immigration has largely stopped as a result of the peaceful conditions in Angola. The population of Kavango amounted to 222,500 during the last census in 2011.

A third major and on-going change to the population of Kavango is urbanization, which has led to the very rapid growth, expansion and development of Rundu. It is said that Rundu is the fastest growing town in Namibia. The whole town of Rundu consisted of 36,964 inhabitants, in the 2001 census and since then it has climbed up to 63,430 in the 2011 census.

. Over one quarter of all people in Kavango live in Rundu and other emerging urban areas, such as Divundu, Nkurenkuru, Ncamagoro and Ndiyona. In summary, the character of the population is changing from one that was completely rural to one in which urban residence is substantial. The importance of urban areas is even greater from an economic point of view. Similarly, the urban, cash economy is becoming much more important and attractive than traditional, subsistence economies based on farming.

### 5.9.2 HIV/AIDS IN NAMIBIA

HIV/AIDS in Namibia is a critical public health issue and is one of the leading causes of death. Namibia has a generalised HIV epidemic, meaning that there is a high HIV prevalence among the whole population. The epidemic is now starting to stabilise, after a rapid increase from the time that the first case of HIV was reported in 1986 through until a peak in 2002. HIV prevalence in Namibia is not yet measured through a population-based survey, instead, HIV prevalence among pregnant women attending Ante Natal Clinics is used. In 2010, 18.8% of pregnant women were HIV positive, a reduction from the high of 22% in 2002. However, HIV prevalence is unevenly distributed throughout the country, therefore this figure is not a national representation. The overall trend illustrates that HIV prevalence is stabilising rather than increasing (UNICEF, 2011).

### 5.9.3 EMPLOYMENT

Unemployment rates in Namibia particularly, among the youth are exceedingly high. About 40% of the unemployed population had completed their primary education of which 14% had completed their secondary education and 0.7 percent had completed their tertiary education. Those with no formal education constituted around 16 percent of the unemployed population. Kavango was the region with the highest poverty level in Namibia, more than 50% of the population was classified as poor. According to the (Namibia Labour Force Survey 2012), unemployment in the Kavango Region is 29.8%.

The proposed development has a potential to contribute to the reduction in unemployment rate by providing temporal and permanent jobs during construction and operation phase.

### 5.9.4 HERITAGE

A review of the National Heritage Council database was conducted, and no known heritage sites were identified in the project area. In cases where heritage sites are discovered, the chance find procedure will be used.

## 6 ENVIRONMENTAL ASSESSMENT OF FINDINGS AND MITIGATION

### 6.1 SCOPING ASSESSMENT FINDINGS

When undertaking the scoping exercise, the design of the proposed project and best practice measures were considered to ensure the likely significant effects and any required additional mitigation measures were identified. The following topics were considered during the assessment:

- Surface water and ground water
- Soils and geology
- Landscape (visual impacts, change in landscape, sense of place)
- Socio-economics (employment, demographics, and land-use)
- Noise
- Ecology (fauna and flora)
- Air Quality (including dust), and
- Cultural heritage and palaeontology resources.

The source-pathway-receptor model was used to evaluate the potential impacts of the proposed project and determine if further assessment is required. These include:

- **Source of potential impact** - where does the impact come from? (e.g. the activity, ground excavation, which emits dust)
- **The potential pathway** – how can the pollution / impact travel through the environment? (e.g. wind direction and speed); and
- **The receptor and effect** – what can be affected and how? (E.g. water body, sedimentation, water quality affected).

TABLE 14 sets out the findings of the assessment. Activities that could be the source of an impact have been listed, followed by receptors that could be affected. The pathway between the source and the receptor has been identified where both are present. Where an activity and/or receptor has not been identified, an impact is unlikely, thus no further assessment or justification is provided. Where the activity, receptor and pathway have been identified, a justification has been provided documenting if further assessment is required or not required.

Due to the nature and localised scale of the construction activities, and the environmental context of both sites, the potential environmental and social effects are limited and unlikely to be significant. Where effects occur, they will be managed (avoided or reduced) through implementation of best practice mitigation, as detailed in the EMP (contained in Appendix A). All topics were considered during the scoping assessments, which did not identify areas of uncertainty and thus no further investigation was deemed required.

## LIMITATIONS, UNCERTAINTIES AND ASSUMPTION

A number of limitations and uncertainties were acknowledged during the EIA process. In line with EIA best practice, assumptions have been made based on realistic worst-case scenarios, thereby ensuring that the worst-case potential environmental impacts are identified and assessed. The following assumptions and uncertainties identified during the assessment process.

**TABLE 13 - SUMMARY OF LIMITATION, UNCERTAINTIES AND ASSUMPTION OF THE EIA PROCESS**

LIMITATION / UNCERTAINTY	ASSUMPTION
The program of construction works is not confirmed	It is assumed that construction work shall take up to 3 months and involve construction lodging facilities, powerlines construction.
Number of employees and area they will come from	It is assumed that most of the workers will come from the nearby settlements of the proposed development and the number of employees will be changing depending on the program, with a range of 10-30 employees.
Access route and creation of new tracks	No new tracks or access roads will be created, public roads will be used to access the site.

**TABLE 14 - SUMMARY OF POTENTIAL IMPACTS**

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
<b>Ground water</b>	<p>Improper handling of discharge, storage, and disposal practices</p> <p>Leaking tanks, leaking sewer lines, and illegal discharges.</p> <p>Opening and placement of equipment on site</p>	<ul style="list-style-type: none"> <li>- Ground water contamination</li> <li>- Poor water quality</li> </ul>	<p>Direct</p> <p>Local</p> <p>Short-term</p> <p>Reversible</p> <p>Unlikely</p>	Medium	Moderate	Moderate (6)	<ul style="list-style-type: none"> <li>- Safe handling procedures of hydrocarbon waste</li> <li>- Safe disposal of wastewater</li> <li>- Waste water treatments system</li> <li>- Build sewage system</li> </ul>	Low (2)
<b>Atmospheric Air</b>	<ul style="list-style-type: none"> <li>- Dust generation due to construction activities and machinery</li> <li>- Excavation</li> <li>- Vehicle emissions</li> <li>- Dust due to vehicles movement (e.g., for material transportation, to and from site construction site)</li> </ul>	<ul style="list-style-type: none"> <li>- Impacts of public health and visibility</li> <li>- Impact on fauna and flora</li> <li>- Negative impacts on air quality</li> </ul>	<p>Direct</p> <p>Local</p> <p>Temporary</p> <p>Reversible</p> <p>Unlikely</p>	Low	Minor	Minor (3)	<ul style="list-style-type: none"> <li>- Avoid off-road driving</li> <li>- Apply dust suppression methods- water sprinkling</li> <li>- Communication with farmers/landowners/neighbours.</li> <li>- Use appropriate methods to control dust i.e wet systems or ventilation exhaust</li> <li>- Use binding material on dusty unpaved roads to proposed development site</li> </ul>	Low (2)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
Soil	<ul style="list-style-type: none"> <li>- Land clearance</li> <li>-Raw materials consumption</li> <li>-Fuel handling and storage, lubrication of equipment</li> </ul>	<ul style="list-style-type: none"> <li>- Soil erosion</li> <li>- Spillages lead to groundwater and soil contamination</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>On-site</li> <li>Short-term</li> <li>Temporary/reversible</li> <li>Unlikely</li> </ul>	Medium	Moderate	Moderate (6)	<ul style="list-style-type: none"> <li>- Use economically friendly material for construction</li> </ul> <p><b>Safe delivery and handling:</b></p> <ul style="list-style-type: none"> <li>- Training employees and toolbox talks</li> <li>- Good housekeeping across the site</li> <li>- Spill kits to be placed at designated areas across the site</li> <li>- Absorption material should be available and at hand. Where saw dust is used it should be cleaned up immediately and not left for long periods as this poses a fire hazard</li> <li>- Any major spill is reported to the project manager and Ministry of Mines and Energy</li> <li>- Equipment to be well maintained and serviced regularly</li> <li>- The use of hydrocarbons under 200 litres can be used for mobile refuelling or servicing</li> </ul>	Low (2)



RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							<b>Refuelling:</b> <ul style="list-style-type: none"> <li>- Drip tray to be used during refuelling of any vehicles and must be on impermeable flat surface where possible, and</li> <li>- Funnel should be available and used to avoid spillage during decanting</li> </ul>	
<b>Community, socio-economic and environment</b>		<ul style="list-style-type: none"> <li>- Floods cause extensive destruction of infrastructure, which in turn disrupts service, provision particularly education and health services.</li> </ul>	Direct Local Short-term Reversible Likely	Medium	Moderate	Moderate (6)	<ul style="list-style-type: none"> <li>- Dissemination of information on flood preparedness</li> <li>- Monitoring preparedness activities</li> <li>- Contact different stakeholders to identify their support</li> <li>- Identify relocation sites</li> <li>- Training and orientation</li> <li>- Identifying and budgeting for resources (resource mobilization)</li> <li>- Reporting on the evolving flood situation</li> </ul>	Minor 3
<b>Terrestrial Ecology and biodiversity</b>	<ul style="list-style-type: none"> <li>- Vegetation clearance for construction of the lodge</li> <li>- Vehicle movement</li> </ul>	<ul style="list-style-type: none"> <li>- Possible injury or death of animals</li> <li>- Poaching</li> </ul>	Direct Local	Medium	Low	Minor (2)	<ul style="list-style-type: none"> <li>- Use existing tracks where possible</li> <li>- Route new tracks around established and protected</li> </ul>	Low (2)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
		<ul style="list-style-type: none"> <li>- Habitat fragmentation from clearing</li> <li>- Habitat loss from excessive Clearing</li> <li>- Increased human activity can impact biodiversity security</li> </ul>	Short-term  Temporary/reversible  Certain				trees, and clumps of vegetation <ul style="list-style-type: none"> <li>- Identify rare, endangered, threatened and protected species and demarcate them and avoid cutting them down.</li> <li>- All workers shall be notified avoid any excluded areas or species</li> <li>- Natural drainage patterns should be restored</li> <li>- Relocation of protected plant species if disturbance cannot be avoided.</li> </ul>	
<b>Community and environment</b>	<ul style="list-style-type: none"> <li>- Light may cause disturbance/disorientation of animals at night</li> <li>- Noise and lights may act as a distraction/attraction to different species.</li> <li>- Noise from construction tools (e.g., concrete mixer, grinders)</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Disruption to neighbour and nearby settlements</li> <li>- Disturbance of local wildlife</li> <li>- Construction noise impacting neighbouring residents</li> </ul>	Direct  Local  Temporary  Reversible  Unlikely	Low	Negligible	Low (2)	<ul style="list-style-type: none"> <li>- No construction activities to be conducted (between dusk and dawn, on Sundays and on public holidays)</li> </ul>	Low (1)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
<b>Neighbours /Landowners/ Tourists</b>	<ul style="list-style-type: none"> <li>- Visual impact because of new building in the area</li> <li>- Disruption of society</li> </ul>	<ul style="list-style-type: none"> <li>- Changes to aesthetics-disturbed view from the road (tourists and local community)</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>Local</li> <li>Short-term</li> <li>Reversible</li> <li>Likely</li> </ul>	Low	Minor	Minor (3)	<ul style="list-style-type: none"> <li>- Maintain good housekeeping on site</li> <li>- Building material is low rise and made of natural material therefore, it is unlikely that the lodge will have any impact of the landscape of the local community.</li> </ul>	Low (2)
<b>Topography and landscape</b>	<ul style="list-style-type: none"> <li>- Creation of new tracks and roads</li> </ul>	<ul style="list-style-type: none"> <li>- Environmental disturbance</li> <li>- Loss of flora and fauna</li> <li>- Disturbance of wildlife in the area</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>Local</li> <li>Short-term</li> <li>Reversible</li> <li>Likely</li> </ul>	Medium	Moderate	Moderate (6)	<ul style="list-style-type: none"> <li>- Make use of existing tracks if available</li> <li>- When developing a new track off an existing roadway ensure the junction is discreet and safe</li> <li>- Monitor the condition of the track before, during, and after use</li> <li>- Do not needlessly remove vegetation from either side of the roadway.</li> </ul>	Low (2)
<b>Heritage</b>	<ul style="list-style-type: none"> <li>- Potential to unearth archaeological remains</li> <li>- Direct and indirect impacts to cultural resources</li> </ul>	<ul style="list-style-type: none"> <li>- Impact on viewshed/landscape surrounding heritage</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>On site</li> <li>Long-term</li> </ul>	High	Major	Major (9)	If discovery of unearthed archaeological remains to be uncovered, the following measures (chance find procedure) shall be applied:	Minor (4)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
		features	Irreversible Likely				<ul style="list-style-type: none"> <li>- Works to cease, area to be demarcated with appropriate tape by the site supervisor, and the Site Manager to be informed</li> <li>- Site Manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary</li> <li>- If work cannot proceed without damage to findings, Site Manager is to inform the Environmental Manager who will get in touch with an archaeologist for advice</li> <li>- Archaeological specialist is to evaluate the significance of the remains and identify appropriate action, for example, record and remove; relocate or leave in situ (depending on the nature and value of the remains)</li> <li>- Inform the police if the remains are human, and</li> <li>- Obtain appropriate clearance or approval from</li> </ul>	

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							the competent authority, if required, and recover and remove the remains to the National Museum or National Forensic Laboratory as appropriate.	
<b>Social Economic</b>	<ul style="list-style-type: none"> <li>- Job creation due to activities</li> <li>- New local interactions</li> <li>- Reduced unemployment rate in the area</li> </ul>	<ul style="list-style-type: none"> <li>- Employment creation and skills development</li> <li>- Opportunities during the phase (Approx. 10-20 jobs)</li> <li>- Knowledge and technology skills transfer to workers during the operational phase and training of local employees</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>Regional</li> <li>Long-term</li> <li>Reversible</li> <li>Certain</li> </ul>	Medium	Minor	Minor (4)	<ul style="list-style-type: none"> <li>- Maximise local employment and local business opportunities to promote and improve the local economy</li> <li>- Enhance the use of local labour and local skills as far as reasonably possible. Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained, and</li> <li>- Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible</li> </ul>	Beneficial
<b>Community</b>	<ul style="list-style-type: none"> <li>- Increased people in the area</li> </ul>	<ul style="list-style-type: none"> <li>- Potential risk for social</li> </ul>	Direct	Moderate	Low	Minor (3)	<ul style="list-style-type: none"> <li>- Encourage local traditions and culture of the</li> </ul>	Low (2)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
	- Increased movement in area and transportation	<ul style="list-style-type: none"> <li>interactions and transmission of infectious diseases</li> <li>Loss of culture and traditions from tourist influence</li> </ul>	<ul style="list-style-type: none"> <li>Local</li> <li>Short-term</li> <li>Irreversible/Reversible</li> <li>Likely</li> </ul>				<ul style="list-style-type: none"> <li>proposed surrounding area</li> <li>Public awareness</li> <li>Ensure distribution of protection (condoms) at the lodge</li> </ul>	
<b>Community &amp; Environment</b>	- Generation of solid waste due to activities	<ul style="list-style-type: none"> <li>Nuisances (odours and visual), and</li> <li>Litter (nuisance and ecological risk)</li> <li>Increased pollution such as plastic etc.</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>On-site</li> <li>Short-term</li> <li>Reversible</li> <li>Likely</li> </ul>	Moderate	Low	Minor (3)	<ul style="list-style-type: none"> <li>Develop waste management programme</li> <li>Training and toolbox talk to workers shall be provided</li> <li>Ensure good housekeeping across site</li> <li>Implement the waste management hierarchy across the site: avoid, reuse, and recycle</li> <li>Waste shall be collected and shall be removed on a regular basis to avoid bad odours</li> <li>It is unlikely that hazardous material and wastes will be produced, however in the event that they do, they shall be managed in a safe and responsible manner so</li> </ul>	Low (2)



RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF POTENTIAL IMPACT/S	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							<p>as to prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials, and</p> <ul style="list-style-type: none"> <li>- Hazardous and non-hazardous waste shall always be stored separately.</li> </ul>	

## 7 ENVIRONMENTAL MANAGEMENT PLAN

The EMP for the proposed project is presented in Appendix A. It provides management options to ensure the impacts of the proposed project are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary.

The management measures should be adhered to during all stages of the construction activities of the lodge. All persons involved and partaking in the proposed activities should be made aware of the measures outlined in the EMP to ensure activities are conducted in an environmentally sound manner.

The objectives of the EMP are:

- To include all components of the development and operations of the project
- To prescribe the best practicable control methods to lessen the environmental impacts associated with the project
- To monitor and audit the performance of operational personnel in applying such controls, and
- To ensure that appropriate environmental training is provided to responsible operational personnel.

## 8 CONCLUSION

The environmental assessment that was undertaken for the proposed project, followed ECC's EIA methodology to identify if there is potential for significant effects to occur as a result of the proposed project.

All other social and environmental receptors were scoped out as requiring further assessment as it was unlikely that there would be significant effects. Through further analysis and identification of mitigation and management methods, the assessment concludes that the likely significance of effects on visual amenity is expected to be minor. Various best practice and mitigation measures have been identified to avoid and reduce effects as far as reasonably practicable, as well as to ensure the environment is protected and unforeseen effects are avoided.

**On this basis, it is of the opinion of ECC that an environmental clearance certificate could be issued, on conditions that the management and mitigation measures specified in the EMP are implemented and adhered to.**

## 9 ENVIRONMENTAL MANAGEMENT PLAN

The EMP for the proposed project is presented in Appendix A. It provides management options to ensure the impacts of the proposed project are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The management measures should be adhered to during all stages of the construction activities. All persons involved and partaking in the proposed activities should be made aware of the measures outlined in the EMP to ensure activities are conducted in an environmentally sound manner.

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- To include all components of the development and operations of the project
- To prescribe the best practicable control methods to lessen the environmental impacts associated with the project
- To monitor and audit the performance of operational personnel in applying such controls, and
- To ensure that appropriate environmental training is provided to responsible operational personnel.

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## APPENDIX A- EMP



## APPENDIX B - NON-TECHNICAL SUMMARY



ECC-096-239-NTS-06-B

### NON-TECHNICAL SUMMARY

### DEVELOPMENT OF SOUTHERN CROSS ADVENTURE LODGES

PREPARED FOR



JULY 2019

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PO BOX 91193 Windhoek Namibia  
Environmental Compliance Consultancy CC  
CC/2013/11404

## NON-TECHNICAL SUMMARY

### DEVELOPMENT OF THE SOUTHERN CROSS ADVENTURE LODGES IN ERONGO, OSHANA, AND KAVANGO REGIONS IN NAMIBIA

#### 1 PURPOSE OF THIS DOCUMENT

The purpose of this Non-Technical Summary (NTS) is to provide Interested and Affected Parties (I&APs) a background to the proposed project and to invite I&APs to register as part of the Environmental Impact Assessment (EIA) process. Development of the Erongo Rocks Adventure Lodge, Nakambale Adventure Lodge and Okavango River Adventure lodge hereby invite I&APs to register as part of the Environmental Impact Assessment (EIA) process. Through registering, all I&APs will be kept informed throughout the EIA process, and a platform for participation will be provided to submit comments/recommendations pertaining to the project.

This NTS includes the following information on:

- The proposed project and location
- The necessity of the project, benefits or adverse impacts anticipated
- The alternatives to the project have been considered and assessed
- How the EIA process works
- The public participation process and how to become involved, and
- Next steps and the way forward.

#### 2 DESCRIPTION OF PROPOSED PROJECT

##### 2.1 BRIEF INTRODUCTION

Environmental Compliance Consultancy (ECC) has been engaged by the proponent (Southern Cross Adventure Lodges) to undertake an Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP) in terms of the Environmental Management Act, 2007 and its Regulations. An environmental clearance application will be submitted to the relevant competent authorities; the Ministry of Environment and Tourism (MET).

##### 2.2 LOCATION

The project location is illustrated in **Error! Reference source not found.**

##### 2.3 WHAT IS PROPOSED

Southern Cross Adventure Lodges is an Inbound Tour Operator with offices in South Africa, Namibia, Botswana and Zimbabwe.

The proponent organises group tours in South Africa, Namibia, Botswana, Lesotho, Zimbabwe, Zambia, Mozambique and Malawi since 1991.

Southern Cross Adventure Lodges proposes to develop lodges with up market accommodation units. With the intend to further spread the financial and social benefits of ecotourism to the previously disenfranchised communities.

##### 2.4 OPERATION PHASE

The proposed construction activities are low-impact and non-intrusive. The following are envisaged during the proposed project:

- Potential creation of access tracks, where existing tracks cannot be utilised
- Limited vegetation clearing for the creation of tracks
- Possible construction of drainage infrastructure, power and water supply infrastructure, sewerage treatment facility and associated connections.

##### 2.5 WHY IS THE PROJECT NEEDED

The development of the Southern Cross Adventure Lodges will aid development in the region whilst offering tourists a higher valued service which will cater for medium to upper market tourists seeking a reasonably priced lodge. The new development will expose tourists to a cultural experience in the west and north central Namibia. This area has large tourism potential and will generate income for the indigenous community.

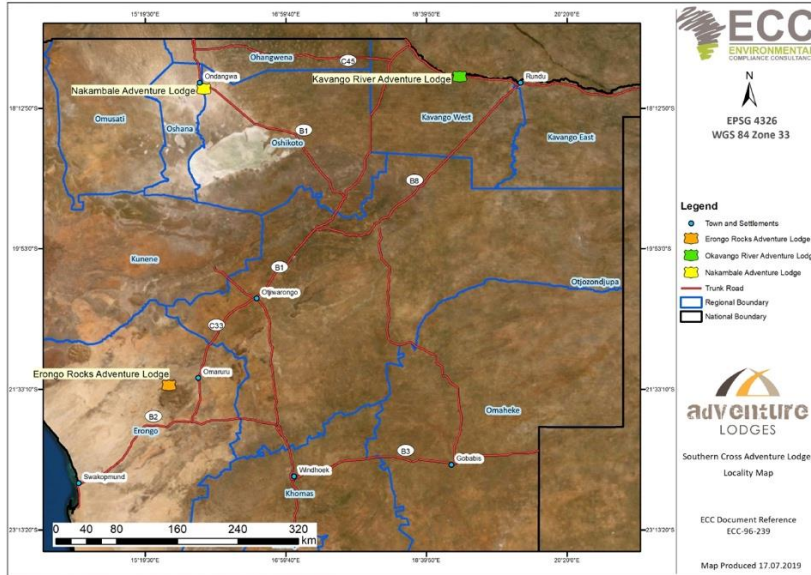


FIGURE 1 – LOCATION MAP OF THE PROPOSED PROJECTS



## 2.6 POTENTIAL IMPACTS OF THE PROJECT

### 2.6.1 SOCIO-ECONOMIC

The potential social impacts are anticipated to be of low significance, and those that may transpire shall be confined within the proposed project sites, these potential impacts may include the following:

- Potential to unearth, damage or destroy undiscovered heritage remains
- Minor disruption to the residents of the farms within the site, including some increase in noise levels and dust arising from construction activities and vehicular movements
- Some jobs will be created as a result of the project, and
- Potential economic benefits due to increased income in the Namibian tourism sector.

### 2.6.2 ENVIRONMENTAL

The potential environmental impacts are anticipated to be of minor significance, and those that may occur shall be contained within the site, these potential impacts may include the following:

- Some potential biodiversity loss due to possible tracks creation and excavations
- Potential use of resources, including surface and groundwater, and
- Potential creation of noise and dust due to construction activities.

## 3 CONSIDERATION OF ALTERNATIVES

Best practice environmental assessment methodology calls for consideration and assessment of alternatives to a proposed project.

In a project such as this one, it is difficult to identify alternatives to satisfy the need of the proposed project; the activities shall be specific to the sites.

During the assessment, alternatives will take the form of a consideration of optimisation and efficiency to reduce potential effects.

## 4 THE ENVIRONMENTAL ASSESSMENT PROCESS

This EIA, conducted by ECC, is undertaken in terms of the Environmental Management Act, 2007 and its regulations.

The process followed in this EIA is set out in the flowchart in

FIGURE 2 below.

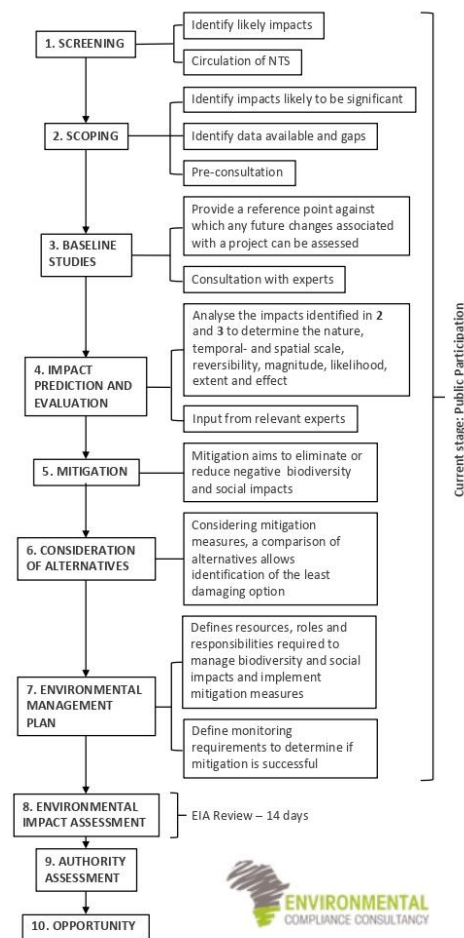


FIGURE 2 - FLOWCHART OF THE ENVIRONMENTAL ASSESSMENT PROCESS

#### 4.1 SCREENING

A review of the proposed project screening findings against the listed activities was conducted; the findings of which are summarised below:

##### TOURISM DEVELOPMENT ACTIVITIES

6. The construction of resorts, lodges, hotels or other tourism and hospitality facilities

##### WATER RESOURCE DEVELOPMENTS

8.1 The abstraction of groundwater and surface water industrial or commercial purposes

8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline system

##### WASTE MANAGEMENT, TREATMENT, HANDLING, AND DISPOSAL ACTIVITIES

2.1 The construction of waste sites, treatment of waste and disposal of waste

2.3 The import, processing, use and recycling, temporary storage, transit or export of waste

The potential environmental and social effects are anticipated to be of minor significance, and those that may occur shall be contained on the proposed lodge sites.

#### 4.2 SCOPING

Due to the nature of the proposed project, and the implementation of industry best practice mitigation measures during the development phase of the project, the effects on the environment and society are expected to be minimal and localised.

#### 4.3 BASELINE STUDIES

For the proposed project, baseline information was obtained through a desk-based study and site verification processes through focusing on the environmental receptors that could be affected by the proposed project. ECC will also engage with stakeholders, I&APs and the proponents to seek input into the assessment.

#### 4.4 IMPACT ASSESSMENT

Impacts will be assessed using the ECC EIA methodology. The EIA will be conducted in terms of the Environmental Management Act, 2007 and its regulations. ECC's methodology for impact assessments

was developed using IFC standards in particular Performance Standard 1 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017), (International Finance Corporation, 2012) and Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008) including international and national best practice with over 25 years of combined EIA experience.

#### 4.5 ENVIRONMENTAL MANAGEMENT PLAN

An EMP shall be developed for the proposed project setting out auditable management actions for Southern Cross Adventure Lodges to ensure careful and sustainable management measures are implemented for their activities in respect of the surrounding environment and community.

#### 4.6 PUBLIC PARTICIPATION AND ADVERTISING

Public participation is an important part of the EIA process; it allows the public and other stakeholders to raise concerns or provide valuable local environmental knowledge that can benefit the assessment, in addition it can aid the design process. This project is currently at the scoping phase and public participation phase.

At this phase ECC will perform the following:

- Identify key stakeholders, authorities, municipalities, environmental groups and interested or affected members of the public, hereafter referred to as I&APs
- Distribute the NTS for the proposed project (this document)
- Advertise the environmental application in two national newspapers
- Place notices on-site at or near the boundary
- If required host a public meeting to encourage stakeholder participation and engagement, and provide details of issues identified by the environmental practitioner, stakeholders and I&APs
- Record all comments of I&APs and present such comments, as well as responses provided by ECC, in the comments and responses report, which will be included in the scoping report that shall be submitted with the application, and
- Circulate I&AP comments to the project team for consideration of project design.



NON-TECHNICAL SUMMARY  
SOUTHERN CROSS ADVENTURE LODGES

Comments must be submitted in writing and can be emailed using the details in the contact us section below.

CONTACT US

We welcome any enquiries regarding this document and its content. Please contact:

**Environmental Compliance Consultancy (ECC)**

[info@eccenvironmental.com](mailto:info@eccenvironmental.com)

Tel: +264 816 697 608

[www.eccenvironmental.com](http://www.eccenvironmental.com)

At ECC we make sure all information is easily accessible to the public.

Follow us online to be kept up to date:





## APPENDIX C - EVIDENCE OF PUBLIC CONSULTATION

22 TUESDAY 16 JULY 2019

THE NAMIBIAN



**NOTICE OF ENVIRONMENTAL ASSESSMENT & PUBLIC PARTICIPATION PROCESS**

**DEVELOPMENT OF THE ABSOLUT TOURS SAFARIS LODGES IN ERONGO, OSHANA, AND KAVANGO REGIONS, NAMIBIA**

Environmental Compliance Consultancy CC (ECC) hereby gives notice to the public that an application for an Environmental Clearance Certificate in terms of the Environmental Management Act, 2007 will be made as per the following:

**Applicant:** Absolut Tours Safaris cc  
**Environmental Assessment Practitioner (EAP):** Environmental Compliance Consultancy  
**Location:** Erongo, Oshana, and Kavango Regions, Namibia

**Project:** Proposed development of the Erongo Rocks Adventure Lodge in the Erongo Region, Nalambale Adventure Lodge in the Oshana Region and Okavango River Adventure Lodge in the Kavango Region, Namibia.

**Proposed Activity:** The proposed project includes the development of:  
 - Erongo Rocks Adventure Lodge with 15 en-suite units, south of Omaruru on Farm Omandumba  
 - Nalambale Adventure Lodge situated in Ondangwa, with 15 en-suite, 5 up market camping units and 5 camping sites, and  
 - Okavango River Adventure Lodge situated in the Kavango Region, with 15 en-suite units.

**Application for Environmental Clearance Certificate:** In terms of the Environmental Management Act, No. 7 of 2007, ECC on behalf of Absolut Tour Safaris is required to apply for environmental clearance to the Ministry of Environment and Tourism for the above-mentioned projects.

**Purpose of the Review and Comment Period:** The purpose of the review and comment period is to present the proposed project and to afford iBAPs an opportunity to comment on the project to ensure that all issues and concerns are captured and considered in the assessment.

**Review Period:** The review and comment period is effective from 16<sup>th</sup> of July 2019 – 6<sup>th</sup> August 2019.

**How you can participate:** ECC is undertaking the required environmental assessment and public participation process in terms of the Act. Interested and affected parties (iBAPs) and Stakeholders are required to register for the project at: <https://eccenvironmental.com/projects/>

Environmental Compliance Consultancy  
 Registration Number: CC020313004  
 Members: Mr. JS Beaulieuhout or Mrs J Mooney  
 PO Box 91193, Swan Windhoek  
 Tel: +264 61 869 7808  
 Email: [info@eccenvironmental.com](mailto:info@eccenvironmental.com)  
 Website: <http://www.eccenvironmental.com>  
 Project ID: ECC-096-239-107-001-A




**Nampengo Investment CC**  
We mean business



**JULY JACKPOT SPECIALS**  
Price N\$ 85 000,00  
Get a Free Tracking Device



**Cigarette Vending Machine N\$ 5,000,00**

Made in Germany for the Namibian People.

Find our showroom at Dorado Valley Complex next to Shoprite U-Save. Call: 081 035 8326  
 c/o Ara & Bach Street, Windhoek West  
 Visit our website: [www.nampengo.com](http://www.nampengo.com)

*In Memoriam*



*Dina "Dee" Nashidoro*

Sunrise: 11 April 2005 | Sunset: 16 July 2018

Dina Shivel, Our Beloved Daughter  
 Today marks one year since that sad day  
 In life we loved you dearly.  
 In death we do the same.  
 It broke our hearts to lose you. By the almighty's grace  
 we have the assurance that you now rest  
 In peace and comfort in the blessed savior's arms.  
 May your Soul continue resting in peace until we meet again.

Dearly missed by:  
 Meekulu, Mommy, your Little Brother and the entire family.

**4 Be committed in 2019**

As a sign of our appreciation, you will receive a complimentary picnic blanket after your 4th donation.

**Tuesday, 16 July 2019**

Centre Tal Street (Windhoek)	07:00-16:00
United House Centre (Windhoek)	08:30-16:00
Namibian Institute of Mining and Technology (Keetmanshoop)	09:00:16:00
Valombola Vocational Training Centre(Ongwediva)	09:00-15:00
Walvis Bay Town (Behind Welwitschia Medi-park)	10:00-18:00

**Wednesday, 17 July 2019**

Centre Tal Street (Windhoek)	07:00-16:00
United House Centre (Windhoek)	08:30-16:00
Keetmanshoop Town (NG Church Hall)	11:00-18:00
Oshana Regional Council (Oshakati)	09:00-15:00
Embwinda Fishing (Walvis Bay)	09:00-16:00


**Thursday, 18 July 2019**

Centre Tal Street (Windhoek)	07:00-18:00
United House Centre (Windhoek)	08:30-16:00
Oshakati Centre (Hospital Grounds)	10:00-18:00
Logistic Support Service (Walvis Bay)	10:00-15:00

**Friday, 19 July 2019**

Centre Tal Street (Windhoek)	07:00-16:00
United House Centre (Windhoek)	08:30-16:00
Bank Windhoek (Oshakati)	09:00-14:30
Abenteur Afrika (Swakopmund)	10:00-15:00





**HARDAP REGIONAL COUNCIL**  
DIRECTORATE OF EDUCATION ARTS AND CULTURE

**VACANCIES**

**DIVISION: Programme Quality Assurance (PQA)**

**Post Designation** : Principal Grade 5  
**10 x Post** : Grootdraai PS  
 : Usib PS  
 : Pioneer JSS (Schlip)  
 : Witkrans Primary School  
 : P.J. Tsaistab Junior Secondary School (Hoachanas)  
 : Klein-Aub Resource School  
 : Samuel Veldskoen Primary School  
 : Mukorob Primary School (Amperbo)  
 : DD Guibeb Primary School  
 : Pally Carstens Primary School  
**Salary Scale** : N\$ 400 001 -478 220 per annum

**Transport allowance** : N\$7680 per annum  
**Housing Allowance** : N\$ 13080 per annum  
**Minimum Requirements** : **A Recognised 3 – year Tertiary Teaching Qualification on NQF Level 6 (or equivalent) plus 7 years teaching experience.**

**Additional Requirements:** **Probation should be confirmed on Grade 6 post.**

**Post Designation** : **Head of Department Grade 6**  
**2 x Posts** : Vooruitsig Secondary School  
**Salary Scale** : N\$ 400 001 per annum  
**Housing Allowance** : N\$ 13080 per annum  
**Transport allowance** : N\$7680 per annum  
**Minimum requirements** : **A recognized 3-year teaching qualification on NQF Level 6 plus 6 years teaching experience.**

**Additional Requirement** : **Areas of specialization 1 x Post: Grade 4 -9 English and/or Khoe-Khoegowab**

**1 x Post** : **Khoe-khoegowab Junior Primary Phase**  
 Confirmation of probation to be attached

**Enquiries:** Ms. JJF Rukamba, Acting Director Tel No: 063 245700, Mr. G.G. Campbell: Chief Human Resource Practitioner, Tel No: 063 245738

**In terms of Affirmative Action, qualifying women and people with disabilities, who meet the advertised requirements, are encouraged to apply.**

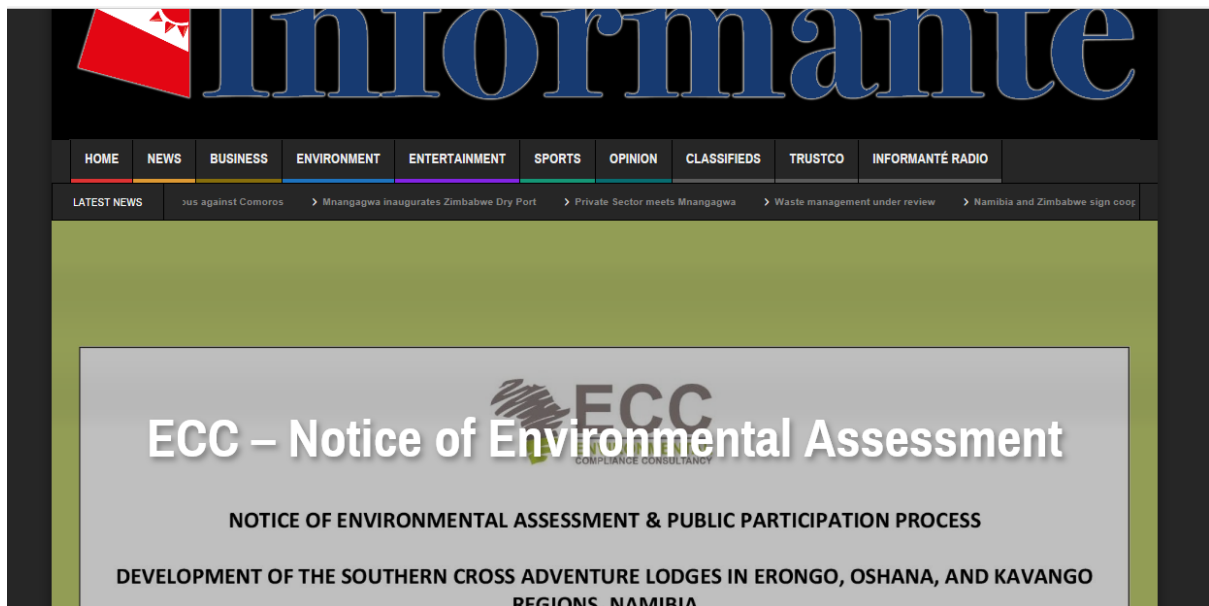
**NB!! All applications must be done on application form 156043 and 156094. All foreign qualifications must be evaluated by the Namibia Qualifications Authority (NQA) and proof of evaluation of qualification should be attached. Applicants who only partially complete and/or do not sign application forms, or who do not attach letters of confirmation of their probations in their current positions or who submit uncertified photocopies will not be considered. Curriculum Vitae and certified copies of education qualifications must be address to:**

The Acting Chief Regional Officer  
 Hardap Regional Council  
 Hardap Directorate of Education,  
 Arts and Culture  
 Private Bag 2122  
 Mariental

**Attention: Human Resources**

**Closing Date: 16 August 2019**

The following was advertised in the Informante on the 18<sup>th</sup> July and 25<sup>th</sup> July 2019, (online newspaper).  
(online newspaper)



SITE NOTICES

**NOTICE OF ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS  
DEVELOPMENT OF THE OKAVANGO RIVER ADVENTURE LODGE, KAVANGO REGION, NAMIBIA**

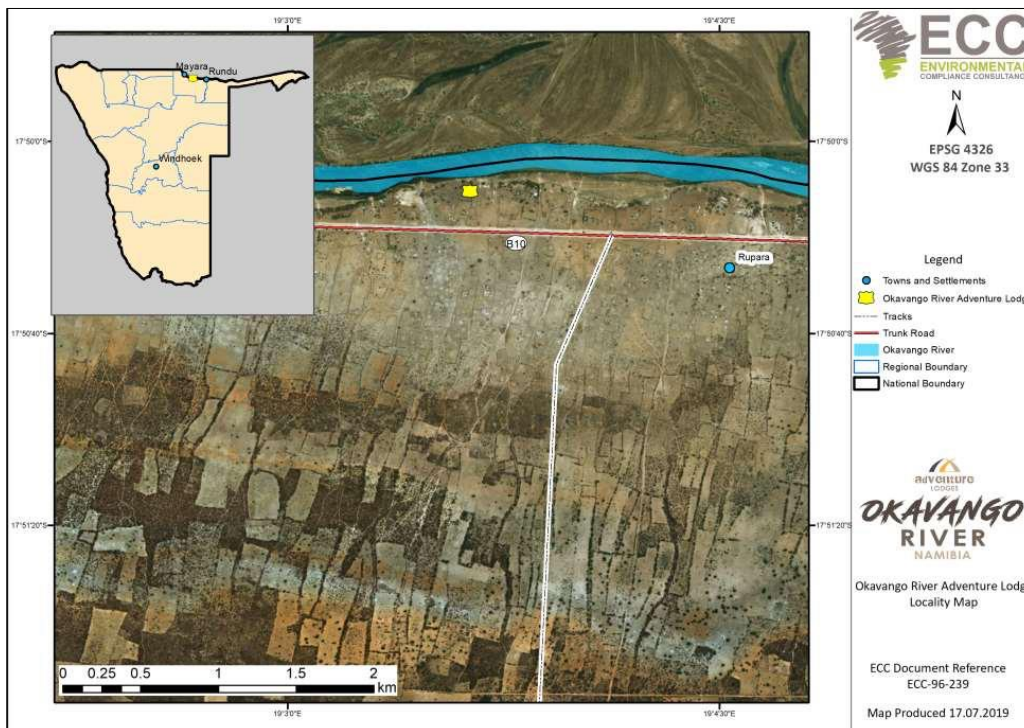
Environmental Compliance Consultancy cc (ECC) hereby gives notice to the public that an application for an Environmental Clearance Certificate in accordance with the Environmental Management Act, 2007 will be made as per the following:

**Applicant:** Southern Cross Adventure Lodges  
**Environmental Assessment Practitioner (EAP):** Environmental Compliance Consultancy

**Project:** Proposed development of the Okavango River Adventure Lodge in Kavango Region, Namibia.

**Proposed Activity:** The proposed project is for the development of a 15 en-suite units lodge on the Kavango, Erongo Region. Additional activities to be carried out on site may include; construction of water sewage system, water pipeline to import fresh water and powerline to import electricity.

**Location:** Kavango Region, Namibia.



**Application for Environmental Clearance Certificate:** In terms of the Environmental Management Act No. 7 of 2007, ECC on behalf of the proponent is required to submit an application for environmental clearance to the Competent Authority and the Ministry of Environment and Tourism for the above-mentioned project.

**Purpose of the Review and Comment Period:** As part of the public participation process, the purpose of the review and comment period is to present the proposed project and to afford interested and affected parties (I&AP) an opportunity to comment on the project to ensure that all issues and concerns are captured and considered in the assessment.

## APPENDIX D -ECC CVS





# Stephan Bezuidenhout

ENVIRONMENTAL ASSESSMENT  
PRACTITIONER

Hello! :)



## ABOUT ME

### Name

Jacobus Stephan Bezuidenhout  
- But you can call me Stephan -

### Born

11 April 1989

### Phone

+264 81 262 7872

### Email

stephan@eccenvironmental.com

### Website

www.eccenvironmental.com

Contact me!

## How to reach me!

kid.bezuidenhout



+264812627872



Stephan  
Bezuidenhout



University of Pretoria  
South Africa  
2012

## Education & Qualifications

Postgraduate Degree in Environmental  
Management & Analysis

University of Stellenbosch  
South Africa  
2008

Bachelors in Applied Science

Additional Qualifications:

- Snake Bite and Snake Handling
- Level 1 & 2 First Aid
- Industrial Environmental Compliance

Publications:

*N.S., et al., Some ecological side-effects of chemical and physical bush clearing in a southern African rangeland ecosystem, Southern African Journal of Botany (2015), <http://dx.doi.org/10.1016/j.sajb.2015.07.012>*

*The FSC National Forest Stewardship Standard of Namibia (Draft V 4). Co-authored by S Bezuidenhout, P Cunningham, A Ashby, F Detering, W Enslin & D Honsbein*

## Experience & Work History



### Managing Director

Current

Since 2012, Stephan has been working as an environmental assessment practitioner. Stephan has a strong ecological background and has gained more than seven years experience in the environmental industry. As a lead practitioner, Stephan has successfully driven environmental impact assessments and compliance assessments within Southern Africa. His hands on and practical experience and knowledge of international standards, such as IFC and World Bank standards allows Stephan to advise his clients and teams constructively and effectively.

### ENVIRONMENTAL CONSULTANT & PRACTITIONER

Stephan manages a dynamic team of environmental practitioners and graduates at Environmental Compliance Consultancy. The firms' core objective is to improve the national standard of environmental compliance by developing local capacity. To date Stephan and his team have successfully completed over 30 projects for various industries, including mining, energy, infrastructure, conservation and tourism.



**ENVIRONMENTAL**  
COMPLIANCE CONSULTANCY

## Stephan Bezuidenhout

Managing Director  
+264 81 262 7872

### References

*Feel free to ask the boss :)*

**SALOME BEESLAAR**  
Environmental Practitioner  
Pr.Sci.Nat: 400385/14

**ESCA COETZEE**  
Environmental Scientist  
Sasol Technology

**PHIL BARKER**  
Pipeline Construction Superintendent  
Worley Parsons

*Or ask those who have worked for me?*

**Michael Moreland**  
Environmental Scientist  
CSP Solar Energy Projects

### Professional Associations

- South African Institute of Ecologists and Environmental Scientists (SAIE&ES)
- Environmental Assessment Practitioners Association of Namibia (EAPAN#172).
- Member of FSC Environmental Chamber
- Executive Committee Member of Namibian Chamber of Environment

### Fun Facts:

- Keen fisherman
- Passionate Hunter & Conservationist
- 21ft vessel certified skipper
- Summated Kilimanjaro
- Have survived scorpion stings and snakebites!
- Did I mention I love camping?

### Words I live by:

'Do what makes you happy  
the rest will follow'

### Experience & Work History

Over the past two years he has mentored over eight interns (of which most still work closely with him) building their careers in environmental management, conservation and rangeland management.

Examples of projects successfully completed include:

- **Abengoa Solar SA Paulputs CSP (Pty) Ltd. 150 MW CSP Tower** Environmental Assessment Practitioner during EIA Process  
Northern Cape Province, South Africa
- **Abengoa Solar SA, Xina Solar One (200 MW) CSP Trough** Environmental Control Officer during construction phase. Northern Cape Province, South Africa
- **Abengoa Solar SA, Khi Solar One (50 MW) CSP Tower.** Environmental Control Officer during commissioning and rehabilitation phases. Northern Cape Province, South Africa for Abengoa Solar
- **Isondlo Project Support (IPS) (Pty) Ltd.** Soil Remediation and commissioning report of NGALA Camp. Gauteng, South Africa
- **Berekisanang Empowerment Farm.** Annual external Water Use Licence audit and 70 hectare agricultural development. Northern Cape, South Africa.

### Environmental Coordinator

ROMPCO PIPELINE – Worley Parsons  
Mozambique and South Africa

Stephan was employed by the Procurement, Management and Construction (PMC) consultant, Worley Parsons to manage the environmental aspects of the proposed linear development. Stephan managed a team of 12 positions for the duration of the project ensuring compliance of National and best practice such as IFC standards.



# Jessica Mooney

## Environment & Safety Specialist

Hello! :)



### ABOUT ME

#### Name

Jessica Mooney

#### Born

24 October 1984

#### Phone

+264 81 653 1214

#### Email

Jessica@eccenvironmental.co  
m

#### Website


www.eccenvironmental.com


*Contact me!*

### How to reach me!

+264 81 653 1214 

Jessica.mooney7 

+264 81 653 1214 

Jessica Mooney 



### Education & Qualifications

Federation University  
Australia  
2003-2006

Bachelor of Applied Science -Environmental Management

Additional  
Qualifications

Management Systems Leadership  
ICAM - Incident Cause Analysis Method  
Certificate II in Metalliferous Mining core safety  
and risk management  
Certificate III in Mine Emergency Response  
& Rescue  
Level 3 – HLTFA402B Apply Advanced first Aid  
Emergency Rope Rescue  
Level 2 - 21593VIC First Aid level 2  
Bonded Asbestos Removal >10m2  
Leading and Managing People –  
Brisbane North Institute of TAFE



### Experience & Work History

Current

#### Environment and Safety Specialist

Environmental Compliance Consultancy  
Providing professional consulting services to clients in Namibia with  
particular focus on approvals, ECCs, reporting and compliance.

- ECC Approvals
- Mine Closure Plans
- Rehabilitation
- Pipeline projects
- Cultural Change programmes
- IMS (ISO14001 and 18001)

#### Group HSE Manager

Weatherly Mining Namibia

An exciting role covering the breadth of two operational underground  
mines (Otjihase and Matchless) and the construction of a new open  
pit mine (Tschudi) working for Weatherly Mining in Namibia, Africa.

- Managed company's SHEQ portfolio
- Full scale construction of new greenfield mine into operational  
copper mine
- Reduced LTIFR by 90% from 23.1 to 2.4 in 22 months!
- Implemented integrated management system
- Approvals, ECC renewals and EMPs
- Established the first mining environmental forums in Namibia
- Implemented SAFE COPPER cultural change programme





# Jessica Mooney

## Environment & Safety Specialist

### References

*Feel free to ask the boss :)*

**MR CRAIG THOMAS**  
Managing Director  
Weatherly Mining

**MR COLIN BULLEN**  
Managing Director  
Imerys (client)

Group Manager Lihir Gold  
**MR NICK CURREY**  
Director at Sustainable Mining Strategies

*Or ask those who have worked for me?*

**Ms Asteria Salmon**  
Worked as Control Room Operator  
WMN

**Mr. Hermanus Lamprecht**  
Paramedic Safety Officer

### Professional Associations

- Chamber of Mines Namibia
- Women on Boards
- The Chamber of Minerals and Energy of Western Australia Industry Member – Mining, Minerals and Resources

### Fun Facts:

- I can deadlift 135kg
- To keep fit I Olympic weight lift
- I run ultra Marathons & the longest run yet the fish river Canyon 65km
- I am one of 6 children - do you think that means 4 of us suffer middle child syndrome?

### Words I live by:

‘The journey will bring you happiest, not the destination’



### Experience & Work History

#### Environmental Consultant

Ensolve Pty Ltd - Australia  
In February 2013 an opportunity came about to launch my own business, Blue Wren Environmental Services.

During this time I have worked alongside Ensolve Pty Ltd to deliver several environmental projects including:

- A mine closure project taking an operating mine site into the rehabilitation and closure phase. This project involved the full development of a mine closure plan, facilitation of the government approvals, stakeholder engagement and technical environmental studies to inform the mine closure plan
- Sustainability reporting in accordance with the Global Reporting Initiative
- Rehabilitation of historic exploration sites and obtaining associated government approvals for relinquishment of bonds.

#### Site Environmental Manager

- Panoramic Resources – Australia
- Brought the site into full compliance with the Environmental Licence within 1 year.
  - Managed projects relating to the expansions of the current mine tailings dams including obtaining approvals under the Mining Act 1978 and Environmental Protection Act 1986.
  - Managed the environmental and community aspects of three operations; Savannah Nickel Mine, Copernicus Nickel Mine (currently in care and maintenance) and the operations at Wyndham Port
  - Responsible for the environment, sustainability and social reporting portfolio
  - Developed productive working relationships with local government environmental agencies and non-government agencies, which assisted with the approvals process.
  - Developed strategies for the recruitment and retention of local Indigenous personnel

#### Environmental Systems Coordinator

- Lihir Gold Limited – Australia  
Working on site to provide technical environmental and community advice to ensure all regulatory and licence obligations were met or exceeded
- Regulatory Approvals (State and Federal Government)
  - Environment and social aspects of the international cyanide management code
  - Operational budgeting and bond management for mine closure
  - Compliance with the legislative framework
  - Community engagement



## Emerita Lyapaka Ashipala Environmental Graduate

Hello! :)



### ABOUT ME

**Name**

Emerita Lyapaka Ashipala

**Born**

15 February 1994

**Phone**

+264 81 701 6851

**Email**

emerita@eccenvironmental.com

**Website**

www.eccenvironmental.com



### Education & Qualifications

Glasgow Caledonian  
University, UK  
2017 - 2018

*Master's Degree in Environmental Management (Oil & Gas) (Distinction)*

University of Namibia  
2013 -2016

*Bachelors in Environmental Biology*



### Experience & Work History

#### Environmental Graduate

Current

Working with Environmental Compliance Consultancy  
Providing professional consulting services to clients in Namibia with particular focus on:

- Drafting EIA adverts and NTS documents
- Assisting in the development of scoping reports and
- Environmental Management Plans for exploration projects

#### Intern

Community-Based Natural Resource Management (CBNRM) Project, GIZ Namibia

Roles and Responsibilities:

- Managed a high-volume workload within a deadline-driven environment.
- Responsible for weekly press review.
- Compilation and analyses of data collected from field for baseline study of projects.
- Assists in project management activities.
- Ensure work ethics is compliant with approved codes and standards.
- Even/workshop assistance planner.
- Engaged in clients and stakeholders' meetings.
- Provides overall project management support throughout the entire life cycle of projects.

#### Team Leader (*Ad hoc Registration Official*)

Electoral Commission of Namibia

Roles and Responsibilities:

- Kit operator
- Printing of registration cards
- Responsible for keeping order and safe guarding of all equipment



## Emerita Lyapaka Ashipala Environmental Graduate

### References

*Feel free to ask the boss :)*

**JESSICA MOONEY**  
Environment & Safety Specialist

**STEPHAN BEZUIDENHOUT**  
Managing Director

*Or ask those who have worked with me?*

**Prof Jim Baird**  
Programme Leader  
Glasgow Caledonian University  
j.baird@gcu.ac.uk

### Fun Facts:

- *I am an adventurous*
- *Passionate on learning more about Oil and Gas*

### Words I live by:

*"Be willing to go all out, in pursuit of your dream. Ultimately it will pay off. You are more powerful than you think you are."*



### Experience & Work History

#### Undergraduate Internship

South African Science Of Climate Change and Adaptive Land Management (SASCCAL), Namibia  
*Role and Responsibilities:*

- Compilation of news in all regions, for newsletter publication
- Using qGIS to digitise map drawings
- Organising various task research portfolios



# Titus Shuuya

## SENIOR SCIENTIST ENVIRONMENTAL PRACTITIONER

Hello! :)



### ABOUT ME

#### Name

Titus Shuuya

#### Born

14 April 1983

#### Email

titus@eccenvironmental.com

#### Website

www.eccenvironmental.com

*Contact me!*

### How to reach me!

+264 85 301 3777 

+264 85 301 3777 

### References

**JESSICA MOONEY**  
Environmental and Safety Consultant

**DR. GILLIAN MAGGS-KÖLLING**  
Executive Director  
Gobabeb Research and Training Centre

### Words I live by:

*'A slow movement of a cheetah  
is not a mistake but a  
calculated accuracy'*



### Education & Qualifications

Namibia University of  
Science and Technology,  
Namibia  
2016

*Master of Science in Natural Resources  
Management*

University of Namibia,  
Namibia  
2013

*Bachelor of Science in Integrated Environmental  
Science*



### Experience & Work History

Current

Senior Scientist Environmental  
Practitioner

Environmental Compliance Consultancy

- Providing professional consulting services to clients
- Environmental Assessment activities
- Participate in environmental requirements of projects, including licences, monitoring and reporting
- Field work and on-site support
- Conduct training

Jul 2012 -Jul  
2019

Senior Researcher

Gobabeb Research and Training Centre

- Managing all planning and logistical implementation of field projects, particularly with reference to the Biodiversity Research and Monitoring Program
- Data analysis and report writing
- Develop long-term ecological monitoring program for the uranium mines in fulfilment of their EMP requirements

Dec 2015 -  
Apr 2016

Ecologist

Cheetah Conservation Fund of Namibia (CCF)

- Assist in all aspects of CCF's ecology research
- Write research proposals and scientific publications
- Coordinate the de-bushing project and harvest and horticulture activities



## APPENDIX E - LIST OF PLANT SPECIES

SPECIES	PLANT DESCRIPTION	LOCNOTES	HABITAT/TXT
<i>Acacia ataxacantha</i> DC.	Shrub 3 m high. Flowers in long spikes in terminal leaf axils, cream. Leaves compound, leaflets many, very fine. Thorns short, hooked, bases far apart. Young shoots grey, hairy, older stems woody.	Cutline from Rupara to Harapembe. Approximately 100 km west of Rundu.	Frequent. Dry woodlands. Growing in sandy soil. Full sun.
<i>Acacia erioloba</i> E.Mey. [1]	Large tree up to 8 m high. Trunk with rough longitudinally fissured bark, brown. Shoots grey. Thorns in pairs, long, straight, white to grey, tapering into a sharp tip. Leaves compound. Pods sickle-shaped, grey, velvety.	Along road C45 to Nkurenkuru.	Scattered to frequent. Full sun.
<i>Acacia fleckii</i> Schinz	Tree 2 m high. Stem grey. Leaves bipinnately compound. Glands on petiole base. Fruits flattened, green.	Omuramba Mpumpu, Harupembe road. Rupara Farm	Common. Woodland. Growing in well-drained, sandy soil. Full sun. Roadside.
<i>Acacia sieberiana</i> DC. var. <i>woodii</i> (Burt & Davy) Keay & Brenan	Large tree with a spreading crown, up to 10 m high. Trunk yellowish. Young shoots hairy, green. Leaves compound, with many pairs of leaflets. Leaflets many, fine, rachis hairy, petiole with a gland. Thorns in pairs, fairly short, white, tapering into a sharp point. Pods drooping, straight, long, dorsiventrally flattened, green.	Along road C45 to Nkurenkuru.	Scattered. Full sun.
<i>Aeschynomene fluitans</i> Peter	Floating stems, aerial leaves and yellow flowers borne in March/April.	Rundu.	Rooted on banks of mainstream.
<i>Ammannia auriculata</i> Willd. var. <i>auriculata</i>	Annual herb, up to 0.05 m high. Leaves opposite, sessile.		Rare. Open shrubland. Growing on river bank, in moist/damp, loamy, sand soil of gentle slope. Full sun.
<i>Aristida stipoides</i> Lam.	Perennial grass, 1.5 cm high. Ligules bared with long white hairs. Inflorescence panicle. Spikelets 3-awned.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun.
<i>Azanza garckeana</i> (F.Hoffm.)	Small tree with dense spreading crown. Flowers delicate, petals whorled, pale yellow with a deep maroon centre. Stigma with many	On the banks of the Okavango River.	Frequent but localised. On steep river embankment.

<i>Exell &amp; Hillc.</i>	branches. Leaves large, ovate, 3-lobed, margins wavy. Shoots green, trunk grey.		Calcrete/limestone. Full sun.
<i>Barleria mackeenii Hook.f.</i>	Perennial suffrutex, 20 cm high. Flowers trumpet-shaped, pale purple, throat dark purple. Bracts large leaf-like, ovate, pressed together. Leaves opposite, elliptic. Stems white at the base.	Approximately 90 km West of Rundu. Mpuku Farm.	Uncommon. Growing under a tree. Sandy soil. Partial shade.
<i>Bauhinia petersiana Bolle</i>	Shrub up to 3 m high. Leaves bifoliolate, softly pubescent, light green. Flowers large, white, petals crinkled. Shoots green, hairy. Stems brown to grey, woody.	Approximately 90 km West of Rundu. Mpuku Farm.	On dune. Fine loamy silty soil. Full sun.
<i>Blepharis obmitrata C.B.Clarke</i>		Rupara, roadside.	Growing by roadside.
<i>Brachiaria deflexa (Schumach.) C.E.Hubb. ex Robyns</i>	Grass.	Kavango: Rupara.	
<i>Brachiaria humidicola (Rendle) Schweick.</i>	Perennial grass. Inflorescence 0.6 m, tuft 5 - 10 cm.	Dry side channel of Kavango west of Bunyu.	Growing on seasonally waterlogged floodplain, on loam soil, in full sun. Common.
<i>Caperonia sp.</i>	Annual herb, up to 50 cm high. Trilocular capsules with short soft spines. Stems hollow with some pith.	Banks of Okavango River, 7 km from Musese on road to Rundu (i.e. downstream).	Growing amongst Phragmites in waterlogged areas of floodplain, sometimes in water itself. Fairly common.
<i>Chamaecrista absus (L.) H.S.Irwin &amp; Barneby</i>		Rupara, sandy border of road.	
<i>Cleome hirta (Klotzsch) Oliv.</i>	Aromatic, glandular herb, 1 m high. Leaflets on 7 cm long petiole. Flowers purple, terminal.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodlands. Growing on plain in well-drained, deep, sandy soil. Full sun.
<i>Combretum collinum</i>	Tree, 5 m high. Bark on trunk rough, longitudinally fissured, grey. Leaves opposite,	Approximately 90 km West of Rundu.	Common. Sandy soil. Full sun.

<i>Fresen. subsp. gazense</i> (Swynn. & Baker f.) <i>Okafor</i>	leathery, elliptic but broadening towards the tip, green with yellow veins, velvety below. Fruit apple shaped with 4 wings, brown in the centre, wings yellow, glabrous.	Mpuku Farm.	
<i>Combretum platypetalum</i> Welw. ex M.A.Lawson subsp. <i>baumii</i> (Engl. & Gilg) <i>Exell</i>		Western Okavango.	
<i>Combretum zeyheri</i> Sond.	Small tree or shrub up to 2.5 m high. Leaves in whorls of 3, green, leathery, softly hairy below, glabrous above. Bark on shoots fibrous, peeling off in longitudinal threads, orange-brown.	Approximately 90 km West of Rundu. Mpuku Farm.	Fine loamy silty soil. Full sun.
<i>Crotalaria barkae</i> Schweinf. subsp. <i>barkae</i>		Okavango. Rundu. Rupara.	Found on sandy border of road.
<i>Crotalaria heidmannii</i> Schinz		District Rundu. Rupara, roadside.	
<i>Crotalaria pisicarpa</i> Welw. ex Baker		District Rundu. Kavango: Rupara, sandy roadside.	
<i>Crotalaria platysepala</i> Harv.		Rundu. Kavango: Rupara, sandy roadside.	
<i>Crotalaria steudneri</i> Schweinf.	Annual herb. Pods mottled with purple. Standard cream with brown nerves, adax cream to yellow on inside. Wings and keel yellow.	Okavango region. Grey sandy flats below Musese Camp, west of Lupala Mission Station.	Growing on grey sandy flats.
<i>Cucumis metuliferus</i> E.Mey. ex Naudin	Creepers. Petals yellow. Fruit cylindrical with short, pointed spines, colour green turning yellow-orange.	Banks of Okavango River, 7 km from Musese on road to Rundu (i.e. downstream)	Growing in shadow of tree and climbing into tree.
<i>Cynodon dactylon</i> (L.)	Stolonous, upright grass, 10 cm high. Smooth appearance. Inflorescence digitate.	Omuramba Mpungu,	Abundant. Growing on grazed plain in



Pers.		Harupembe road. Rupara Farm.	clay soil. Full sun.
<i>Digitaria milanjiana</i> (Rendle) Stapf	Grass.	Kavango, Rupara, Yard area.	
<i>Eragrostis cilianensis</i> (All.) Vignolo ex Janch.	Grass.	Kavango: Rupara, forest.	Attacked by gall mites (Aceria) abundantly.
<i>Eragrostis dinteri</i> Stapf	Grass 30 cm high. Leaves with hairy sheath, alternate and folded in the midrib. Inflorescence a raceme, spikelets, maroon, compact.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Common. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside.
<i>Eragrostis echinochloidea</i> Stapf	Erect grass 30 cm high. Inflorescence raceme with big, compact spikelet.	Mpungu, Harupembe. Rupara Farm.	Occasional. Growing on plain in well-drained, clay- calcrete soil. Full sun. Disturbed.
<i>Eragrostis rigidior</i> Pilg.	Spreading grass, 0.5 m high. Leaves stiff, hairy on both surfaces. Inflorescence a panicle, 4-whorled arranged.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside. Disturbed.
<i>Eragrostis trichophora</i> Coss. & Durieu	Grass.	Rupara Farm.	Sandy soil on roadside.
<i>Erucastrum arabicum</i> Fisch. & C.A.Mey.	Annual herb with small yellow flowers.	Sandy soil between Lupala Mission and Musese Camp.	
<i>Euphorbia inaequilatera</i> Sond. var. <i>inaequilatera</i>	Prostrate annual herb. Stems branched dichotomously, reddish, with milky latex, shortly pubescent. Leaves opposite, subsessile, elliptic, shortly pubescent underneath, dark green above pale green below, margins red. Fruit a small round capsule.	Cutline from Rupara to Harapembe. Approximately 100 km West of Rundu.	Common. Sandy soil. Cleared area. Full sun.
<i>Ficus petersii</i> Warb.	Tree 45 feet high. Branches drooping forming a dense canopy. Figs borne on young branchlets	5.6 miles west of Lupala Finnish	Diriko name: 'uhoro'

	only. Trunk, compound, consisting of previously separate stems of a strangler tree. Now a tree on its own with a trunk 2,5 feet in diameter.	Mission.	
<i>Combretum collinum</i> <i>Fresen. subsp. gazense</i> (Swynn. & Baker f.) <i>Okafor</i>	Tree, 5 m high. Bark on trunk rough, longitudinally fissured, grey. Leaves opposite, leathery, elliptic but broadening towards the tip, green with yellow veins, velvety below. Fruit apple shaped with 4 wings, brown in the centre, wings yellow, glabrous.	Approximately 90 km West of Rundu. Mpuku Farm.	Common. Sandy soil. Full sun.
<i>Combretum platypetalum</i> <i>Welw. ex M.A. Lawson</i> <i>subsp. baumii</i> (Engl. & Gilg) <i>Exell</i>		Western Okavango.	
<i>Combretum zeyheri</i> Sond.	Small tree or shrub up to 2.5 m high. Leaves in whorls of 3, green, leathery, softly hairy below, glabrous above. Bark on shoots fibrous, peeling off in longitudinal threads, orange-brown.	Approximately 90 km West of Rundu. Mpuku Farm.	Fine loamy silty soil. Full sun.
<i>Crotalaria barkae</i> <i>Schweinf. subsp. barkae</i>		Okavango. Rundu. Rupara.	Found on sandy border of road.
<i>Crotalaria heidmannii</i> <i>Schinz</i>		District Rundu. Rupara, roadside.	
<i>Crotalaria pisicarpa</i> <i>Welw. ex Baker</i>		District Rundu. Kavango: Rupara, sandy roadside.	
<i>Crotalaria platysepala</i> <i>Harv.</i>		Rundu. Kavango: Rupara, sandy roadside.	
<i>Crotalaria steudneri</i> <i>Schweinf.</i>	Annual herb. Pods mottled with purple. Standard cream with brown nerves, adax cream to yellow on inside. Wings and keel yellow.	Okavango region. Grey sandy flats below Musese Camp, west of Lupala Mission Station.	Growing on grey sandy flats.
<i>Cucumis metuliferus</i>	Creeper. Petals yellow. Fruit cylindrical with short, pointed spines, colour green turning	Banks of Okavango River, 7 km from	Growing in shadow of tree and

<i>E.Mey. ex Naudin</i>	yellow-orange.	Musese on road to Rundu (i.e. downstream)	climbing into tree.
<i>Cynodon dactylon (L.) Pers.</i>	Stolonous, upright grass, 10 cm high. Smooth appearance. Inflorescence digitate.	Omuramba Mpungu, Harupembe road. Rupara Farm.	Abundant. Growing on grazed plain in clay soil. Full sun.
<i>Digitaria milanjiana (Rendle) Stapf</i>	Grass.	Kavango, Rupara, Yard area.	
<i>Eragrostis cilianensis (All.) Vignolo ex Janch.</i>	Grass.	Kavango: Rupara, forest.	Attacked by gall mites (Aceria) abundantly.
<i>Eragrostis dinteri Stapf</i>	Grass 30 cm high. Leaves with hairy sheath, alternate and folded in the midrib. Inflorescence a raceme, spikelets, maroon, compact.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Common. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside.
<i>Eragrostis echinochloide a Stapf</i>	Erect grass 30 cm high. Inflorescence raceme with big, compact spikelet.	Mpungu, Harupembe. Rupara Farm.	Occasional. Growing on plain in well-drained, clay-calcrete soil. Full sun. Disturbed.
<i>Eragrostis rigidior Pilg.</i>	Spreading grass, 0.5 m high. Leaves stiff, hairy on both surfaces. Inflorescence a panicle, 4-whorled arranged.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside. Disturbed.
<i>Eragrostis trichophora Coss. &amp; Durieu</i>	Grass.	Rupara Farm.	Sandy soil on roadside.
<i>Erucastrum arabicum Fisch. &amp; C.A.Mey.</i>	Annual herb with small yellow flowers.	Sandy soil between Lupala Mission and Musese Camp.	
<i>Euphorbia inaequilatera Sond. var.</i>	Prostrate annual herb. Stems branched dichotomously, reddish, with milky latex, shortly pubescent. Leaves opposite, sessile,	Cutline from Rupara to Harupembe. Approximately 100	Common. Sandy soil. Cleared area. Full sun.

<i>inaequilatera</i>	elliptic, shortly pubescent underneath, dark green above pale green below, margins red. Fruit a small round capsule.	km West of Rundu.	
<i>Ficus petersii</i> Warb.	Tree 45 feet high. Branches drooping forming a dense canopy. Figs borne on young branchlets only. Trunk, compound, consisting of previously separate stems of a strangler tree. Now a tree on its own with a trunk 2,5 feet in diameter.	5.6 miles west of Lupala Finnish Mission.	Diriko name: 'uhoro'
<i>Glinus lotoides</i> L. var. <i>lotoides</i>	Prostrate herb with red brown clusters of flowers growing in moist places	River flats below visitors camp at Runtu.	Peaty black soil.
<i>Grewia falcistipula</i> K.Schum.	Graceful spreading shrub, 1.2 m high. Stems held horizontally above ground, grey, woody. Leaves all held in one plane, velvety, grey below, green above, base asymmetric. Fruit round, fairly large, on an extended gynophore.	Cutline from Rupara to Harapembe. Approximately 100 km West of Rundu.	Frequent. White sandy soil. Dry woodlands. Full sun.
<i>Grewia retinervis</i> Burret	Shrub 2 m high. Stem squared. Leaves rough, alternate, margin serrate. Fruits green become brown when ripe.	Mpumpu Omuramba, Harupembe road. Rupara Farm.	Occasional. Growing in well-drained, sandy soil. Full sun. Roadside.
<i>Grewia schinzii</i> K.Schum.	Tree/shrub, 5 m high. Many stemmed, two or three straight stems growing outwards.	Okavango River, at Rupara Farm.	Occasional.
<i>Grewia retinervis</i> Burret	Shrub 2 m high. Stem squared. Leaves rough, alternate, margin serrate. Fruits green become brown when ripe.	Mpumpu Omuramba, Harupembe road. Rupara Farm.	Occasional. Growing in well-drained, sandy soil. Full sun. Roadside.
<i>Grewia schinzii</i> K.Schum.	Tree/shrub, 5 m high. Many stemmed, two or three straight stems growing outwards.	Okavango River, at Rupara Farm.	Occasional.
<i>Hermannia guerkeana</i> K.Schum.		Rupara Farm, roadside.	
<i>Hibiscus dongolensis</i> Delile	Shrub 1 m high. Flowers yellow.	Mpuma.	Sandy loam.
<i>Hibiscus mastersianus</i> Hiern	Annual forb up to 1.7 m high. Flowers large, showy, yellow with a maroon centre, calyx lobes linear. Leaves alternate, elliptic to ovate. Stems with irritant hairs, light green.	Approximately 90 km West of Rundu. Mpuku Farm.	Next to field in red sand. Full sun.
<i>Hippocratea parviflora</i>	Slender shrub forming a thicket 1.4 m high. Leaves single, stems opposite at node. Fruits	Kavango District: Katondo, next to	

N.E.Br.	plentiful.	main road.	
<i>Hirpicium gorterioides</i> (Oliv. & Hiern) Roessler subsp. <i>gorterioides</i>		Rupara, sandy soil along road.	
<i>Hyphaene petersiana</i> Klotzsch ex Mart.	Palm tree, up to 8 m high. Trunk bare, grey to almost black, fibrous, unbranched. Leaves clustered at the tip of the stem, fan shaped, grey, hard. Fruit round, large, brown, 8 cm in diameter, covered with a hard fibrous exocarp, kernel hard, white.	Along road C45 to Nkurenkuru.	Common but localised. Calcrete. Full sun.
<i>Ipomoea chloroneura</i> Hallier f.	Annual erect herb, 25 cm high. Flowers trumpet-shaped, white. Leaves alternate, elliptic, densely covered with long white hairs, green above, white below. Stems upright, very hairy.	Approximately 90 km West of Rundu. Mpuku Farm.	Light shade.
<i>Ipomoea hackeliana</i> (Schinz) Hallier f.	Annual creeper. Flowers white, tubular, single. Leaves alternate, ovate, hairy, margins wavy and serrate. Capsules ovoid to round, hairy, light green when immature.	Approximately 90 km West of Rundu. Mpuku Farm.	Common. Omuramba. Partial shade.
<i>Ipomoea magnusiana</i> Schinz	Annual creeper. Flowers trumpet-shaped, purple. Leaves palmate, white below, green above. Stems prostrate, very hairy.	Approximately 90 km West of Rundu. Mpuku Farm.	Light shade.
<i>Justicia betonica</i> L.	Biennial herb, 0.2 m high. Flowers white. Inflorescence dense racemes at end of twig, flower covered by large green/white bracts. Leaves opposite. Stem ascending.	Along Hakaseube road.	Occasional. Open shrubland. Growing in well-drained, loamy, sandy soil. Full sun.
<i>Lagarosiphon ilicifolius</i> Oberm.		Rundu. Haisirira, Okavango river.	Rooted, submerged in marginal waters of mainstream.
<i>Leobordea platycarpa</i> (Viv.) B.-E. van Wyk & Boatwr. [2]		Rupara, roadside.	
<i>Leonotis nepetifolia</i> (L.) R.Br.	Perennial herbs, 1.2 m high, stems angular. Inflorescence borne at nodia around central axis.	43.2 km east of Rundu along the main road, in sandy soil.	

<i>Lessertia benguellensis</i> Baker f.		Kavango: Rupara, roadside.	Along the roadside.
<i>Megaloprota hne albescens</i> C.E.Hubb.	Perennial grass. Leaves soft, hairy. Ligule membranous. Inflorescence digitate.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Common. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside.
<i>Melinis kallimorpha</i> (Clayton) Zizka	Perennial grass with zigzag shape. Leaves glabrous, ligule translucent membrane. Inflorescence a panical. Spikelets yellowish, ends in 2 awns.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun.
<i>Melinis repens</i> (Willd.) Zizka subsp. repens	Grass 60 cm high. Soft hairs to glabrous. Ligule fringe of hairs. Inflorescence a panicle, spikelets wooly.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained sand. Full sun. Roadside.
<i>Nymphaea nouchali</i> Burm.f. var. <i>caerulea</i> (Savigny) Verdc.	Perennial hydrophyte. Underground organ corm.	Side channel to Kavango river.	Growing in 0.5-0.8 m deep water. In standing water, on clay soil, on floodplain, in full sun. Common.
<i>Nymphoides indica</i> (L.) Kuntze subsp. <i>occidentalis</i> A.Raynal	Floating leaves and small white/yellow aerial flowers.		Rooted in very shallow water in quiet margins of mainstream.
<i>Oryza longistaminata</i> A.Chev. & Roehr.	Grass.	About 8 km east of Rundu. Nearest village: Kakoro. On small flood plains on banks of Okavango River.	Growing in association with Phragmites and Leersia. Animals grazing on plant. Genebank Voucher.
<i>Ottelia kunenensis</i> (Gürke) Dandy	Annual hydrophyte, height up to 0.3 m. Flowers bright yellow. Leaves linear, between 15 - 25 mm, growing from base.		Growing in clay soil, in standing water on floodplain, in wetland-grassland, in full sun. Gentle slope. Occasional.

<i>Ozoroa schinzii</i> (Engl.) R.Fern. & A.Fern.	Many stemmed shrub, leaves borne in whorls of 3-each. Stems slender, flowers minute, white.	Sambiu. Katondo, next to main road.	
<i>Panicum maximum</i> Jacq.	Annual grass, 0.5 m high. Leaves about 2 cm broad and 20 cm long. Ligule fringed. Inflorescence a panicle, spikelets deep maroon.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Common. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside.
<i>Pavonia clathrata</i> Mast.	Annual forb up to 1.7 m high. Flowers white to pale pink, epicalyx lobes linear with interconnected bristles. Leaves all along the stems, trifoliolate to palmate. Shoots erect, green, sticky-glandular.	Approximately 90 km West of Rundu. Mpuku Farm.	On edge of field in red sand. Partial shade.
<i>Peltophorum africanum</i> Sond.	Large tree up to 8 m high. Leaves compound, pinnae spaced far apart. Growth tip on young shoots reddish-brown, velutinous. Stems grey. Pods rhombic, flat, dark-brown, single-seeded.	Along road C45 to Nkurenkuru.	Scattered. On calcrete/limestone. Full sun.
<i>Perotis vaginata</i> Hack.	Perennial grass with pale green inflorescence.	11 miles west of Sambusu Mission Station.	On flats in grey sandy soil.
<i>Pogonarthria fleckii</i> (Hack.) Hack.	Perennial grass, spreading, hairy. Ligule long hairy. Inflorescence a raceme.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Roadside. Disturbed.
<i>Potamogeton thunbergii</i> Cham. & Schltdl.	Submerged and floating leaves.	Rundu. Haisisira: Okavango river.	Rooted in shallow marginal water of mainstream.
<i>Pygmaeothonus zeyheri</i> (Sond.) <i>Robyns</i> var. <i>zeyheri</i>	Small suffrutex with underground stems. Flowers green.	16.5 miles west of Rundu on road down Omuramba Nkutu.	On dune in deep sand.
<i>Rhus quartiniana</i> A.Rich.	Shrub, 4 m high. Bank, seepage and bed.	Okavango river.	
<i>Rotala</i> sp.	Submerged.	Rundu. Haisisira, Okavango river.	Growing in sand in shallow quiet marginal waters of



			mainstream.
<i>Schinziophyton rautanenii</i> (Schinz) Radcl.-Sm.	Large tree with spreading crown, up to 6 m high. Leaves palmate, dark green above lighter below, petiole long. Trunk mottled orange to grey. Flowers and fruit absent.	Approximately 90 km West of Rundu. Mpuku Farm.	Full sun.
<i>Sesamum triphyllum</i> Welw. ex Asch. var. <i>grandiflorum</i> (Schinz) Merxm.	Annual herb, 30 cm high. Flowers tubular, corolla lobes dusty pink, tube dark pink to maroon. Leaves trifoliolate with black glands in each axil. Pods lanceolate, held erect.	Approximately 90 km West of Rundu. Mpuku Farm.	Frequent but restricted. Omuramba. Fine silty loamy soil. Full sun.
<i>Setaria verticillata</i> (L.) P.Beauv.	Lax soft grass, glabrous. Inflorescence spike, brittle sticky.	Omuramba Mpumpu, Harupembe road. Rupara Farm.	Occasional. Grasslands. Growing on grazed plain in calcrete-clay soil. Shade.
<i>Sida cordifolia</i> L. subsp. <i>maculata</i> (Cav.) Marais	Perennial shrub up to 1 m high. Leaves cordate, very hairy, large. Flowers orange, with a tuft of bristles sticking out at the top. Stems erect, hairy.	Approximately 90 km West of Rundu. Mpuku Farm.	Omuramba. Full sun.
<i>Sida ovata</i> Forssk.	Small perennial herb. Flowers orange. Leaves alternate, elliptic.	Approximately 90 km West of Rundu. Mpuku Farm.	Frequent. Sandy soil. Light shade.
<i>Striga gesnerioides</i> (Willd.) Vatke	Herb 20 cm high. Leaves absent. Flowers in opposite bracts, purple with maroon centre.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Roadverge. Disturbed.
<i>Strychnos cocculoides</i> Baker	Small tree with a dense round crown, 2.5 m high. Trunk cream with thick corky bark. Leaves opposite, simple, almost round, leathery, dark green with yellow venation, 5 veins from the base. Fruit large, round, green, approximately 15 cm in diameter.	Along road C45 to Nkurenkuru.	Scattered. Sandy soil. Full sun.
<i>Tephrosia purpurea</i> (L.) Pers. subsp. <i>altissima</i> Brummitt	Perennial, semi-prostrate herb with magenta flowers.	Masari Experimental Station, 30 miles east of Rundu.	
<i>Tephrosia purpurea</i> (L.)	Procumbent, perennial herb. Leaves bi-pinnate. Leaflets opposite. Flowers pink. Fruit pods	Mpunpu Omuramba, next to	Common. Woodland.

<i>Pers. subsp. leptostachya (DC.) Brummitt var. pubescens Baker</i>	green.	the Harupembe road. Rupara Farm.	Growing on plain in well-drained, sandy soil. Full sun. Roadside.
<i>Terminalia prunioides M.A.Lawson</i>	Tree 25 feet high with rather straggly branches forming a dense elongate crown branchlets tending to be spinescent buds greenish yellow, bark grey, longitudinally fissured.	Okavango N.T.: 5.6 miles west of Lupala Finnish Mission.	Diriko: 'Muhama'.
<i>Tragia okanyua Pax</i>	Twining climber with stinging hairs. Flowers greenish white.	Kashipa 3.4 miles east of Nyangana Mission Station.	
<i>Tragus berteronianus Schult.</i>	Prostrate grass. Leaf margin ciliate. Inflorescence a spike.	Along okavngo river, Harupembe road. Rupara Farm.	Occasional. Growing on riverbank in calcrete-clay soils. Full sun. Disturbed.
<i>Tricholaena monachne (Trin.) Stapf &amp; C.E.Hubb.</i>	Grass.	Kavango: Rupara, Missionary Station, in cultivated fieds and in forest.	
<i>Tristachya superba (De Not.) Schweinf. &amp; Asch.</i>	Perennial grass, internodes almost 15 cm apart. Leaves leathery, 0.5 cm in diameter, margin ciliate. Inflorescence raceme, spikelets 1 cm long ends in 5-6 cm long awns, stamens and style protruding. Style ciliate, brown.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Disturbed.
<i>Urochloa brachyura (Hack.) Stapf</i>	Annual grass, 50 cm high. Leaf margins ciliate, leaf base sessile around the stem. Soft wayvy leaves. Inflorescence a raceme.	Mpunpu Omuramba, next to the Harupembe road. Rupara Farm.	Occasional. Woodland. Growing on plain in well-drained, sandy soil. Full sun. Roadside.

## **APPENDIX F – ASSESSMENT FORM**

The full application is available on their website

## Eco Awards Namibia

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



### Assessment Form:

#### Establishment details:

Name: \_\_\_\_\_ No of beds: \_\_\_\_\_  
NTB Registration category \_\_\_\_\_ Telephone: \_\_\_\_\_  
And number: \_\_\_\_\_  
Physical address: \_\_\_\_\_ Fax: \_\_\_\_\_  
Postal address: \_\_\_\_\_ email: \_\_\_\_\_  
\_\_\_\_\_

Contact person:  
Name: \_\_\_\_\_ Telephone: \_\_\_\_\_  
Position: \_\_\_\_\_ Fax: \_\_\_\_\_  
Cell-phone: \_\_\_\_\_ email: \_\_\_\_\_

	CRITERIA SUBSECTION	TOTAL SCORE POSSIBLE	TOTAL SCORE APPLICABLE	OWN SCORE	ASSESSORS SCORE	AWARDED SCORE
1.	Management	23	23			
2.	Conservation	17	17			
3.	Energy	16	16			
4.	Water	20	20			
5.	Waste, pollution, sewer	24	24			
6.	Building & landscaping	18	18			
7.	Staff & Health	36	36			
8.	Guiding	6	6			
9.	Social responsibility	13	13			
10.	Legal/NTB Compliance	16	16			
	<b>SUBTOTAL</b>	<b>189</b>	<b>189</b>			
	<b>PERCENTAGE</b>	100%	100%			
	<i>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.</i>					
11.	Bonus points	10%	10%			
	<b>TOTAL FINAL SCORE</b>	<b>110%</b>	<b>110%</b>			
	<b>TOTAL FINAL SCORE</b>					

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
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Date: \_\_\_\_\_  
Name of Assessor: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date of MC approval: \_\_\_\_\_  
Signature of MC Chair: \_\_\_\_\_