



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



ECC-096-239-REP-04-B

# Environmental Scoping and Impact Assessment

**ERONGO ROCKS ADVENTURE LODGE IN OMARURU,  
ERONGO REGION  
PREPARED FOR**



SEPTEMBER 2019

---

## TITLE AND APPROVAL PAGE

<b>Project Name:</b>	Development of the Erongo Rocks Adventure Lodge.
<b>Project Number</b>	ECC-096-239-REP-04-B
<b>Client Name:</b>	Southern Cross Adventure Lodges (Pty) Ltd
<b>Ministry Reference:</b>	N/A
<b>Status of Report:</b>	Final for Submission
<b>Date of issue:</b>	SEPTEMBER 2019
<b>Review Period</b>	NA

### 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)

### Confidentiality

Environmental Compliance Consultancy Notice: This document is confidential. If you are not the intended recipient, you must not disclose or use the information contained in it. If you have received this document in error, please notify us immediately by return email and delete the document and any attachments. Any personal views or opinions expressed by the writer may not necessarily reflect the views or opinions of Environmental Compliance Consultancy.

*Please note at ECC we care out lessening our footprint on the environment, therefore all documents are printed double sided.*

---

## EXECUTIVE SUMMARY

Southern Cross Adventure Lodges (Pty) Ltd propose to undertake construction activities for the development of the Erongo Rocks Adventure Lodge in Erongo Region. The proposed development comprises a 15 en-suite unit lodge, south west of the town of Omaruru on farm Omandumba. The area has significant sustainable tourism potentials, offering numerous activities in the region such as nature drives, excursions to historic rock paintings and visits to the San and their Living Museum. Furthermore guests will be able to experience hiking and climbing excursions around Erongo Mountains. The fascinating, wide-open, adventurous and wild landscape of the area of the proposed Erongo Rocks Adventure Lodge will offers excellent opportunities of exploration. The proposed development will also generate income (e.g. selling arts and crafts) 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 (EMA) No. 7 of 2007 and its Regulations (No. 30 of 2011), therefore, an environmental clearance certificate is required. As part of the environmental clearance certificate application, an environmental impact assessment (EIA) has been undertaken which satisfies the requirements of the 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 Erongo Rocks Adventure Lodge. The proposed development comprises of powerline, water pipeline, water storage tanks, guest accommodation and entertainment areas (swimming pool).

The planned development is located in an area that has a fairly sparse vegetation cover, dominated by *Crotalaria argyrea* (dwarf shrub), with the grass *Eragrostis annulata* and the smaller trees *Boscia foetida*.

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.

The EIA has been undertaken in terms of the requirements of EMA and the EIA regulation. The EIA was undertaken using a methodology developed by Environmental Compliance Consultancy (ECC), 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.

**TABLE OF CONTENTS**

<b>1</b>	<b>INTRODUCTION</b> .....	8
1.1	PURPOSE OF THIS REPORT .....	8
1.2	PROPOSED PROJECT .....	8
1.3	THE PROPONENT OF THE PROPOSED PROJECT .....	10
1.4	ENVIRONMENTAL CONSULTANCY .....	10
1.5	ENVIRONMENTAL REQUIREMENTS .....	10
1.6	REPORT STRUCTURE .....	11
<b>2</b>	<b>REGULATORY FRAMEWORK</b> .....	13
2.1	NATIONAL REGULATORY FRAMEWORK .....	13
<b>3</b>	<b>APPROACH TO THE EIA</b> .....	15
3.1	PURPOSE OF AN EIA .....	15
3.2	THE ASSESSMENT PROCESS .....	15
<b>4</b>	<b>ECC METHODOLOGY FOR THE IMPACT ASSESSMENTS</b> .....	17
4.1	DETERMINATION OF SIGNIFICANCE .....	17
4.1	CONSULTATION .....	21
4.1.1	Non-technical summary .....	21
4.1.2	Newspaper advertisements .....	21
4.1.3	Site notices .....	21
4.1.4	Consultation Feedback .....	21
<b>5</b>	<b>PROJECT DESCRIPTION</b> .....	22
5.1	NEED FOR THE PROPOSED PROJECT .....	22
5.2	ALTERNATIVES .....	22
5.2.1	Alternatives considered .....	22
5.3	THE PROJECT SITE AND LOCATION .....	22
5.4	SITE AND SURROUNDING ENVIRONMENT .....	24
5.5	PROPOSED DEVELOPMENT ACTIVITIES .....	26
5.5.1	Design and Building Material .....	26
5.5.2	Planned project schedule .....	26
5.5.3	Workers and accommodation .....	26
5.5.4	Resource and waste management .....	26
<b>6</b>	<b>ENVIRONMENTAL AND SOCIAL BASELINE</b> .....	27
6.1	INTRODUCTION .....	27
6.2	BASELINE OF THE BUILT ENVIRONMENT .....	27
6.3	CLIMATE AND TOPOGRAPHY .....	29

6.4	VEGETATION AND SOIL .....	30
6.5	FAUNA SPECIES .....	31
6.6	SITE GEOLOGY AND HYDROLOGY.....	31
6.1	SOCIO-ECONOMIC .....	34
6.1.1	Governance .....	34
6.2	DEMOGRAPHIC PROFILE .....	34
6.2.1	HIV/AIDS in Namibia .....	34
6.2.2	Employment.....	34
6.2.3	Economic activities .....	34
6.2.4	Cultural heritage .....	34
<b>7</b>	<b>ASSESSMENT OF FINDINGS AND MITIGATION.....</b>	<b>37</b>
7.1	SCOPING ASSESSMENT FINDINGS .....	37
7.2	LIMITATIONS, UNCERTAINTIES AND ASSUMPTION .....	37
<b>8</b>	<b>ENVIRONMENTAL MANAGEMENT PLAN .....</b>	<b>46</b>
<b>9</b>	<b>CONCLUSION .....</b>	<b>47</b>
	<b>REFERENCES .....</b>	<b>48</b>
	<b>APPENDIX A: EMP .....</b>	<b>49</b>
	<b>APPENDIX B - NON-TECHNICAL SUMMARY .....</b>	<b>50</b>
	<b>APPENDIX C - EVIDENCE OF PUBLIC CONSULTATION.....</b>	<b>56</b>
	<b>APPENDIX D -ECC CVS .....</b>	<b>59</b>
	<b>APPENDIX E - LIST OF PLANT SPECIES .....</b>	<b>67</b>
<b>TABLES</b>		
	TABLE 1 - PROPONENT DETAILS.....	10
	TABLE 2 - LISTED ACTIVITIES AND RELEVANCE TO THE PROPOSED DEVELOPMENT .....	11
	TABLE 3 - STRUCTURE OF THE REPORT .....	11
	TABLE 4 - LEGAL COMPLIANCE .....	13
	TABLE 5 – PERMITS AND LICENSES .....	14
	TABLE 6 - SENSITIVE AND VALUE RECEPTOR .....	17
	TABLE 7 - NATURE OF IMPACT.....	18
	TABLE 8 - MAGNITUDE OF CHANGE .....	18
	TABLE 9 - LEVEL OF CERTAINTY.....	19
	TABLE 10 - GUIDE TO SIGNIFICANCE RATING .....	20
	TABLE 11 - SIGNIFICANCE DESCRIPTION .....	20
	TABLE 12 - SUMMARY OF LIMITATION, UNCERTAINTIES AND ASSUMPTION OF THE EIA PROCESS .....	37
	TABLE 13 - SUMMARY OF POTENTIAL IMPACTS.....	38

**FIGURES**

FIGURE 1 - LOCALITY MAP OF ERONGO ROCK ADVENTURE LODGE	9
FIGURE 2 - ECC SCOPING PROCESS	16
FIGURE 3 - ROADS OF THE PROPOSED PROJECT AREA AND LOCATION	23
FIGURE 4- LOCATION OF FARM BOUNDARIES AND STAKEHOLDERS	25
FIGURE 5 - SITE OF PROPOSED PROJECT AREA AND SURROUNDING FEATURES	28
FIGURE 6 - WIND DIRECTION OF SPEED IN THE ERONGO REGION	29
FIGURE 7 - VEGETATION AND SOIL IN THE AREA	30
FIGURE 8 - SITE GEOLOGY AND HYDROLOGY OF THE PROPOSED AREA	32
FIGURE 9 - GEOLOGICAL MAP OF THE PROPOSED PROJECT	33
FIGURE 10 – HERITAGE SITES	36

## 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 activities for the proposed Erongo Rocks Adventure Lodge, which are described in detail throughout the report. The EIA has been undertaken in terms of the requirements of the EMA and the EIA regulation.

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.

This report has been prepared by ECC with the terms of reference for the assessment 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 EMP (Appendix A) is also required in terms of the EMA. An EMP has been developed to provide a management framework for the planning and implementation of Construction activities. The EMP provides - 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 PROPOSED PROJECT

Southern Cross Adventure Lodges (Pty) Ltd proposes to undertake construction activities for the development of Erongo Rocks Adventure Lodge in Erongo Region. The nearest town is Omaruru which is located about 35 km northeast of the Erongo Rocks Adventure Lodge ( see **Error! Reference source not found.**).

The proposed development comprises a 15 en-suite, units lodge which will expose tourists to the cultural activities in the central western parts of Namibia. The project surrounding area has significant tourism attraction and the proposed development will 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.



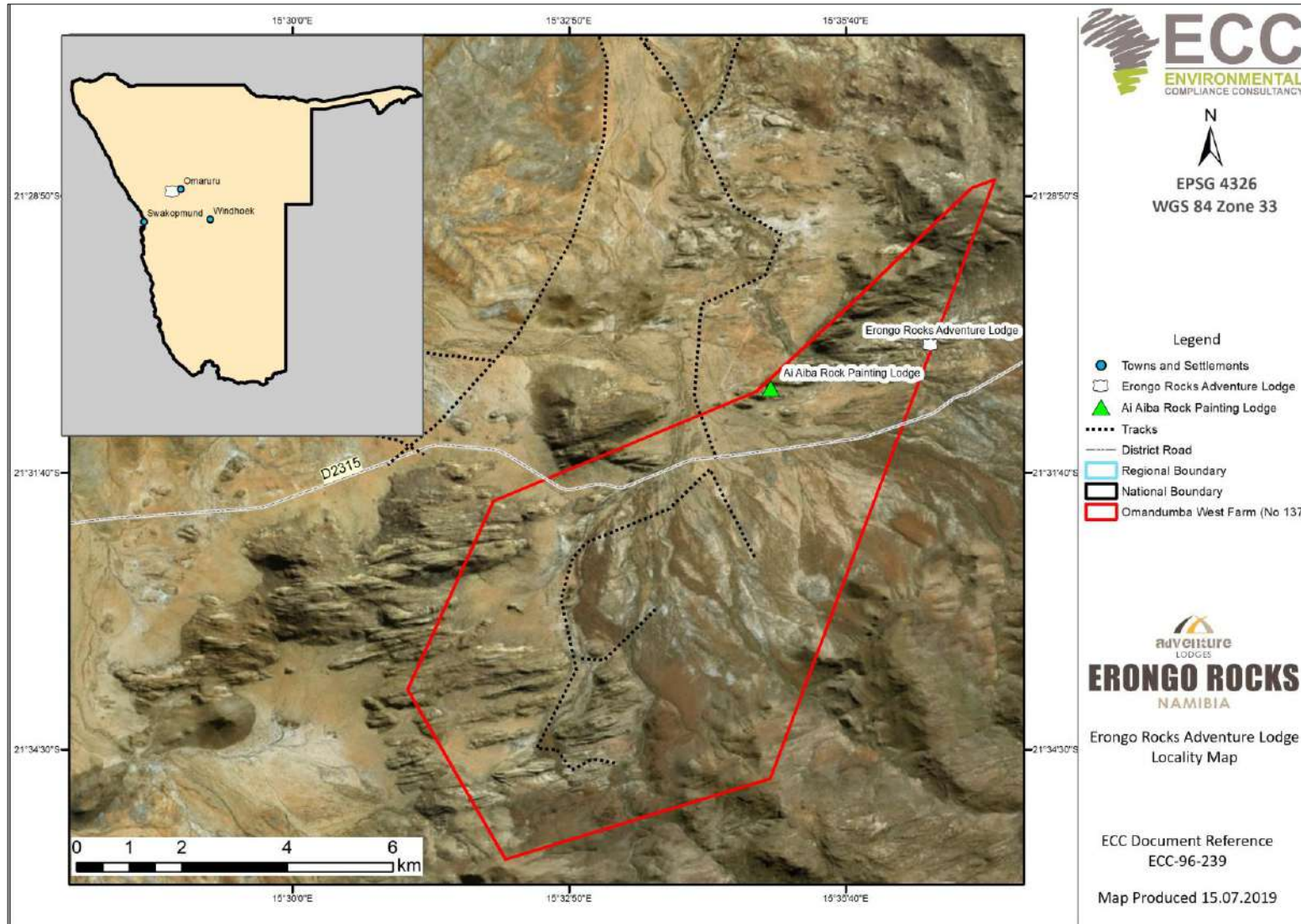


FIGURE 1 - LOCALITY MAP OF ERONGO ROCK ADVENTURE LODGE

### 1.3 THE PROPONENT OF THE PROPOSED PROJECT

The proponent of the project is Southern Cross Adventure Lodges (Pty) Ltd as set out in **TABLE 1**.

**TABLE 1 - PROPONENT DETAILS**

CONTACT	POSTAL ADDRESS	EMAIL ADDRESS	TELEPHONE	WEBSITE
Jochen Beckett	P.O.Box 5633 Windhoek	<a href="mailto:jochen@absoluttours.com">jochen@absoluttours.com</a>	+264 61 308 675	<a href="http://www.absoluttours.com">www.absoluttours.com</a>

### 1.4 ENVIRONMENTAL CONSULTANCY

ECC, a Namibian consultancy (registration number Close Corporation 2013/11401), has prepared this scoping report and impact assessment 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 81 669 7608

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

### 1.5 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. Listed activities triggered by the proposed project in terms of the Environmental Management Act, 2007 and its regulations are as follows:

**TABLE 2 - LISTED ACTIVITIES AND RELEVANCE TO THE PROPOSED DEVELOPMENT**

LISTED ACTIVITY	EIA SCREENING FINDING
<b>ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES</b> 1 (b) The transmission and supply of electricity	A solar system line will be installed to provide electricity at the lodge site.
<b>WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES</b> (2.1) The construction of facilities for waste sites, treatment of waste and disposal of waste. (2.3) The import, processing, use and recycling, temporary storage, transit or export of waste	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.
<b>TOURISM DEVELOPMENT ACTIVITIES</b> (6) The construction of resorts, lodges, hotels or other tourism and hospitality facilities	The planned project is the construction of a lodge for tourism purpose.
<b>WATER RESOURCE DEVELOPMENTS</b> 8.6) Construction of industrial and domestic wastewater treatment plants and related pipeline systems	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.
<b>MINING AND QUARRYING ACTIVITIES</b> (3.2) Other forms of mining or extraction of any natural resources whether regulated by law or not.	Minimal sand removal is required for construction activities. The sand will be sourced from an approved existing borrow pit.
<b>FORESTRY ACTIVITIES</b> (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.	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.

## 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
1	Introduction	This chapter introduces the EIA and provides background information on the proponent
2	Regulatory Framework	This chapter describes the Namibian, international and relevant environmental regulatory framework applicable to the project
3	Approach to the EIA	Provides the assessment methodology applied to the EIA

SECTION	TITLE	CONTENT
4	Project Description	Technical description of the project 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
5	Description of the environmental and social baseline	This chapter describes the existing environment through the analysis of the baseline data regarding the existing natural and socio-economic environment
6	Prediction and Evaluation of Impacts Methodology	This chapter presents the methodology applied to the EIA
7	Assessment of 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
8	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
9	Conclusions	Details the next steps for the EIA
10	References	A list of reference used for this report
11	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. The Constitution says that 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 (l)***

This chapter outlines the regulatory framework applicable to the proposed project, (TABLE 4) provides a list of applicable legislation and the relevance to the project.

### 2.1 NATIONAL REGULATORY FRAMEWORK

**TABLE 4 - LEGAL COMPLIANCE**

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
<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>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>
<b>Water Act, 1956</b>	<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 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 the abstraction of water from surface and or underground sources, an application should be submitted</p>

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	The Minister may issue a Permit in terms of the regulations 5 and 9 of the government notice R1278 of 23 July 1971 as promulgated under section 30 (2) of the Water Act no. 54 of 1956, as amended.	to the Minister of Agriculture Water and Forestry.
<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.	Taken into consideration during the design of the works to be undertaken within the Erongo Rocks Adventure Lodge boundary site. 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 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 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.

## 2.2 ENVIRONMENTAL POLICY

Southern Cross Adventures Lodges (Pty) Ltd personnel are committed to environmental management principles and to conduct all construction activities in such a way as to minimize the 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 (Pty) Ltd.

## 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 5.

**TABLE 5 – PERMITS AND LICENSES**

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



### **3 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 (FIGURE 2) and detailed further in the following sections.



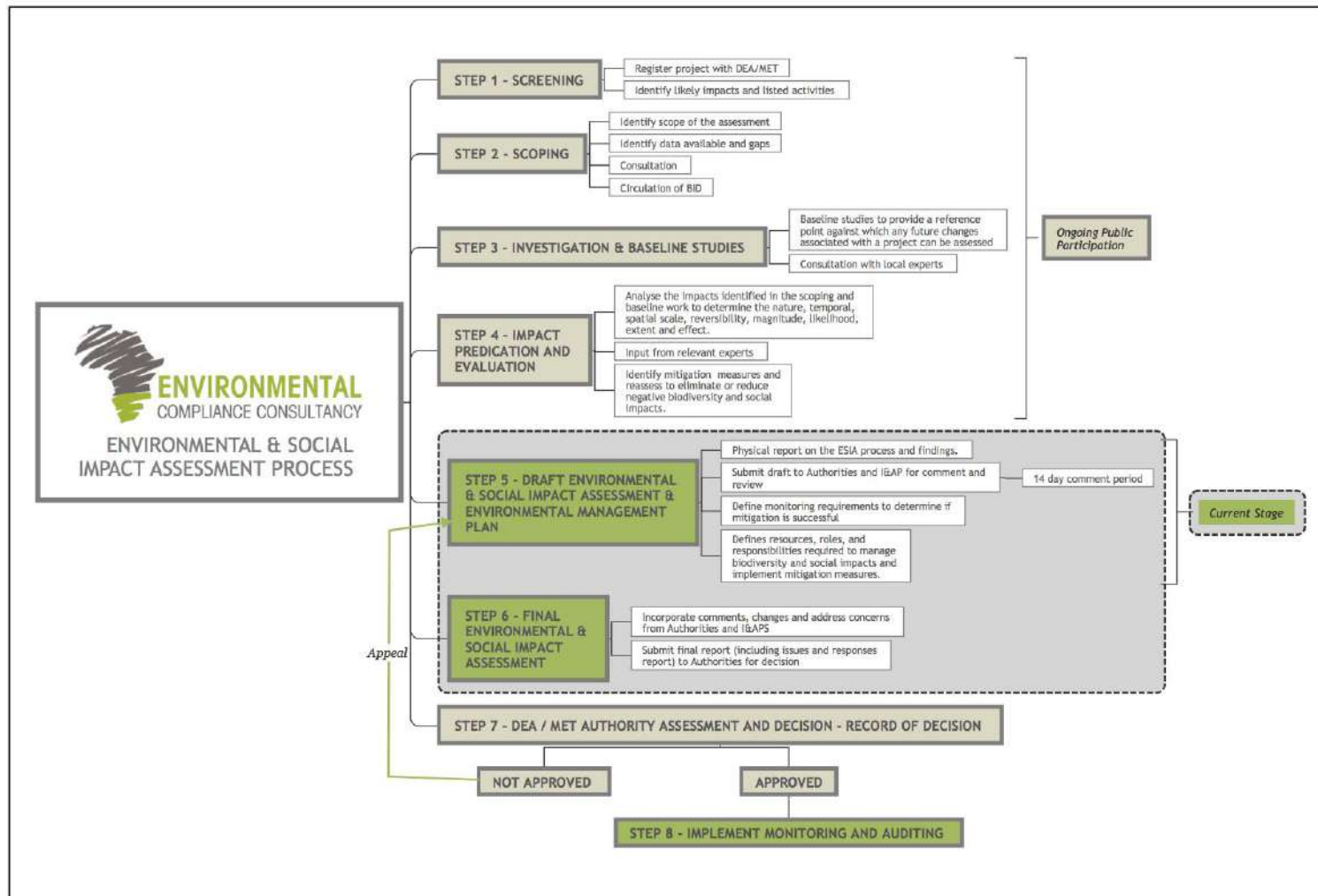


FIGURE 2 - ECC SCOPING PROCESS

## 4 ECC METHODOLOGY FOR THE IMPACT ASSESSMENTS

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 Erongo Rocks 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.

Final mitigation measures and recommendations are based on the cumulative experience of the consulting team and the client, taking into consideration the potential environmental and social impacts.

### 4.1 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 6 7 and 8.

- 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, reversible or permanent)

**TABLE 6 - SENSITIVE AND VALUE 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 7 - 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 effect 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>Extend/Geographic Scale</b>	
On-site	Impacts that are limited to the boundaries of the project site
Local	Impacts that occur in the local area of influence, including around the proposed site and within the wider community
Regional / National	Impacts that affect a receptor that is regionally 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

**TABLE 8 - MAGNITUDE OF CHANGE**

MAGNITUDE OF CHANGE	DESCRIPTIONS
<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 impact</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.

A 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 the predicted and support the identification of additional mitigation measures through the lifetime of the proposed project.

**TABLE 9 - LEVEL OF CERTAINTY**

LEVEL OF CERTAINTY	DESCRIPTIONS
High	Likely changes are well understood. Design/information/data used to determine impacts is very comprehensive.  Interactions are well understood and documented.  Predictions are modelled, and maps based on interpretations are supported by a large volume of data. Design/information/data has very comprehensive spatial coverage or resolution.
Medium	Likely changes are understood. Design/information/data used to determine impacts include a moderate level of detail.  Interactions are understood with some documented evidence.  Predictions are modelled but not yet validated and/or calibrated. Mapped outputs are supported by a moderate spatial coverage or resolution.
Low	Interactions are currently poorly understood and not documented.  Predictions are not modelled, and the assessment is based on expert interpretation using little or no quantitative data.  Design is not fully developed, or information has poor spatial coverage or resolution.

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 10). 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 7).

TABLE 10 - GUIDE TO SIGNIFICANCE RATING

<b>Magnitude of Change</b>					<b>Sensitivity</b>
Negligible	Minor	Moderate	Major		
Minor (3)	Moderate (6)	Major (9)	Major (12)	High	
Low (2)	Minor (4)	Moderate (6)	Major (8)	Medium	
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 have been provided in (TABLE 11). These definitions were used to check the conclusions of the assessment of receptor sensitivity, nature of impact and magnitude of impact was appropriate.

TABLE 11 - SIGNIFICANCE DESCRIPTION

SIGNIFICANCE OF IMPACT	DESCRIPTION
Major (negative)	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.
Moderate (negative)	Impacts are considered within accepted 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.
Minor (negative)	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.
Low (negative)	Impacts are considered to be local factors that are unlikely to be critical to decision-making.

Low – Major (Beneficial)	Impacts are considered to be beneficial to the environment and society:
-----------------------------	---

The colour green has been applied to highlight positive impacts over negative impacts shown in shades of yellow, orange and red. The description for each level of significance presented in **TABLE 11** was also followed when determining the level of significance for a beneficial impact.

The level of 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 still 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.

#### 4.1 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.

##### 4.1.1 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.

##### 4.1.2 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.

##### 4.1.3 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.

##### 4.1.4 CONSULTATION FEEDBACK

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

## 5 PROJECT DESCRIPTION

### 5.1 NEED FOR THE PROPOSED PROJECT

The development of the Erongo Rocks Adventure Lodge will attract tourists to the region thereby presenting opportunities for development in the region whilst exposing tourists to a full cultural experience. The tourism industry is an important contributor to the generation of revenue, rural development, employment and poverty reduction. The need to expand the tourism sector and ensure sustainability in the sector is highlighted in Namibia's 5th National Development Plan.

### 5.2 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.

#### 5.2.1 ALTERNATIVES 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.

### 5.3 THE PROJECT SITE AND LOCATION

The proposed project Erongo Rocks Adventure Lodge is located approximately 20 km south of the C36 road and 1km into the D2315 road in the Erongo Region (see **Error! Reference source not found.**).

Southern Cross Adventure Lodges (Pty) Ltd proposes to undertake construction activities for the development of Erongo Rocks Adventure Lodge in Erongo Region. The nearest town to the Erongo Rocks Adventure Lodge is Omaruru, which is located about 35 km northeast, and lies as well close to the intersection of the C33 and C36 roads. The proposed development is a 15 en-suite, units lodge. The new development will expose tourists to the cultural activities in the central western parts of Namibia, this area has significant tourism attraction and the proposed development will 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, cultural interactions with communities, swimming pool, and camping.



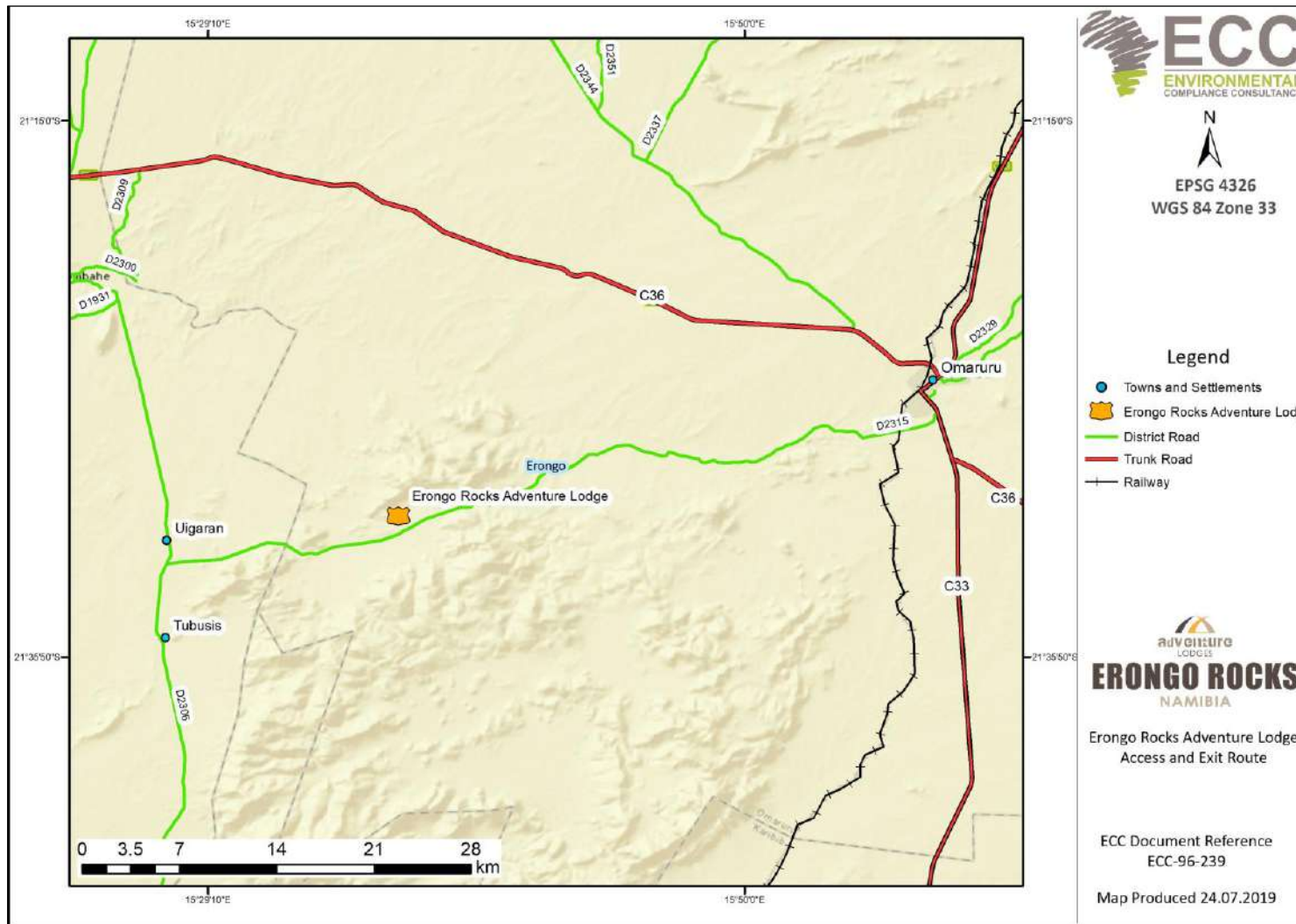


FIGURE 3 - ROADS OF THE PROPOSED PROJECT AREA AND LOCATION

## 5.4 SITE AND SURROUNDING ENVIRONMENT

The proposed Erongo Rocks Adventure Lodge is surrounded by neighbouring farms and settlements (FIGURE 4). Additionally, the development is situated within the southern areas of the Erongo Mountains in the boundaries of farm Omandumba. Numerous tourism activities are offered within the Erongo mountains such as nature drives, excursions to historic rock art, to view various traditional Bushman rock paintings, and visits to the Living Museum of the Ju/'Hoansi-San. The Living Museum is an open-air museum where guests can experience the local way of living, to learn and engage in traditional activities. This interactive programme has been carefully designed to keep local traditions alive, while providing employment and economic opportunities for the San communities. Other features in the surrounding are lodges and caves. The area offers a wide range of local wildlife, the species found are kudus, oryx, klipspringers, mountain zebras, giraffes, baboons, leopards and most commonly the various antelopes.

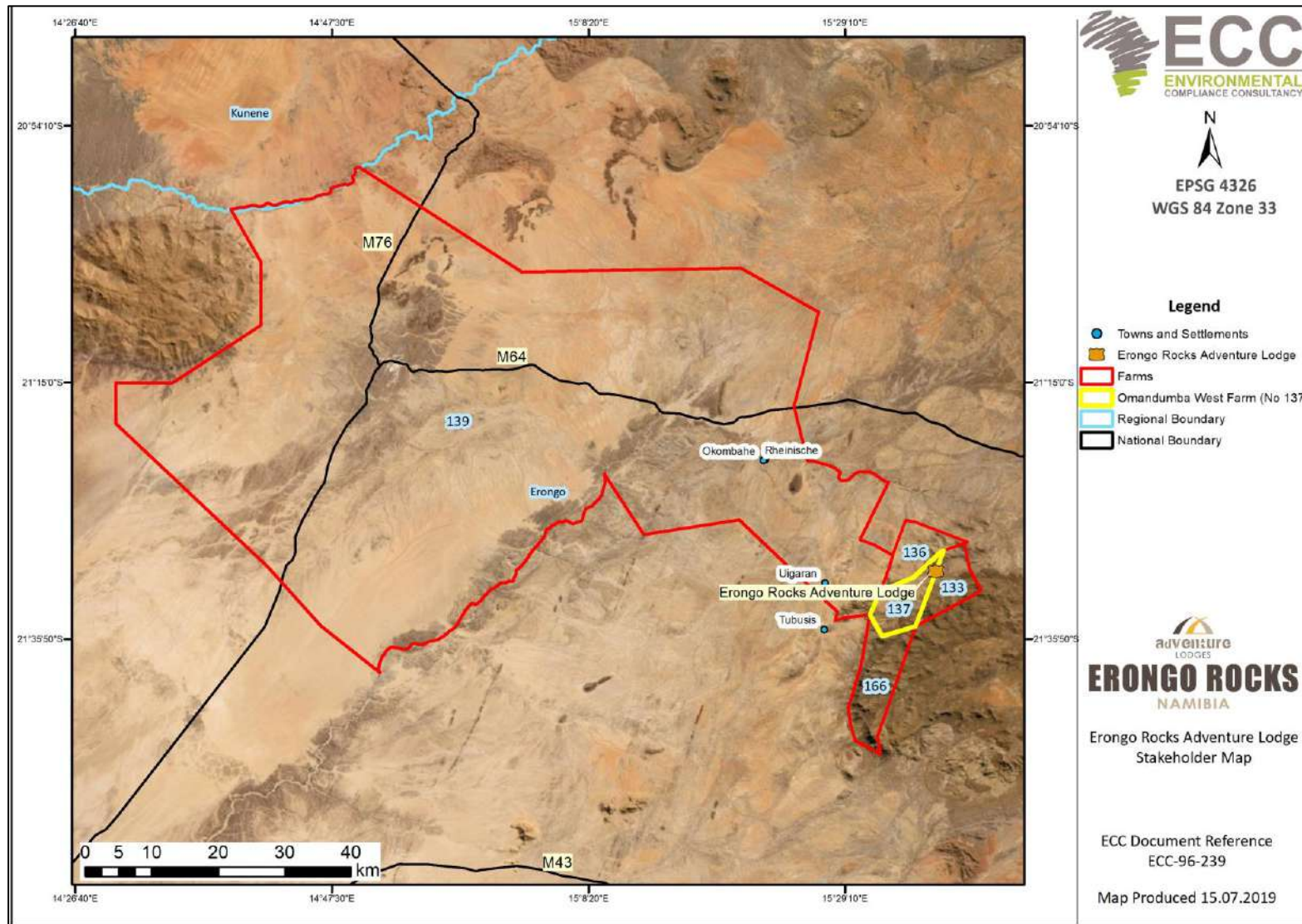


FIGURE 4- LOCATION OF FARM BOUNDARIES AND STAKEHOLDERS

## 5.5 PROPOSED DEVELOPMENT ACTIVITIES

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

- Fifteen (15) en-suite guest rooms
- Power line to provide electricity
- Water pipelines
- Accommodation rooms for maximum of 30 Guest

### 5.5.1 DESIGN AND BUILDING MATERIAL

The lodge will be constructed using wood canvas, which are a cheaper and eco-friendly alternative to bricks. This method of construction is best suited for remote sites because of the use of ecologically sound and natural materials. The method leaves a very low carbon footprint and unskilled local labour can be used during the construction.

### 5.5.2 PLANNED PROJECT SCHEDULE

The proposed activities as discussed above are anticipated to be carried out once an environmental clearance 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 construction and operational phases of the project.

### 5.5.3 WORKERS AND ACCOMMODATION

During the construction phase, the project expects to avail 10-30 employment opportunities. All workers and staff will be from the immediate local community and will therefore commute from their homes every morning. There will be accommodation camps, two (2) toilets and showers provided for workers. 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.

### 5.5.4 RESOURCE AND WASTE MANAGEMENT

Water availability is crucial for any development but in this context particularly for human consumption and for construction activities. Water will be obtained from an existing borehole. Permits will be obtained as appropriate.

Waste will be produced on site, which will include sewage and solid such as packaging. All solid waste shall be collected and delivered to Omaruru for disposal.

## 6 ENVIRONMENTAL AND SOCIAL BASELINE

### 6.1 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. This section also incorporates consultation and public participation of the proposed project.

### 6.2 BASELINE OF THE BUILT ENVIRONMENT

The project is situated within Erongo Region in the western part of Namibia and the region's western border stretches along the Atlantic Ocean shoreline. The total population of the region is about 150 809 and grows at a rate of 3.4% annually (Population and Housing Census, 2011). It covers an area of 63,539 km<sup>2</sup> and include interesting tourism features such as the Namib Desert, Brandberg, Spitzkoppe and rock art at Twyfelfontein, Petrified Forest and the lagoon at Walvis Bay. Other features in the surrounding are lodges and caves (FIGURE 5). The main languages that are spoken by the local inhabitants are Afrikaans, Oshiwambo, Nama/Damara and Otjiherero (*Population and Housing Census, 2011*).

Some of the existing environmental problems that occur in this region include overfishing, uncontrolled activities such as mining and prospecting in protected areas and excessive water exploitation for mining activities (*Namibian Coast Conservation and Management, 2017*).



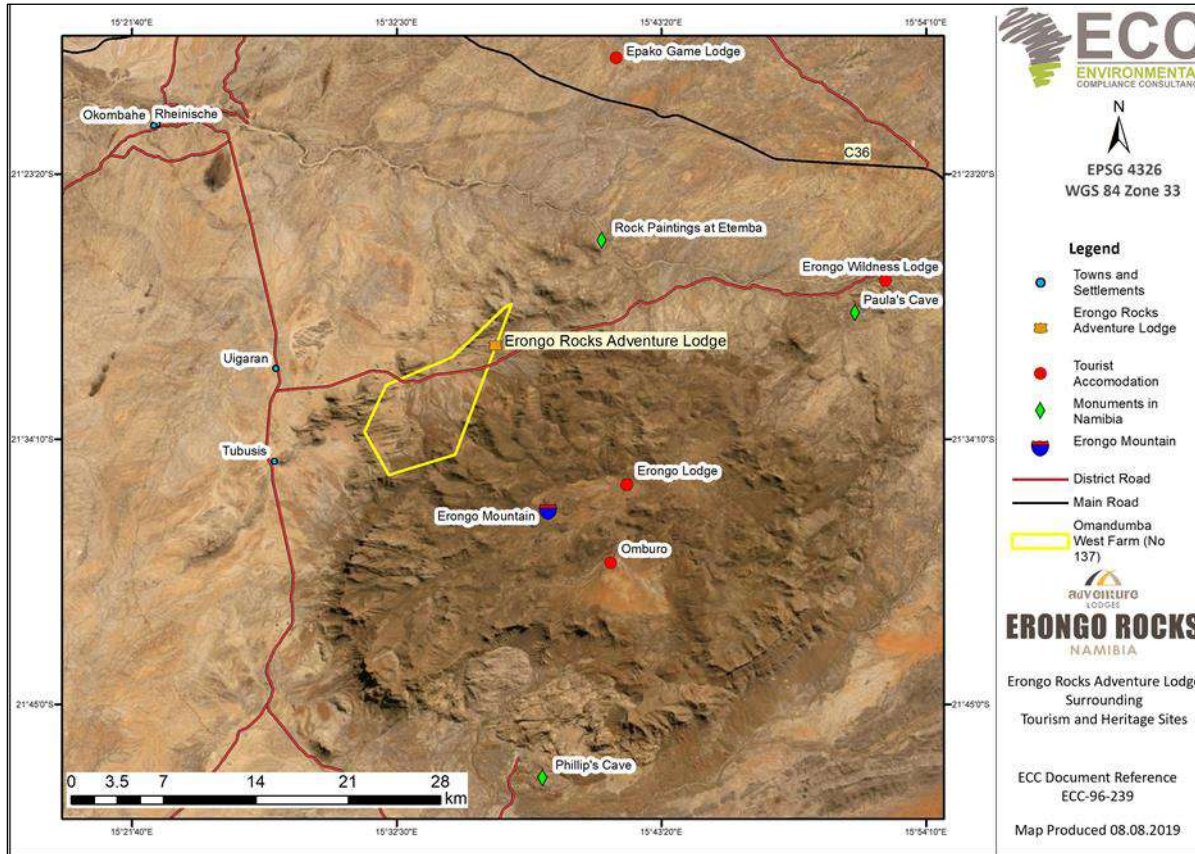


FIGURE 5 - SITE OF PROPOSED PROJECT AREA AND SURROUNDING FEATURES

### 6.3 CLIMATE AND TOPOGRAPHY

The climate of Erongo Region divided into zones consists of a coastal foggy zone (about 20 km inland), the middle zone roughly (20-90 km from the coast) and the eastern zone which extends up to 120 Km from the coast. The central western parts of Namibia in the Erongo Region is generally characterized with the aridity of very hot temperatures occurring in the inland areas during the day, as well as cooling at night due to outgoing radiations under clear skies.

There are very low rainfall occurring in the area, averaging about 308 mm. Great variability in annual rainfall, with most years in the Namib receiving less than the average, and occasional years receiving very heavy rains (>100 mm). Most rain in the Namib falls in late summer, between January and April (63%), while some rain falls in winter (10%) with the driest phase from September to December (Mendelsohn, 2002).

The temperatures are highest on average in January, at around 23.6 °C. The lowest average temperatures in the year occur in July, when it is around 14.8 °C. In summer, the rains often subdue heat, but temperatures may rise well above 32.7 degrees. The prevailing wind in the central-northern is dominantly from the north east, with an average speed of approximately 1.4m/s and 7.5% calm days since the period of March 2015 to September 2018 (FIGURE 6).

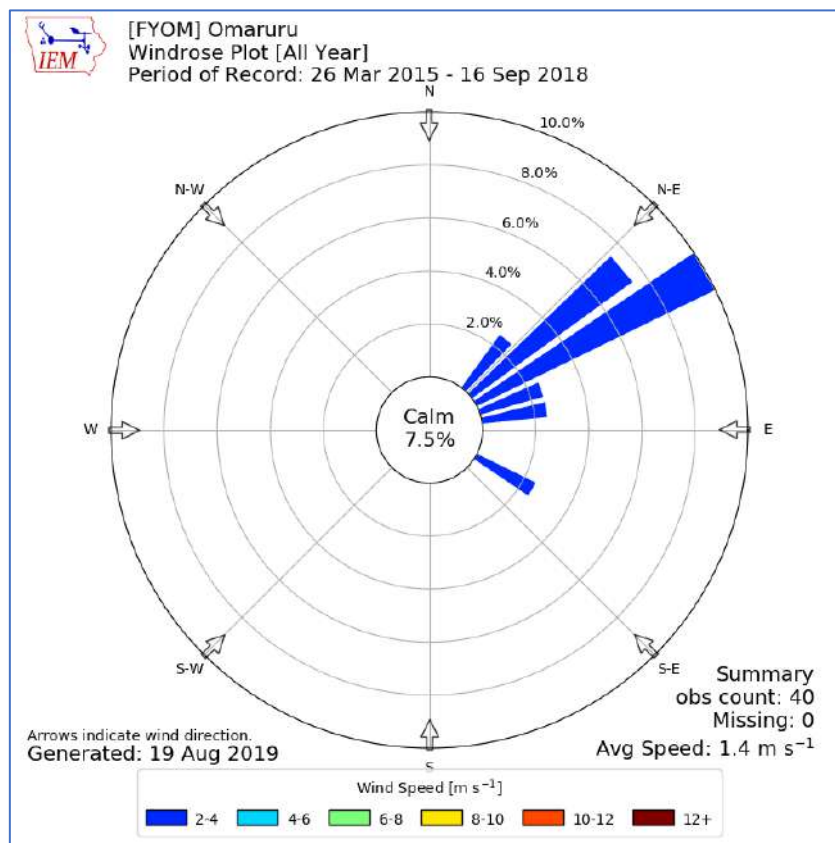


FIGURE 6 - WIND DIRECTION OF SPEED IN THE ERONGO REGION



## 6.4 VEGETATION AND SOIL

Namibia's vegetation is strongly influenced by the spatial and temporal variability of the rainfall. The vegetation in the livestock area of the Erongo Region varies from sparse grassland and shrubland (see FIGURE 7) in the dry west, to dense shrubland in the central parts and the east, with moderate to dense cover of shrubs and trees, common trees plants types within the project area are especially the acacias. Commercial crop farming is practised in isolated areas such as on the banks of ephemeral Omaruru River near Omaruru town. Some commercial farms serve as hunting or guest establishments, while some have been converted into game farms or reserves, aimed at regional and international tourists.

In the Erongo Region, the land rises steadily from sea level to about 1,000 m across the breadth of the Namib. The Namib land surface is mostly flat to undulating gravel plains, punctuated with occasional ridges and isolated 'inselberg' hills and mountains. Namibia's highest mountain, Brandberg (2,579 m), lies in the far northern part of the Erongo Region. The eastern edge of the Namib is marked by the base of the escarpment in the southern part of the region. In the northern part, the escarpment is mostly absent and there is a gradual rise in altitude to over 1,500 m. South of the Kuiseb River lies the central Namib Sand Sea, and sand dunes also form a narrow coastal belt between Walvis Bay and Swakopmund.

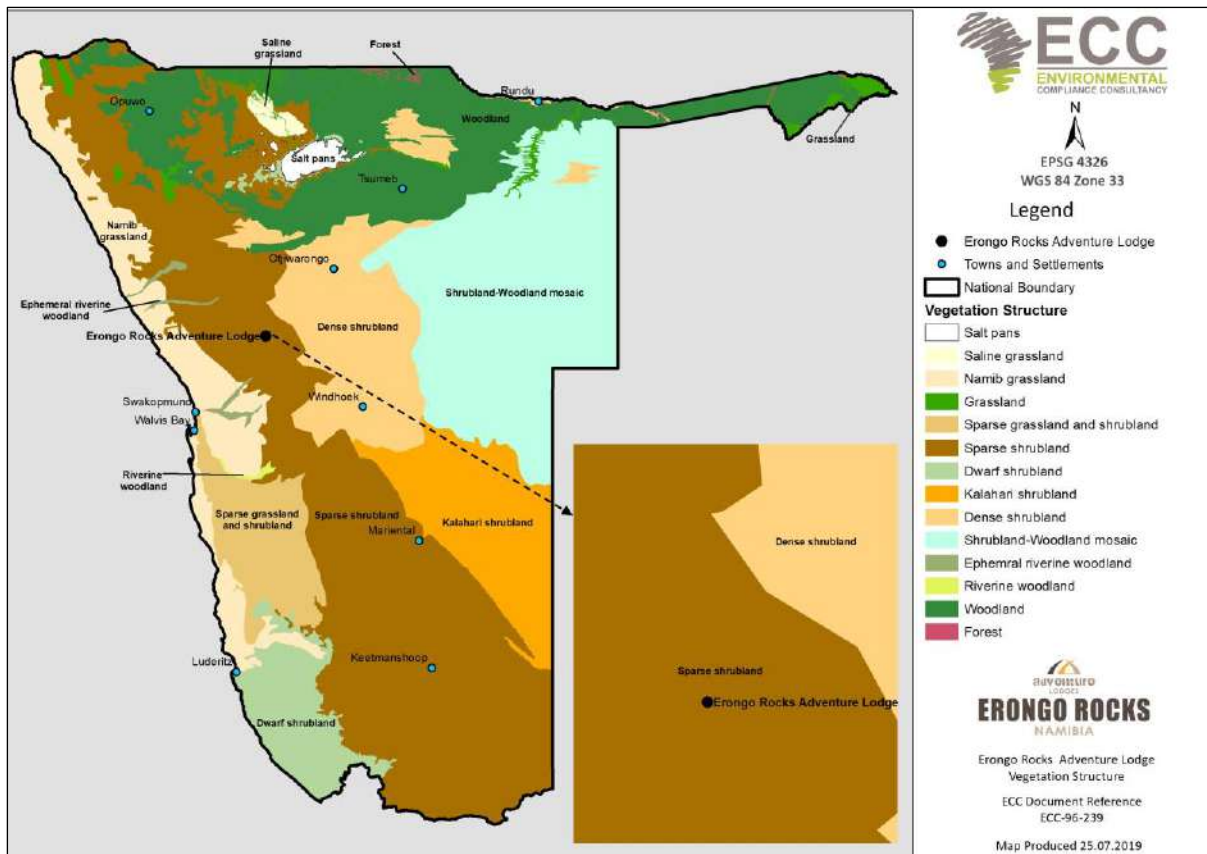


FIGURE 7 - VEGETATION AND SOIL IN THE AREA

## 6.5 FAUNA SPECIES

Despite of the arid climate with little precipitation open water can be found deep in the rugged mountain range thus a diverse plant and wildlife is found here. Common species found in the area may be antelopes, kudus, oryx, klipspringers, mountain zebras, giraffes, baboons and leopards. Black Rhino has been reintroduced into the Erongo Rhino Sanctuary.

## 6.6 SITE GEOLOGY AND HYDROLOGY

The Erongo Region covers an area of approximately 63,539 km<sup>2</sup>, which comprises 7.7 per cent of Namibia's total area of about 824 km<sup>2</sup>.

The Erongo Region stretches from the Central Plateau westwards across the Central-Western Plains and Escarpment to the Central Namibian coast, roughly over a distance between 200 and 350 km. Northwards the stretches from the Ugab river in the north to the Kuiseb river in the south over a distance of up to 300 km. On the west it is flanked by the Atlantic Ocean.

The Central-Western Plains were largely formed by erosion cutting eastwards into the higher ground, thereby forming the catchment area of several major ephemeral rivers such as the Khan, Omaruru, Swakop and Ugab, which waters would all reach the sea when in full flood during a good rainy season. Rivers that closely lie to the proposed project area are the Okarundu river and further west of the lodge is the Goab river (FIGURE 8).

The Brandberg, with its tallest peak at 2,606 m above sea level, is Namibia's highest mountain. It is composed of a single mass of granite that rose through the earth's crust some 120 million years ago. The Brandberg has one of the richest selections of rock paintings, including the world-famous 'White Lady'.

There is a Messum crater, southwest the mountain, a flat basin, with a diameter of up to 18 km. Consisting of barren reddish basalt rock, it is the remnant of a huge subterranean volcanic chamber having occurred during the spilt up of the Gondwanaland.

One of the most distinctive landmarks is the Spitzkoppe, an imposing granite rock formation of which the summit is 1,728 m above sea level, situated about 50 km from Usakos, and clearly visible from the main road leading to Swakopmund.

The complexes of Brandberg and Spitzkoppe are made up mostly of plutonic rocks, while others, like Messum and Erongo, comprise an assemblage of both intrusive and extrusive rocks.

Erongo Region is one of the largest Cretaceous granitic complexes in northwestern Namibia. Situated 25 km southwest of Omaruru, it rises more than 1000 m above the deeply weathered, 650 to 600 million year old Damara metasediments and granites, which it intruded. In the east, south and west, it is bounded by high granite cliffs, while in the southeast the Erongo volcanic rocks are juxtaposed against conglomerates, sandstones and siltstones of the Triassic Lion's Head Formation (~220 m. y.), which equally form an imposing natural bastion. The Erongo Mountains represent the eroded core of an ancient volcano, with peripheral and central granite intrusions (Roadside Geology of Namibia, MME publications) (See FIGURE 9)

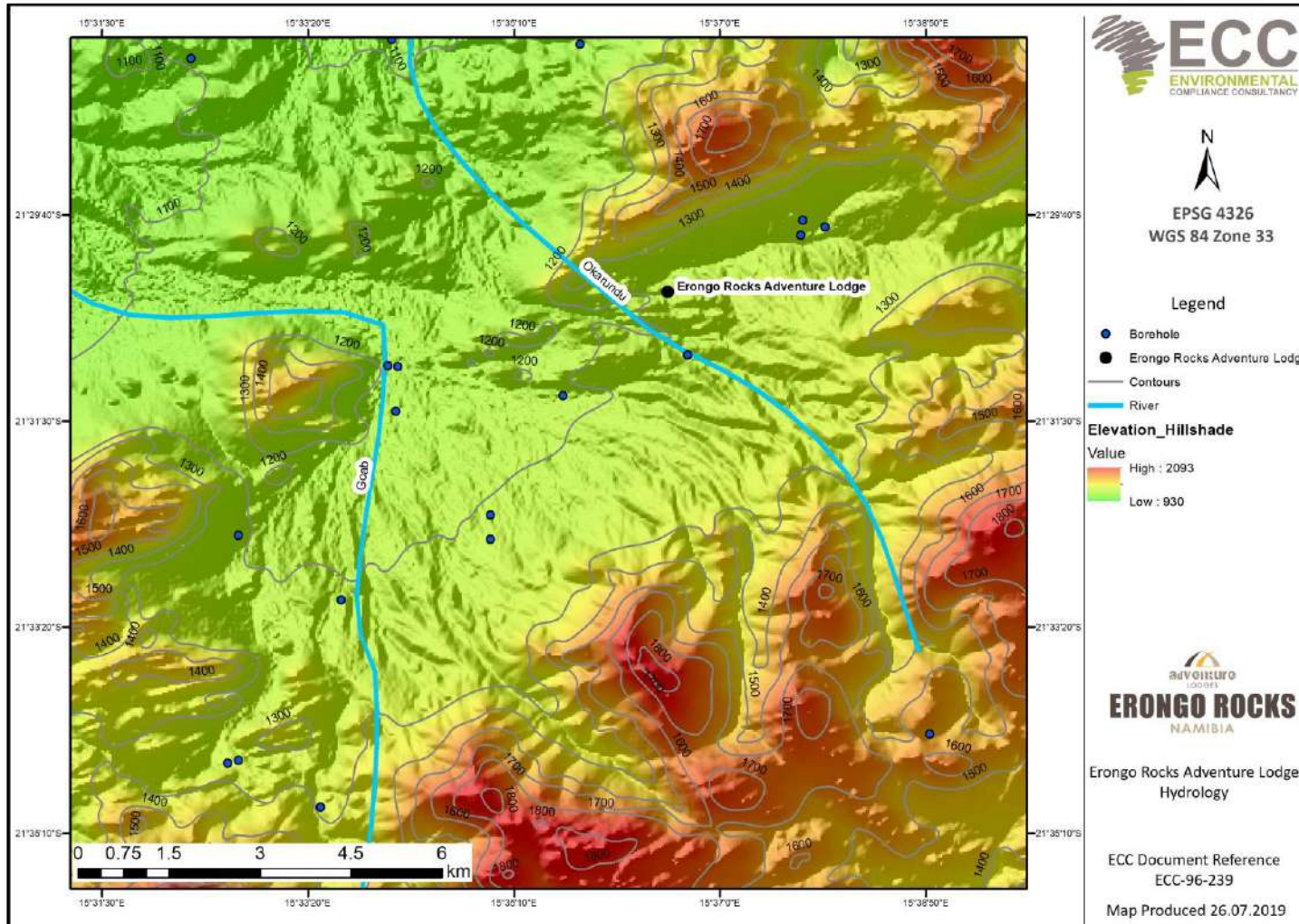


FIGURE 8 - SITE GEOLOGY AND HYDROLOGY OF THE PROPOSED AREA



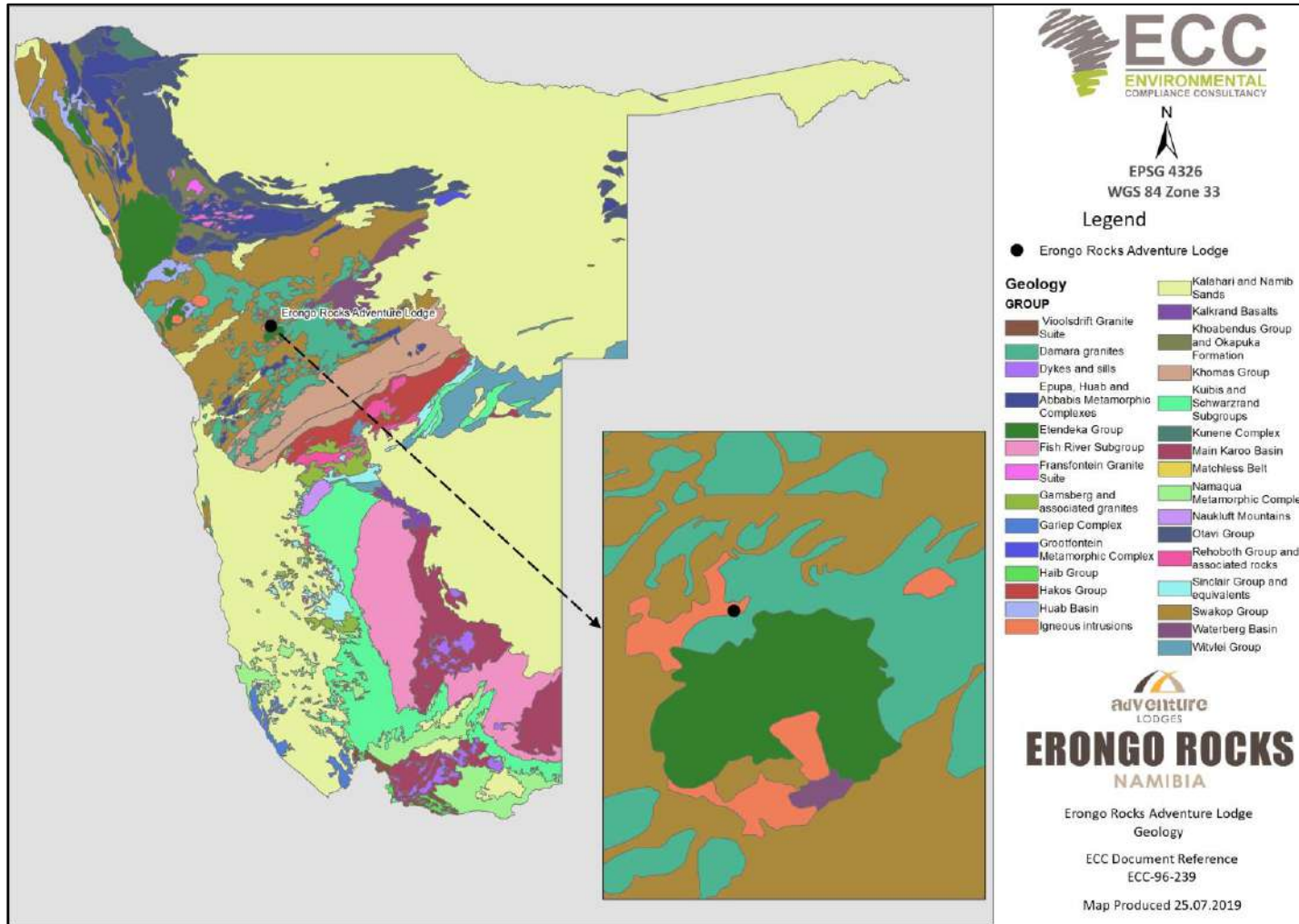


FIGURE 9 - GEOLOGICAL MAP OF THE PROPOSED PROJECT

## 6.1 SOCIO-ECONOMIC

### 6.1.1 GOVERNANCE

Namibia was established in 1990 and is led by a democratically elected and stable government. The country ranked top fifth out of 54 African countries in the Ibrahim Index of African Governance in 2015 for the indicators including the quality of governance and the government's ability to support human development, sustainable economic opportunity, rule of law and human rights (National Planning Commission, 2017).

As a result of sound governance and stable macroeconomic management, Namibia has experienced rapid socioeconomic development. Namibia has achieved the level of 'medium human development' and ranks 125<sup>th</sup> on the Human Development Index out of 188 countries (National Planning Commission, 2017).

## 6.2 DEMOGRAPHIC PROFILE

### 6.2.1 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).

### 6.2.2 EMPLOYMENT

Unemployment rates in Namibia particularly, among the youth are exceedingly high. According to the presentation, which was based on a labour force survey (2018), the Erongo region has the lowest unemployment rate (21,9%) in the country. The survey's results further indicate that the Erongo region's youth have the best employment rate in Namibia. The region only has a rate of 25 % of its youth either unemployed or not studying at tertiary level.

The labour force participation rate is the proportion of the economically active people in a given population group, which is calculated as the number of economically active people divided by the total population in the same population group. The labour force participation for the country was 71.2% (Namibia Labour Force Survey 2018).

### 6.2.3 ECONOMIC ACTIVITIES

The region's economy hinges on fishing, mining, agriculture and tourism. With its tourism industry growing at a fast rate and agriculture at its hinterland serving as the main livelihood there, the Erongo Region offers a diverse portfolio of economic activities and resources.

### 6.2.4 CULTURAL HERITAGE

There are four archaeological heritage sites in the Erongo Region that are proclaimed National Monuments: Philipp Cave, Ameib; Paula Cave, Omandumba West; Brandberg Monument Area; Bushman Paradise, Spitzkoppe (see FIGURE 10). All are rock art sites: the first two are located on private farmland, while the second two are on State Land. The Brandberg, arguably Namibia's premier rock art area, is largely protected by

the difficulty of access to the rock art sites. One part, the Tsisab Ravine, which is home to the famous Maack (White Lady) Shelter, receives more than 15 000 visitors each year. None of the archaeological heritage sites intersect within the proposed development area and so in cases where heritage sites are discovered the chance find procedure will be used.

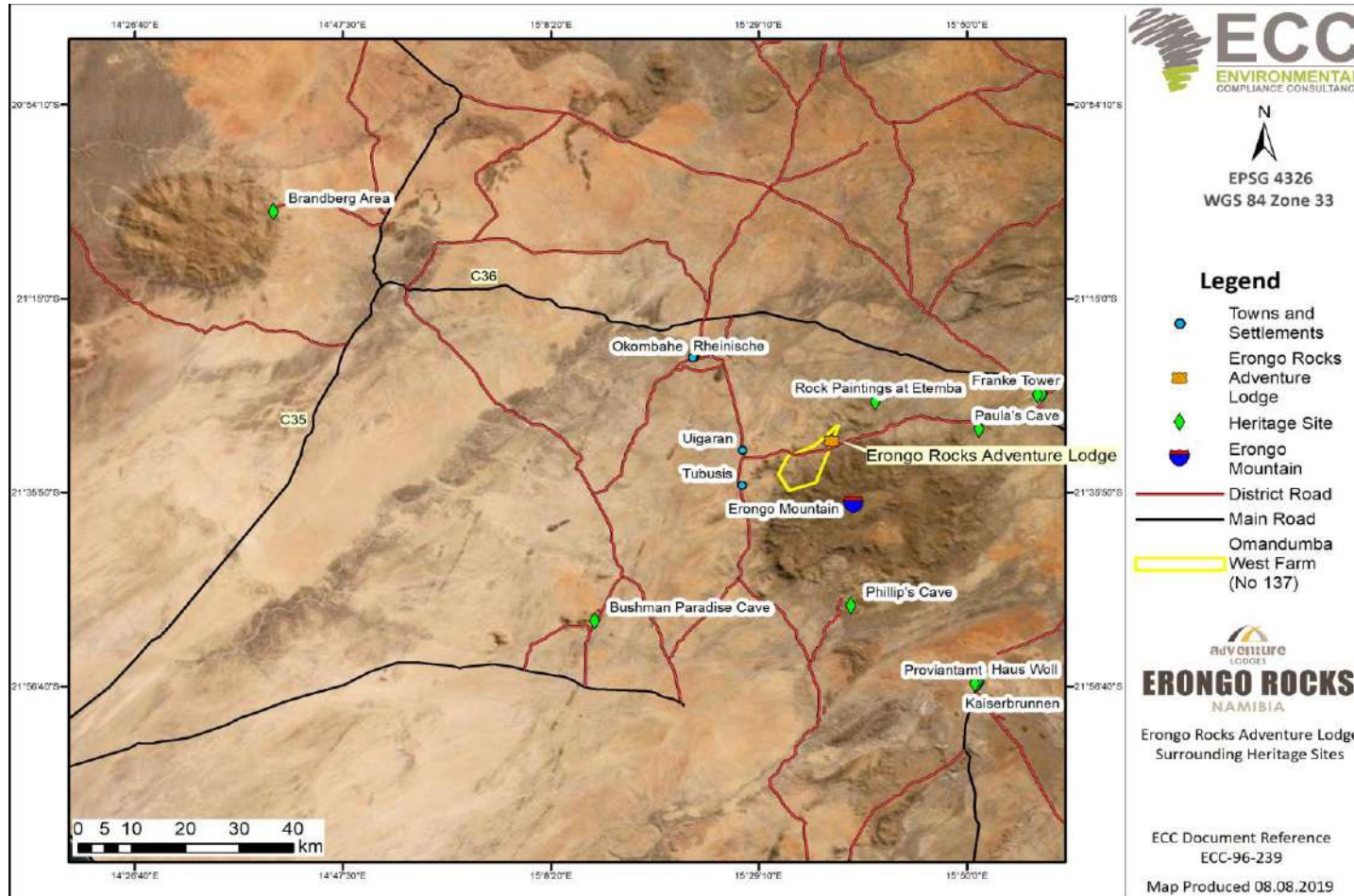


FIGURE 10 – HERITAGE SITES



## 7 ASSESSMENT OF FINDINGS AND MITIGATION

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts, each impact must be evaluated and assessed.

### 7.1 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. A summary of the potential impacts and mitigation and/or control measures are discussed below.

The following topics were considered during the scoping phase:

- Surface water and ground water (including geomorphology)
- Soils and geology
- Socio-economics (employment, demographics, and land-use)
- Noise
- Ecology (fauna and flora)
- Air Quality (including dust), and
- Cultural heritage.

### 7.2 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 include:

**TABLE 12 - 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 four months and involve construction lodging facilities, powerlines and water pipeline construction.
Number of employees and area they will come from	It is assumed that most of the workers will come from immediate local communities in the Erongo Region 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 13 - SUMMARY OF POTENTIAL IMPACTS

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
Groundwater	Improper handling of discharge, storage, and disposal practices Leaking tanks, leaking sewer lines, and illegal discharges.	- Organic and inorganic groundwater pollution	Direct Local Long-term Irreversible Likely	Medium	Moderate	Moderate (6)	<ul style="list-style-type: none"> <li>- Ensure safe handling of discharge and storage, safe waste disposal practices,</li> <li>- Maintain spillage management</li> <li>- Maintain legal disposal of waste</li> <li>- Absorption material should be available at hand</li> <li>- Follow discharge policies, rules and regulations</li> </ul>	Low (2)
Soil	Fuel handling and storage, lubrication of equipment	- Spillages lead to groundwater contamination and soil contamination	Direct On-site Short-term Temporary/reversible Likely	Medium	Moderate	Moderate (6)	<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</li> </ul>	Low (2)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							<p>for long periods as this poses a fire hazard</p> <ul style="list-style-type: none"> <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> <p><b>Storage:</b></p> <ul style="list-style-type: none"> <li>- All tanks to be stored on a non-porous floor and bunded area</li> <li>- Bund need to be capable of storing at least 110% of the volume of the tank</li> <li>- All containers should to be suitable for use and not damaged</li> <li>- Tanks should be locked at all times</li> </ul>	

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	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 vehicles and must be on permeable flat surface where possible, and</li> <li>- Funnel should be available and used to avoid spillage during decanting</li> </ul>	
<b>Community</b>	<ul style="list-style-type: none"> <li>- Dust creation due to construction activities</li> </ul>	<ul style="list-style-type: none"> <li>- Impacts of public health and visibility</li> <li>- Impact on fauna and flora</li> </ul>	Direct Local Temporary Reversible Unlikely	Low	Minor	Minor (3)	<ul style="list-style-type: none"> <li>- Avoid off-road driving</li> <li>- Apply dust suppression methods- water sprinkling</li> </ul> Communication with farmers/landowners/neighbours.	Low (2)
<b>Neighbours /Landowners/ Tourists Community and environment</b>	<ul style="list-style-type: none"> <li>- Visual impact because of new building in the area</li> </ul>	<ul style="list-style-type: none"> <li>- Changes to aesthetics- disturbed view from the road (tourists and local community)</li> </ul>	Direct Local Short-term Reversible Likely	Low	Minor	Minor (3)	<ul style="list-style-type: none"> <li>- Maintain good housekeeping on site</li> </ul> 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	Low (2)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
nt							community.	
<b>Topography and landscape Neighbours /Landowners/ Tourists</b>	<ul style="list-style-type: none"> <li>- Creation of new tracks and roads, land clearance for construction project</li> </ul>	<ul style="list-style-type: none"> <li>- Environmental disturbance</li> <li>- Loss of flora and fauna</li> <li>- Disturbance of animals 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 but is also 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
<b>Heritage Topography and landscape</b>	<ul style="list-style-type: none"> <li>- Disturbance to heritage archaeological remains</li> <li>- Direct and indirect impacts to cultural resources</li> <li>Creation of new tracks and roads</li> </ul>	<ul style="list-style-type: none"> <li>- Impact on viewshed/landscape surrounding heritage features</li> </ul>	<ul style="list-style-type: none"> <li>Direct</li> <li>On site</li> <li>Long-term</li> <li>Irreversible</li> <li>Likely</li> </ul>	High	Major	Major (9)	<p>If discovery of unearthed archaeological remains to be uncovered, the following measures (chance find procedure) shall be applied:</p> <ul style="list-style-type: none"> <li>- Works to cease, area to be demarcated with appropriate tape by the site supervisor, and the Site Manger to be informed</li> <li>- Site Manager to visit the site and determine whether</li> </ul>	Minor (4)

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							<p>work can proceed without damage to findings, mark exclusions boundary</p> <ul style="list-style-type: none"> <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 the competent authority, if required, and recover and remove the remains to the National Museum or National Forensic</li> </ul>	

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							Laboratory as appropriate.	
<b>Social Economic Heritage</b>	- Job creation due to activities	<ul style="list-style-type: none"> <li>- Employment creation and skills development</li> <li>- Opportunities during the phase (Approx. 10-20 jobs)</li> <li>- Impact on viewshed/landscape surrounding heritage features</li> </ul>	<p>Direct</p> <p>Regional</p> <p>Long-term</p> <p>Reversible</p> <p>Certain</p>	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 Environment Social Economic</b>	- Light and noise may cause disturbance/disorientation of animals at night	<ul style="list-style-type: none"> <li>- Disruption to neighbour and nearby settlements</li> <li>- Disturbance of local wildlife</li> </ul>	<p>Direct</p> <p>Local</p> <p>Temporary</p> <p>Reversible</p>	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 IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
			Unlikely					
<b>Community Environment</b>	- Generation of waste due to construction activities	<ul style="list-style-type: none"> <li>- Nuisances (odours and visual), and</li> <li>- Litter (nuisance and ecological risk)</li> </ul>	<p>Direct</p> <p>On-site</p> <p>Short-term</p> <p>Reversible</p> <p>Likely</p>	Moderate	Low	Minor (3)	<ul style="list-style-type: none"> <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 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</li> <li>- Hazardous and non-</li> </ul>	<b>Low (2)</b>

RECEPTOR	DESCRIPTION OF ACTIVITY	DESCRIPTION OF IMPACT	EFFECT/DESCRIPTION OF MAGNITUDE	VALUE OF SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF IMPACT	IMPACT MANAGEMENT/CONTROL MEASURES	RESIDUAL IMPACT AFTER MITIGATION
							hazardous waste shall be stored separately at all times	

## 8 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.

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.

## 9 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. Through the scoping process, the most significant effect identified is the disruption to visual amenity, which is likely to affect the natural landscape of the site. 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.

## REFERENCES

Erongo council (2015) Retrieved from <http://www.erc.com.na/erongo-region/geography/>.

Environmental Impact Analysis (2012) Retrieved from <https://planning.lacity.org/eir/ConventionCtr/DEIR/files/IV.H.2%20Water%20Resources-Groundwater.pdf>.  
Groundwater Quality Technical Report , KPFF Consulting Engineers .

International Finance Corporation. (2017). A Guide to Biodiversity for the Private Sector. The Social and Environmental Impact Assessment Process.

International Finance Corporation. (2012). IFC Performance Standards on Environmental and Social Sustainability. The World Bank.

Ministry of Environment and Tourism, Ministry of Mines and Energy. (2018). National Policy on the Prospecting and Mining in Protected Areas . Windhoek: Ministry of Environment and Tourism, Ministry of Mines and Energy.

Ministry of Mines and Energy. Publications (2015), Roadside Geology of *Namibia* Retrieved from [http://www.mme.gov.na/files/publications/c55\\_A4\\_Erongo\\_en.pdf](http://www.mme.gov.na/files/publications/c55_A4_Erongo_en.pdf).

Ministry of Mines and Energy. (2018, August). Mineral Rights and Resources Development . Retrieved from Ministry of Mines and Energy: <http://www.mme.gov.na/mines/mrrd/>

Republic of Namibia. (2008). The Government Gazette of the Republic of Namibia, Draft Procedures and Guidelines for Environmental Impact Assessment and Environmental Management. Windhoek: Republic of Namibia,.

(n.d.). Namibia Labour Force Survey 2018. Windhoek: Namibia Statistics Agency.

Namibia Statistics Agency. (2011). Namibia 2011 Population and housing census main report. Windhoek.

National Planning Commission . (2018). STATUS OF THE NAMIBIAN ECONOMY . Windhoek : National Planning Commission .

## 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

---

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.



## 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.

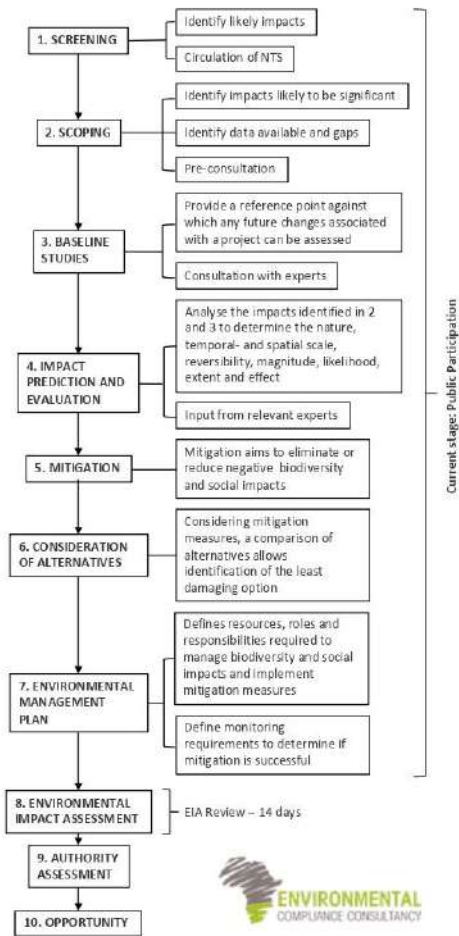


FIGURE 2 - FLOWCHART OF THE ENVIRONMENTAL ASSESSMENT PROCESS

#### 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.

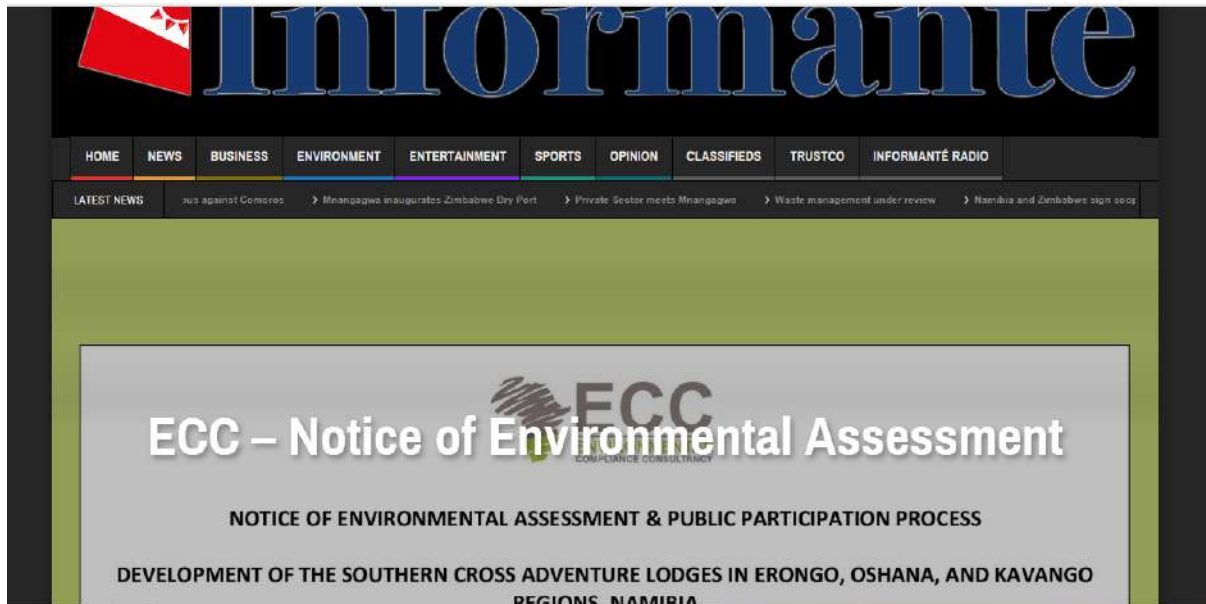
Follow us online to be kept up to date:







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



## SITE NOTICES

### NOTICE OF ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION PROCESS DEVELOPMENT OF THE ERONGO ROCKS ADVENTURE LODGE, ERONGO REGION, NAMIBIA

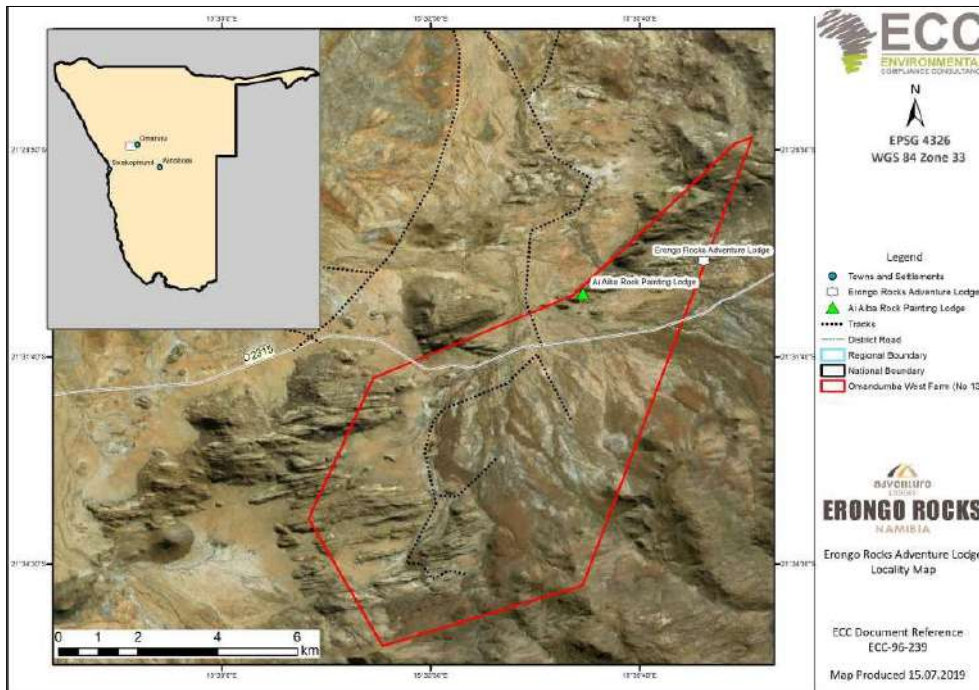
Environmental Compliance Consultancy cc (ECC) hereby gives notice to the public that an application for an Environmental Clearance Certificate in accordance with the Environmental Management Act, 2007 will be made as per the following:

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

**Project:** Proposed development of the Erongo Rocks Adventure Lodge in Erongo Region, Namibia.

**Proposed Activity:** The proposed project is for the development of a 15 en-suite units lodge on the Omandumba Farm in Omaruru, 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:** Omaruru, Erongo 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

### Education & Qualifications

 University of Pretoria  
South Africa  
2012  
*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.





## 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.com

**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



Current

### Experience & Work History

#### 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	LOCATION NOTES
<i>Abutilon fruticosum</i> Guill. & Perr.	Medium-sized shrub, 1.2 - 1.5 m high. Stems woody. Flowers many, orange with dark maroon centres. Fruits brownish grey with woolly yellow top which is papery or hardish.	Bergsig Ged.1 167 Farm
<i>Acacia erubescens</i> Welw. ex Oliv.	Tree. Whitish trunk. Most trees still bare, few trees with leaves and pods.	Spitzkop: Rhino rock area.
<i>Acalypha segetalis</i> Müll.Arg.	Annual herb up to 40 cm high. Usually between rocks in semi-shade.	Farm Omandumba Ost 133. 2 miles before the gate to Otjimpae.
<i>Acanthosicyos naudinianus</i> (Sond.) C.Jeffrey	Prostrate, creeping, flowers yellow.	About 13km from Karibib on road to Omaruru.
<i>Acrotome fleckii</i> (Gürke) Launert	Flowers white.	Erongo. Farm Brabant.
<i>Ammannia baccifera</i> L. subsp. <i>baccifera</i>		Schlucht 162 Farm. Granite mountains at farm house.
<i>Amphiasma merenskyanum</i> Bremek.	Virgate shrubs, up to 1.5 m high. Flowers white with bristles in the throat.	Farm Schlucht, Erongo Mountains. In rock crevices.
<i>Aptosimum lineare</i> Marloth & Engl. var. <i>lineare</i>		Kransberg at Erongo.
<i>Aristida effusa</i> Henrard	Annual, erect grass, up to 1 m high.	Farm Omandumba Ost; 133. Mountain slope 2 miles before gate Otjimpae West.
<i>Aristida parvula</i> (Nees) De Winter	Much branched annual grass with effuse inflorescences.	50 miles east of Omaruru River Mouth on the road to Uis.
<i>Azima tetracantha</i> Lam.	Small, very prickly shrub. Stems blue-green.	Bergsig Rest 167 Farm. Erongo Mountains. At base of bergsig.
<i>Barleria lancifolia</i> T.Anderson subsp. <i>lancifolia</i>	Upright shrubs up to 0.70 m high. Flowers bright pale violet with dark throat.	Schlucht 162 Farm at homestead.



SPECIES	PLANT DESCRIPTION	LOCATION NOTES
<i>Brachiaria deflexa</i> (Schumach.) C.E.Hubb. ex Robyns	Annual grass, 15 cm high.	Erongo Mountains.
<i>Bulbostylis densa</i> (Wall.) Hand.-Mazz. subsp. <i>densa</i>	Annual sedge 5 cm high.	Erongo Mountains.
<i>Cardiospermum pechuelii</i> Kuntze		Erongo, Farm Brabaunt.
<i>Cleome angustifolia</i> Forssk. subsp. <i>petersiana</i> (Klotzsch) Kers	Erect, annual, up to 60 cm high.	Farm Omandumba East 133; northern side of Erongo.
<i>Combretum apiculatum</i> Sond. subsp. <i>apiculatum</i>	Small tree up to 3.5 m with sticky fruits.	Farm Omandumba Ost. Erongo Mountains.
<i>Cotyledon orbiculata</i> L. var. <i>orbiculata</i>	Very large leafed succulent plant. Reddish buds.	Erongo mountains: Farm Bergsig 167. Near Bergsig beacon.
<i>Crassula tabularis</i> Dinter	Small, succulent, pinky-brown plant, sometimes green. Edges of leaves finely serrated, colour varies from plant to plant. Small sessile flowers.	Erongo mountains - Farm Bergsig OM 167.
<i>Crotalaria argyraea</i> Welw. ex Baker	Perennial dwarf shrub. Flowers yellow, zygomorphic, 'schiffchen gesehnbelt'. Leaves compound, trifoliate, margin entire, greyish green, without stipules. Plant erect, base woody. Fruit 'inflated' with a prominent midrib, fruit a pod. Seeds flattish and kidney-shaped, yellowish brown.	Western margin of Farm Omundumba West, Damaraland frontier.
<i>Crotalaria barnabassii</i> Dinter ex Baker f.	Erect annual up to 65 cm high.	Farm Schlucht 162. Granite mountains at farm house.
<i>Crotalaria distans</i> Benth. subsp. <i>distans</i>	Perennial shrub, 15 cm high. Flowers: yellow.	Erongo Mountains.
<i>Crotalaria podocarpa</i> DC.	Annual, erect herb, up to 50 cm high. Flowers bright orange-yellow.	Farm Omandumba-Ost 133. Erongo - Northside.
<i>Croton gratissimus</i> Burch. var. <i>gratissimus</i>	Up to 2 m high shrub. Undersurface of leaf white, upper surface light green. Leaves lanceolate, up to 7 cm long and 2.5 cm wide, long pointed.	Farm Omandumba 133. 2 miles before Otjimpau west gate.
<i>Cyphostemma congestum</i> (Baker) Desc. ex Wild & R.B.Drumm.	Strong climber, stems and leaves semi succulent.	Daxberge.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
Danthoniopsis dinteri (Pilg.) C.E.Hubb.	Annual grass, up to 2 m high. Leaves broad. Inflorescence big, spreading.	Farm Omandumba East 133.
Diandrochloa pusilla (Hack.) De Winter	Small erect annual grass.	Farm Schlucht 162, near dam.
Dianthus namaensis Schinz var. dinteri (Schinz) S.S.Hooper	Perennial. Flowers pale purple to white. Much old woody growth common only at high altitudes between the rocks.	Erongo mountains - Farm Bergsig OM 167.
Dimorphotheca cuneata (Thunb.) Less.	Small, woody herb with dark grey stems, flowers old and dry, fruits - creamish, papery. Leaves sticky.	Erongo Mountains: Farm Bergsig 167.
Eragrostis annulata Rendle ex Scott-Elliot	Grass.	Farm Omandumba 137, Erongo.
Eriocephalus luederitzianus O.Hoffm.	Perennial dwarf shrub, 30 cm high. Inflorescence: white.	Erongo Mountains.
Euphorbia monteiroi Hook.f. subsp. brandbergensis B.Nord.	Some plants are very reddish. Much branched but only reaches 2 feet.	Erongo mountains - Farm Bergsig 167.
Euphorbia monteiroi Hook.f. subsp. monteiroi	Perennial shrub, 40 cm high.	Erongo Mountains.
Felicia anthemidodes (Hiern) Mendonça	Annual herb, 30 cm high. Flowers: white.	Erongo Mountains.
Felicia smaragdina (S.Moore) Merxm.	Annual herb, 15 cm high. Flowers: yellow.	Erongo Mountains.
Flueggea virosa (Roxb. ex Willd.) Voigt subsp. virosa	Shrub growing up-right 2 m high. Flowers: very small berry like yellow-creamish if these are flowers on young stems. Leaves alternate, nearly round to obovate and simple. Margins smooth and waved, green above - paler green below, leaves light leathery and smooth, 25 - 35 long, 25 - 30 wide, petiole 8 - 12 mm, wine red. Stems and bark shrub with many stems growing upright and regular. Old stems grey and smooth becoming reddish with young stems wine - red.	West of Omaruru in Erongo. Farm Omandumba West 137.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
<i>Forsskaolea viridis</i> Ehrenb. ex Webb	Notes: White fluffy calyx. Grows between the rocks. Rough, erect, brownish stem.	Erongo mountains. Farm Bersig OM 167.
<i>Gladiolus saccatus</i> (Klatt) Goldblatt & M.P.de Vos	Bulb with papery covering. Red flowers with green calyx and subtended by green bract. Green fruits.	Erongo Mountains: Farm Bergsig 167.
<i>Gloriosa superba</i> L.		Farm Schlucht: OM 162. Granite mountains at farm house.
<i>Gonialoe dinteri</i> (A.Berger) Boatwr. & J.C.Manning	Upright, recurved leaves.	Brabant 168 Farm. At the old mine. (Karibib QDS).
<i>Grewia tenax</i> (Forssk.) Fiori var. <i>capillipes</i> Lanza	Shrub about 1.80 m high.	Farm Omandumba East 133, Northern Erongo. Coarse sand plain.
<i>Gymnosporia maranguensis</i> (Loes.) Loes.	220 cm high; Notes: Perennial 2.2 m high. Leaves: simple, fascicled, spathulate, margin entire. Plant with thorns (single), bark brown, smooth, older parts slightly fissured.	Farm Omundumba West.
<i>Helinus integrifolius</i> (Lam.) Kuntze	Perennial, climbing shrub, up to 3 m wide, climbing over other shrubs. Flowers green.	Farm Omandumba Ost 133. Mountain slope and gorge.
<i>Hermannia helianthemum</i> K.Schum.	Upright shrub up to 65 cm high. Flowers dirty red.	Farm Schlucht 162. Granite mountains at farm house.
<i>Hermannia modesta</i> (Ehrenb.) Mast.	Red flowered herb up to 30 cm.	Farm Omandumba Ost 133. Erongo Mountains.
<i>Hermannia quartiniana</i> A.Rich.	Perennial dwarf shrub, 25 cm high. Flowers yellow.	Erongo Mountains.
<i>Hibiscus dinteri</i> Hochr.	Sparse bushes up to 2 m high with white flowers, becoming pink when drying.	Farm Schlucht 162, Erongo Mountains.
<i>Hibiscus elliotiae</i> Harv.	Woody shrublet up to 2 m with red flowers.	Farm Omandumba East 133. Erongo Mountains.
<i>Hibiscus sidiformis</i> Baill.	Annual, upright herb, up to 1.5 m high. Leaves trifoliolate. Flowers small, lemon yellow.	Farm Omandumba Ost 133: 2 miles before gate to Otjimpau.
<i>Hirpicium gorterioides</i> (Oliv. & Hiern) Roessler subsp.		35 km west of Omaruru.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
gorterioides		
Indigofera heterotricha DC. subsp. heterotricha		Erongo. Farm Brabant.
Indigofera holubii N.E.Br.	Prostrate plant. Flowers orange.	Farm Umbo. Erongo mountains along river.
Indigofera rautanenii Baker f.	Erect, multi-branched shrublet. Fruit a small curled pod.	About 25 km from Karibib on road to Omaruru.
Indigofera sordida Benth. ex Harv.	Yellow-green bush, up to 1.5 m high. Flowers orange.	Farm Schlucht, Erongo Mountains. In rock crevices.
Indigofera vicioides Jaub. & Spach var. vicioides	Small, prostrate annual with pink flowers.	Farm Schlucht. Erongo Mountains.
Ipomoea coptica (L.) Roth ex Roem. & Schult.		Farm Schlucht 162. Hubertustal, granite mountains near farmhouse.
Ipomoea obscura (L.) Ker Gawl. var. obscura	Prostrate, creeping, flowers yellow.	Circa 13 km from Karibib on road to Omaruru.
Jamesbrittenia pallida (Pilg.) Hilliard	White flowers smells strongly. Veins on leaves conspicuous.	Erongo Mountains. Farm Bergsig 167.
Kohautia cynanchica DC.	Flowers white.	Erongo, Farm Brabant.
Lapeirousia coerulea Schinz	Herb up to 36 cm with deep blue flowers.	Farm Anibib. Erongo mountains
Leobordea platycarpa (Viv.) B.-E. van Wyk & Boatwr. [2]	Prostrate annual, small yellow flowers.	Erongo Mountains. Farm Bergsig 167.
Leonotis ocymifolia (Burm.f.) Iwarsson var. schinzii (Gürke) Iwarsson	Perennial up to 6 feet, flowers orange tomentose.	Farm Umbo, alongside perennial stream.
Lessertia benguellensis Baker f.	The fruits broad, flat.	W of Erongo Mountains. Farm Rockfontein.
Lindernia parviflora (Roxb.) Haines		Farm Schlucht 162, granite mountain near farm house.
Lophiocarpus dinteri Engl.	Annual herb, yellow-green.	Farm Omamdumba-West. In sand in existence in the Omuramba.
Lycium eenii S.Moore	Stems very grey or white. Flowers tubular, pale mauve or white with mauve lines. Leaves decrease in size towards top of stems.	Erongo mountains. Farm Bergsig 167.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
Manulea dubia (Skan) Overkott ex Roessler	Erect green herb 2 feet high. Leaves small. Petals orange when open, tube is cream.	Erongo Mountains - Farm Bergsig 167.
Maytenus heterophylla (Eckl. & Zeyh.) N.Robson subsp. arenaria N.Robson	Shrub with occasional short thorns on stems. Fruit yellow, partly turning red.	Farm Omandumba East 133. Mountain slope and gorge.
Melhania damarana Harv.	Small shrub up to 0.45 m high. Flowers orange-yellow.	Schlucht 162 Farm.
Monechma genistifolium (Engl.) C.B.Clarke subsp. genistifolium	Erect. Flowers pale violet/mauve.	About 13 km from Karibib on road to Omaruru.
Myrothamnus flabellifolius Welw.		Omandumba West 137 Farm. Next to district road from Omaruru to Erongo mountains.
Namacodon schinzianum (Markgr.) Thulin	Erect perennial herb. Old growth light brown, new growth green. Flowers blue, calyx green and narrow.	Bergsig Rest 167 Farm. Erongo mountains.
Nemesia fruticans (Thunb.) Benth.	Annual herb up to 45 cm high. Flowers light violet.	Farm Omandumba East 133. Mountain slope in gorge, 2 miles before Otjimpau West gate.
Nemesia lilacina N.E.Br.	Annual herb, 15 cm high. Flowers white to pink.	Erongo Mountains.
Nemesia sp.	Pale purple flowers with yellow spot on centre. Erect annual, small.	Erongo Mountains, Farm Bergsig 167.
Nicotiana africana Merxm.	Flowers greenish-yellow. Always growing in shade.	Omaruru district. Farm Omandumba - West: OM 137.
Oldenlandia herbacea (L.) Roxb. var. flaccida Bremek.	Flowers white.	Road: Omaruru - Omatjetje. 12 miles from Omaruru
Oldenlandia herbacea (L.) Roxb. var. herbacea	Flowers pure white.	Farm Schlucht, near dam marshy soil.
Olea europaea L. subsp. africana (Mill.) P.S.Green	Tree. Pale grey bark.	Erongo Mountain: Farm Bergsig 167.
Oncocalyx welwitschii (Engl.) Polhill & Wiens	Flowers bright yellow.	Farm Schlucht, Erongo Mountains, 3 miles from house.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
<i>Osteospermum montanum</i> Klatt	Perennial dwarf shrub, 40 cm high. Flowers: yellow.	Erongo Mountains.
<i>Oxalis purpurascens</i> T.M.Salter	Annual. Height: 5 (15, including flowers) cm. Flowers: vividly pink, yellow centre, inflorescence a few flowered umbel. Leaves compound, trifoliate, the leaflets heart-shaped, greyish green with dark (violet) spots. Roots/underground organs: could not be dug out (too deep, soil too hard).	Farm Omundumba West.
<i>Panicum schinzii</i> Hack.	Annual, up to 55 cm high, lush yellow-green.	Farm Omandumba East 133. Erongo northern side. Coarse sandy flats.
<i>Panicum simulans</i> Smook	Grass.	Farm Schlucht 162. Granite mountains at farmhouse.
<i>Pentarrhinum insipidum</i> E.Mey.	Creeper. No latex. Creeper, around grass and low perennials. Flowers dark crimson and yellow cororia.	Karibib. Erongo mountains: Farm Bergsig OM 167.
<i>Petalidium lanatum</i> (Engl.) C.B.Clarke	Semi-prostrate. Flowers red and yellow.	About 13 km from Karibib on road to Omaruru.
<i>Petalidium variabile</i> (Engl.) C.B.Clarke var. <i>spectabile</i> Mildbr.	Normal inferior lobe, gradually widening from throat.	Omandumba West 137 Farm
<i>Petalidium variabile</i> (Engl.) C.B.Clarke var. <i>variabile</i>	Dwarf shrub. Flowers pink.	About 13 km from Karibib on road to Omaruru.
<i>Polygala</i> sp.	Small, purple irregular flowers. Leaves green and very finely haired. Woody base, dark grey, new growth.	Erongo Mountains: Farm Bergsig 167.
<i>Portulaca oleracea</i> L.	Prostrate, succulent perennial with yellow flowers.	Namibia. Erongo. Omadumba Ost.



SPECIES	PLANT DESCRIPTION	LOCATION NOTES
<i>Rhus marlothii</i> Engl.	Shrub. Foliage glaucous.	Farm Schlucht 162, Erongo Mountains.
<i>Rhynchosia sublobata</i> (Schumach. & Thonn.) Meikle		35 km west of Omaruru.
<i>Rotheca myricoides</i> (Hochst.) Steane & Mabb. var. <i>myricoides</i>		Farm Schlucht 162. Granite mountains at farm house.
<i>Schoenoplectiella leucantha</i> (Boeck.) Lye		Granite mountains at farmhouse. Farm Schlucht 162.
<i>Seddera schizantha</i> Hallier f.		Klein Ameib.
<i>Selago alopecuroides</i> Rolfe	Light, mauve, small flowers. Base grey and woody.	Erongo mountains: Farm Bergsig OM 167.
<i>Senecio eenii</i> (S.Moore) Merxm.	Annual herb, 10 cm high. Flowers: pink-purple.	Erongo Mountains.
<i>Sesamum capense</i> Burm.f.	Light-violet flowers.	Erongo, Farm Brabaut. Karibib.
<i>Sesamum schinzianum</i> Asch.	Perennial shrub up to 1 m high, with pink flowers and darker spots on the throat.	Omaruru District: Farm Schlucht, Erongo Mountain, wetter parts in rocks.
<i>Sesamum</i> sp.		Farm Schlucht 162. Granite mountains at farmhouse.
<i>Sesbania pachycarpa</i> DC. subsp. <i>dinterana</i> J.B.Gillett	Forb up to 1.2 m high. Flowers yellow with dark spots.	Farm Omandumba East, gorge.
<i>Sesbania sphaerosperma</i> Welw.	Herb, grows up to 1 m in height. Yellow flowers.	Erongo Mountains. Farm Anibib.
<i>Sesuvium sesuvioides</i> (Fenzl) Verdc. var. <i>angustifolium</i> (Schinz) Gonç.		Erongo Mountains. Farm Omandumba Ost 133.
<i>Setaria incrassata</i> (Hochst.) Hack.	Upright tufted grass up to 1.2 m high. Inflorescence dense, up to 20 centimetre long. Bristles up to 1 centimetre long.	Farm Omandumba East, OM 133. On upper mountain slope 2 miles before gate to Otjimpau West.
<i>Stipagrostis damarensis</i> (Mez) De Winter	Large grass, up to 1 m high tufts, stiff. Leaves very long. Up to 40 cm long inflorescence.	Okombahe Reserve. In stoney riverbed.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
<i>Strophanthus amboensis</i> (Schinz) Engl. & Pax	Green and hard fruit. Tall thin. Grey main stem resting or creeping over other tree.	Karibib: In rocky riverbed, 3/4 way down Bergsig.
<i>Tapinanthus glaucocarpus</i> (Peyr.) Danser	Growing on a tree. Leaves and flowers very furry. Inside tubular flowers and stripped reddish. Stems grey and hairy.	Erongo mountains. Farm Bergsig 167.
<i>Tephrosia oxygona</i> Welw. ex Baker subsp. <i>lactea</i> (Schinz) A.Schreib.	Erect forb, woody at base, up to 75 cm tall. Flowers large violet.	Farm Omandumba-Ost 133. Erongo - northern side.
<i>Tetragonia calycina</i> Fenzl	Shrub 1.5 m high. Flowers sweet scented.	West of Erongo Mountains. Farm Rockfontein.
<i>Tragia dinteri</i> Pax	Annual climber, 15 cm high. Flowers green-cream. Leaves stinging.	Erongo Mountains.
<i>Trema orientalis</i> (L.) Blume	Big tree. Flowers and fruits. Bark light grey.	Erongo Mountains farm bersig 167
<i>Urochloa brachyura</i> (Hack.) Stapf	Upright, annual, grass up to 65 cm in height. Spikes hairy.	Farm Ombu 130. High plain, omuramba soil.
<i>Urochloa panicoides</i> P.Beauv.	Graminoid. Annual, erect.	Farm Ombu 130.
<i>Vangueria cyanescens</i> Robyns	Perennial shrub, 300 cm high. Flowers calyx green, 5 - lobed. Leaves no hairs. Stem multi-stemmed.	Erongo mountains.
<i>Vangueria proschii</i> Briq.	Erect shrubs. Leaves fresh green, leathery and bark black.	Farm Schlucht, Erongo Mountains.
<i>Viscum rotundifolium</i> L.f.	Small green flowers in leaf axils. Fruits orange 4 mm wide, roundish.	Erongo mountains: Farm Bergsig 167.
<i>Withania somnifera</i> (L.) Dunal	Gooseberry-like shrub, only 2 specimens seen. Leaves and stems green, in sandy ground between huge rocks. Up to 4 feet tall, green inflated calyx around green berry fruit.	Erongo Mountains: Farm Bergsig 167.

SPECIES	PLANT DESCRIPTION	LOCATION NOTES
Xerophyta viscosa Baker	Perennial, forming mats up to 50 cm and 40 cm high. Leaves shiny green, sticky. Flowers pure white.	About 2 miles bever gate Otimpau west. At mountain slope between rocks.
Zaleya pentandra (L.) C.Jeffrey	Spreading annual herb.	Farm Schlucht 162.
Zornia glochidiata Rchb. ex DC.	Annual, upright up to 10 cm high.	Farm Schlucht 162.