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ENVIRONMENTAL SCOPING REPORT PLUS ASSESSMENT

Exploration Activities on EPL 6663 for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones, in the Erongo Region

PREPARED FOR

MARENICA ENERGY LIMITED

DECEMBER 2019

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TITLE AND APPROVAL PAGE

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EXECUTIVE SUMMARY

Marenica Energy Ltd is an Australian Securities Exchange Listed Company that has various exploration projects in Namibia. Marenica Energy Ltd seeks to further explore uranium mining opportunities and propose to undertake exploration activities on EPL 6663 for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones, in the Erongo Region. The EPL 6663 located between the C28 and C14 road and is approximately 104km east of Walvis Bay, off C14 and approximately 88km east of Swakopmund off C28. The EPL site covers the surface area of approximately 38,060 ha within the borders of the Namib- Naukluft National Park, about 5300ha extends outside the borders of the National Park

The proposed project triggers listed activities in terms of the Environmental Management Act No.7 of 2007, therefore, an environmental clearance certificate is required. As part of the environmental clearance certificate application, an environmental impact assessment has been undertaken to satisfy the requirements of the Environmental Management Act, 2007. This Environmental Scoping Report plus assessment and Environmental Management Plan (EMP) shall be submitted as part of the application for the environmental clearance.

The proposed project will entail various types of exploration methods within the EPL 6663 site which may include drilling, aerial or remote sensing, ground penetrating radar, and mineral sampling. Non-invasive ground penetrating radar is planned to be undertaken followed by drilling program. If mineralisation is identified, further exploration methods shall be applied; if not identified, than EPL 6663 shall be rehabilitated and returned to government.

The area receives an annual rainfall of less than a 100 mm and has unique vegetation and wildlife species including reptiles and avifauna, many of which are endemic to the Namib Desert. EPL 6663 falls within the Namib Desert Biome and Central Desert vegetation type, which tends to have grassland occupying the gravel plains. Along the natural drainage channels, camel thorn trees (*Acacia erioloba*) can be found. A diversity of game spoors, tracks, scats and burrows were recorded which includes species of interests such as giraffes and zebras among other large ungulates. The EPL 6663 is covered with limited geological features and mainly composed of plains with various surface water features across the site that are likely to have runoff during rainy periods.

The environmental impact assessment (EIA) was undertaken using a methodology developed by Environmental Compliance Consultancy, which is based on the International Finance Corporation (IFC) standard for environment and social impact assessments. Through the scoping process, a review of the site and surrounding environmental assessment was completed by undertaking a desktop review and site visit.

Some vegetation may be cleared to create access tracks, working areas, and to allow for the installation and development of exploration boreholes. The impacts of exploration activities with respect to airborne dust are expected to be limited to vehicular activities. There will be some release of exhaust fumes from machinery that will impact the immediate vicinity but will be of short duration. Additionally, there will be associated drilling and machinery noise, which could be a disturbance to immediate neighbours and wildlife, but this will be of short duration.

Water is a scarce commodity in Namibia and, as such, must always be treated with caution. The hydrology of the area is limited to ephemeral streams and groundwater and the potential for contamination from the proposed activities is regarded as minimal. Protection of water quality is addressed in the EMP.

The assessment is considered to be comprehensive and sufficient to identify impacts, and it is concluded that the likely effects were not deemed significant and therefore no further assessment is required. 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.

Contents

1 INTRODUCTION 7
1.1 Purpose of this Report 7
1.2 Background to the Proposed Project 7
1.3 Environmental Requirements 9
1.4 The Proponent of the Proposed Project 9
1.5 Environmental Consultancy 9
1.6 Report Structure 10
2 REGULATORY FRAMEWORK 11
2.1 Policies 13
2.1.1 Minerals policy 13
2.1.2 National policy on the prospecting and mining in protected areas 13
2.2 Licences 13
2.2.1 Exclusive prospecting licence 13
3 APPROACH TO THE EIA 15
3.1 Purpose of an EIA 15
3.2 The Assessment Process 15
4 PROJECT DESCRIPTION 17
4.1 Need for the Proposed Project 17
4.2 Alternatives 17
4.2.1 No-go Alternative 17
4.3 Proposed exploration activities 17
4.3.1 Exploration schedule 18
4.3.2 Workers and accommodation 18
4.3.3 Resource use and waste management 18
4.3.4 Rehabilitation 19
5 ENVIRONMENTAL AND SOCIAL BASELINE ENVIRONMENT 20
5.1 Introduction 20
5.2 Methodology 20
5.3 Consultation 20
5.3.1 Newspaper Advertisements 20
5.3.2 Non-Technical Summary 20
5.3.3 Site Notices 20
5.3.4 Consultation Feedback 20
5.4 Baseline of the Built Environment 20
5.5 Socio-Economic 21

5.5.1 Governance 21
5.5.2 Demographic Profile 21
5.5.3 HIV/AIDS in Namibia 21
5.5.4 Employment 21
5.5.5 Economic activities 21
5.6 Climate 22
5.7 Vegetation and Wildlife 23
5.8 Cultural Heritage 25
5.9 Soils and Geology 25
5.10 Hydrology - Groundwater and Surface Water 28
5.11 Land Use and Infrastructure 28
6 PREDICTION AND EVALUATION OF IMPACTS METHODOLOGY 29
6.1 Introduction 29
6.2 ECC Methodology for the Impact Assessments 29
6.3 Determination of Significance 29
7 ASSESSMENT FINDINGS AND MITIGATION MEASURES 34
7.1 Scoping assessment findings 34
8 ENVIRONMENTAL MANAGEMENT PLAN 43
9 CONCLUSION 44
REFERENCES 45
APPENDIX A: ENVIRONMENTAL MANAGEMENT PLAN 46
APPENDIX B: LIST OF PLANT SPECIES 47
APPENDIX C: NON-TECHNICAL SUMMARY 64
APPENDIX D: ADVERTS 65
APPENDIX E: SITE NOTICE 68
APPENDIX F: ECC CVS 69

TABLES

TABLE 1 - PROPONENT DETAILS 9
TABLE 2 - ENVIRONMENTAL SCOPING REPORT SECTIONS 10
TABLE 3 - LEGAL COMPLIANCE 11
TABLE 4- SENSITIVITY AND VALUE OF RECEPTOR 29
TABLE 5- NATURE OF IMPACT 30
TABLE 6 - MAGNITUDE OF CHANGE 31
TABLE 7– LEVEL OF CERTAINTY 32
TABLE 8 - GUIDE TO SIGNIFICANCE RATINGS 32
TABLE 9– SIGNIFICANCE DESCRIPTION 33
TABLE 10- LIMITATIONS AND ASSUMPTIONS OF THE ASSESSEMENT 34
TABLE 11 – SUMMARY OF THE POTENTIAL IMPACT 35

FIGURES

FIGURE 1 – LOCATION OF EPL 6663 8
FIGURE 2 - ECC SCOPING PROCESS 16
FIGURE 3 - PREVAILING WIND IN WALVIS BAY 22
FIGURE 4 - VEGETATION COVER ON THE EPL 6663 24
FIGURE 5 – GEOLOGY MAP OF EPL 6663 26
FIGURE 6 – SOIL MAP OF EPL 6663 27
FIGURE 7 – HYDROLOGY OF THE EPL 6663 28

DEFINITIONS AND ABBREVIATIONS

DEA	Directorate of Environmental Affairs
ECC	Environmental Compliance Consultancy =
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
IFC	International Finance Cooperation
I&AP	Interested and affected parties
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
MPMRC	Minerals (Prospecting and Mining Rights) Committee
NDP5	Fifth National Development Plan

1 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

The purpose of this report is to present the findings of the environmental impact assessment (EIA) for the proposed project. The proposed project is to undertake mineral exploration activities on Exclusive Prospecting Licence (EPL) 6663 for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones, which is described in detail throughout the report. The EIA has been undertaken in terms of the requirements of the Environmental Management Act 7 of 2007 and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act, 2007 (referred to herein as the EIA Regulations). This Scoping Report and appendices will be submitted to the Ministry of Mines and Energy (MME) and the Directorate of Environmental Affairs (DEA) at the Ministry of Environment and Tourism (MET) for review as part of the application for an environmental clearance certificate.

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

This report provides information to authorities, 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 environmental and social impact assessment on feasible alternatives that were considered, and
- Report the assessment findings, identifying the significance of effects.

In addition to the environmental assessment, an Environmental Management Plan (EMP) (Appendix A) is also required. An EMP has been developed to provide a management framework for the planning and implementation of exploration activities thereby providing operational standards and operating arrangements to ensure that the potential environmental and social impacts of operating the exploration sites are mitigated, prevented and minimised as far as reasonably practicable and that statutory requirements and other legal obligations are fulfilled.

1.2 BACKGROUND TO THE PROPOSED PROJECT

Marenica Energy Ltd proposes to undertake mineral exploration for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones on Exclusive Prospecting Licence (EPL). The EPL 6663 located between the C28 and C14 road and is approximately 104km east of Walvis Bay, off C14 and approximately 88km east of Swakopmund off C28. The EPL site covers the surface area of approximately 38,060 ha within the borders of the Namib- Naukluft National Park, about 5300ha extends outside the borders of the National Park (refer to Figure 1).

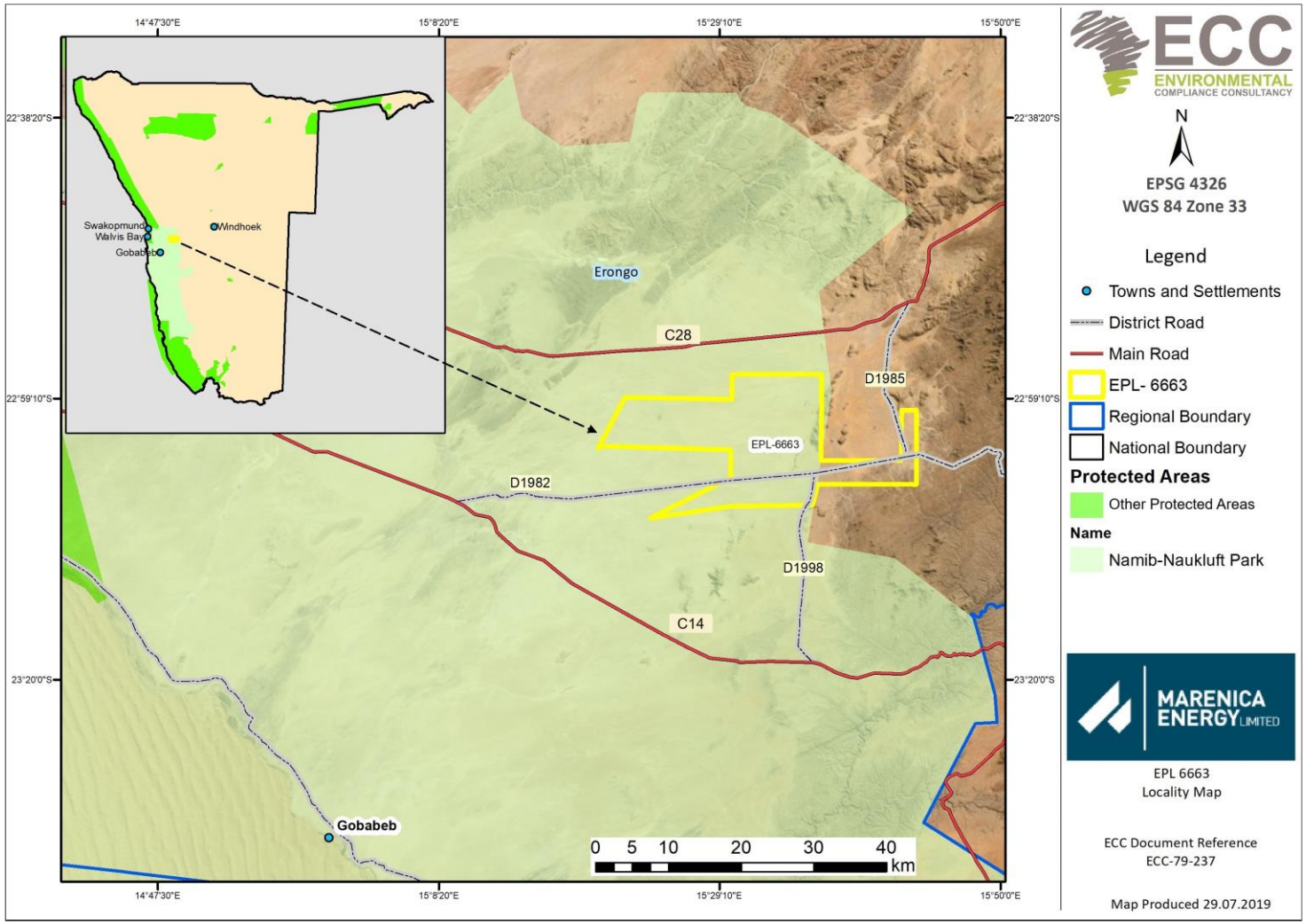

FIGURE 1 – LOCATION OF EPL 6663

1.3 ENVIRONMENTAL REQUIREMENTS

The Environmental Management Act, 2007 stipulates that an environmental clearance certificate is required to undertake listed activities in terms of the Act and its regulations, as such an environmental impact assessment (EIA) of the proposed project is required, and subsequent report (this document) submitted as part of the Environmental Clearance Certificate. Listed activities triggered by the proposed project in terms of the Environmental Management Act, 2007 and its supporting regulations are as follows.

MINING AND QUARRYING ACTIVITIES

3.1 The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining) Act, 1992

- ✓ The proposed project requires a licence for the extraction of Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones.

3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not

- ✓ Minerals (soil and sand), metals will be sourced out within the project's footprint/ locally as far as possible

3.3 Resource extraction, manipulation, conservation and related activities

- ✓ The proposed project will extract Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones

1.4 THE PROPONENT OF THE PROPOSED PROJECT

Marenica Energy Ltd (herein referred to as the proponent) is an Australian Securities Exchange Listed Company, which is seeking to explore for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones, in Namibia. The proponent has developed a uranium concentration process that is unique and ground-breaking, lowering the extraction cost of uranium and significantly reducing potential environmental effects associated with reducing the mass of ore to be leached. This U-pgradeTM process technology can be applied to surficial uranium deposits and is capable of concentrating uranium by a factor of up to 50 times, thereby reducing the feed to a leaching circuit dramatically.

The proponent of the proposed project is Marenica Energy and the proponent details are provided in TABLE 1.

TABLE 1 - PROPONENT DETAILS

CONTACT	POSTAL ADDRESS	EMAIL ADDRESS	TELEPHONE
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1.5 ENVIRONMENTAL CONSULTANCY

Environmental Compliance Consultancy, a Namibian consultancy registration number 2013/11401, has prepared this document on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa in the public and private sector. The CVs of the authors of this report are contained in Appendix F.

ECC is independent of the proponent and has no vested or financial interest in the proposed project, except for fair remuneration of professional services rendered. All compliance and regulatory requirements regarding this assessment document should be forwarded by email or post to the following address:

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1.6 Report Structure

This environmental scoping study and impact assessment report is structured as per the contents set out in the Table 2.

TABLE 2 - ENVIRONMENTAL SCOPING REPORT SECTIONS

SECTION	TITLE	CONTENT
-	Executive Summary	Executive summary of the EIA
-	Abbreviations	A list of abbreviations used during the report
1	Introduction	This section introduces the EIA and provides background information on the proposed project, proponent and purpose of the report
2	Regulatory Framework	This chapter describes the Namibian environmental regulatory framework applicable to the project and how it has been considered in the assessment and the scoping report and EMP.
3	Approach to the EIA	Presents the methodology of the EIA
4	Project Description	Presents the need of the project, the alternatives considered and a description of the proposed project and how the proposed project will be operated.
5	Environmental and social baseline environment	Presents information on the receiving environment that may be affected by the project.
6	Prediction and evaluation of impacts	This chapter presents the predicted potential environmental and social effects arising from the proposed project, and the mitigation and management strategies to be applied to avoid or reduce the effects.
7	Assessment findings and mitigation measures	This chapter presents the findings and the mitigation and management strategies to be applied to avoid or reduce the effects.
8	Conclusions	Concludes the findings of the EIA
	References	A list of reference used for this report
Appendices	Appendices A-E	– Appendix A: Environmental Management Plan – Appendix B: List of plant species – Appendix C: Non-technical Summary – Appendix D: Adverts – Appendix E: Site Notice – Appendix F: ECC CVS

2 REGULATORY FRAMEWORK

This chapter outlines the regulatory and policy framework applicable to the proposed project. Table 3 provides a list of applicable legislation and the relevance to the project.

TABLE 3 - LEGAL COMPLIANCE

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
Minerals (Prospecting and Mining) Act No 33 of 1992	Provides for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control, minerals in Namibia. Section 50 (i) requires *"an environmental impact assessment indicating the extent of any pollution of the environment before any prospecting operations or mining operations are being carried out and an estimate of any pollution, if any, likely to be caused by such prospecting operations or mining operations"*	The proposed activity is prospecting for minerals; hence it requires an EIA to be carried out as it triggers listed activities in terms of the Environmental Management Act and its regulations. This report presents the findings of the EIA. Works shall not commence until all conditions in the Act are met. The project shall be compliant with section 76 of the Minerals Act with regards to records, maps, plans and financial statements, and information, reports and returns submitted.
Environmental Management Act, 2007 (Act No. 7 of 2007) and its regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011)	The Act aims to promote sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment. 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. 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 environmental clearance certificate process.	This Environmental Scoping Report and assessment plus the 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 in terms of the Act and its regulations.
Water Act, 1956	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	The Act stipulates obligations to prevent pollution of water. The EMP sets out measures to avoid polluting the water environment.

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
	respects… and for the control of certain activities on or in water in certain areas". The Ministry of Agriculture Water and Forestry Department of Water Affairs is responsible for the administration of the Water Act. 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 abstract water from a controlled water source, a WA 002 should be filled and submitted to the MAWF	Regulation 5: "Upon receipt of an application in terms of regulation 4(1) the Minister may issue a permit authorising the applicant to sink, enlarge, deepen, alter, open up or clean any borehole, well or spring mentioned in the application or to abstract therefrom and use a specific quantity of water for the purposes and subject to the conditions specified in the permit: Provided that, if the Director is of opinion that artesian water is or will be found in a borehole or well, the Minister shall not consider an application unless it is recommended by the Board. " Regulation 9: The Minister may, when issuing a permit under regulation 5, impose such conditions, whether generally or in respect of different periods in any year, as he may deem necessary for an equitable distribution of water in the public interest or for the conservation of water supplies or for the protection of water sources, including conditions in respect of measures to minimise potential groundwater and surface water pollution are contained in the EMP.
The Nature Conservation Ordinance No. 4 of 1975	One of the major biodiversity related laws in Namibia is the legislation governing the conservation of wildlife, and protected areas.	The following sections are applicable to the proposed project and measures to ensure compliance are included in this environmental scoping report plus the EMP. – Section 18 of the Nature Conservation Ordinance restricts of the rights to enter game parks and nature reserves and prohibition of certain acts therein, and – Section 72 of the Nature Conservation Ordinance restricts picking and transport of protected species.
National Heritage Act, No. 27 of 2004.	The Act provides provision of the protection and conservation of places and objects with heritage significance. Section 55 compels exploration 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 the site, therefore the stipulations in the Act have been taken into consideration and are incorporated into the EMP. Section 55 compels exploration companies to report any archaeological findings to the National Heritage Council after which a permit needs to be issued before the findings can be disturbed.

NATIONAL REGULATORY REGIME	SUMMARY	APPLICABILITY TO THE PROJECT
Soil Conservation Act No.76 of 1969	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 on the EPL site. Measures in the EMP sets out methods to avoid soil erosion.

2.1 POLICIES

2.1.1 MINERALS POLICY

The Minerals Policy was adopted in 2002 and sets guiding principles and direction for the development of the Namibian mining sector while communicating the values of the Namibian people. It sets out measures to achieve several objectives in line with the sustainable development of Namibia's natural resources. The policy strives to create an enabling environment for local and foreign investments in the mining sector and seeks to maximise the benefits for the Namibian people from the mining sector while encouraging local participation, amongst others.

The objectives of the Minerals Policy are in line with the objectives of the Fifth National Development Plan (NDP5) that include reduction of poverty, employment creation and economic empowerment in Namibia. The proposed project conforms to the policy and has been considered through the EIA process and the production of this report.

2.1.2 NATIONAL POLICY ON THE PROSPECTING AND MINING IN PROTECTED AREAS

National Policy on the Prospecting and Mining in Protected Areas (Ministry of Environment and Tourism, Ministry of Mines and Energy, 2018) was passed in July 2018 and provides direction in terms of where mining and exploration related impacts are legally prohibited and where biodiversity priority areas may present high risks for mining projects.

The policy provides a framework for integrating relevant biodiversity information into decision making about exploration and mining options and how best to avoid, minimise or remedy biodiversity impacts caused by mining, and in so doing support sustainable development.

EPL 6663 (assessed in this report) falls within the Namib-Naukluft National Park. It is therefore imperative that the potential impacts within the national parks be thoroughly assessed and in particular are reviewed and compared with the 'no mining and prospecting zones' in the aforementioned policy. The EPL does not fall within any exclusion zones set by the policy.

2.2 LICENCES

2.2.1 EXCLUSIVE PROSPECTING LICENCE

EPL 6663 was granted on the 19/09/19. The EPL shall be valid for three years. In terms of the Minerals (Prospecting and Mining) Act, 1992, an EPL may be renewed, however may only be extended twice for two-year periods if demonstrable progress is shown. Renewals beyond seven years requires special approvals from the minister (Ministry of Mines and Energy, 2018).

Such renewals are subject to a reduction in size of the EPL. When a company applies for renewal of an EPL, this application must be lodged 90 days prior to the expiry date of the EPL or, with good reason, no later than the expiry date (Ministry of Environment and Tourism, Ministry of Mines and Energy, 2018).

Renewal application for EPL 6663 may be required if mineralisation is present and exploration activities last longer than three years. If renewal is applied for, the MET shall review the renewal application and make any comments and/or recommendations for consideration by the Minerals (Prospecting and Mining Rights) Committee (MPMRC).

Amendments and revisions may be required for the EIA and EMP. Due consideration must be given when renewing the licence to ascertain whether there is justification to renew the licence. Once an EPL expires and a new EPL is issued, even if it is to the previous holder, the full screening process must be followed with a full EIA process before operations may commence (Ministry of Environment and Tourism, Ministry of Mines and Energy, 2018).

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, EIA process and subsequent reports 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.

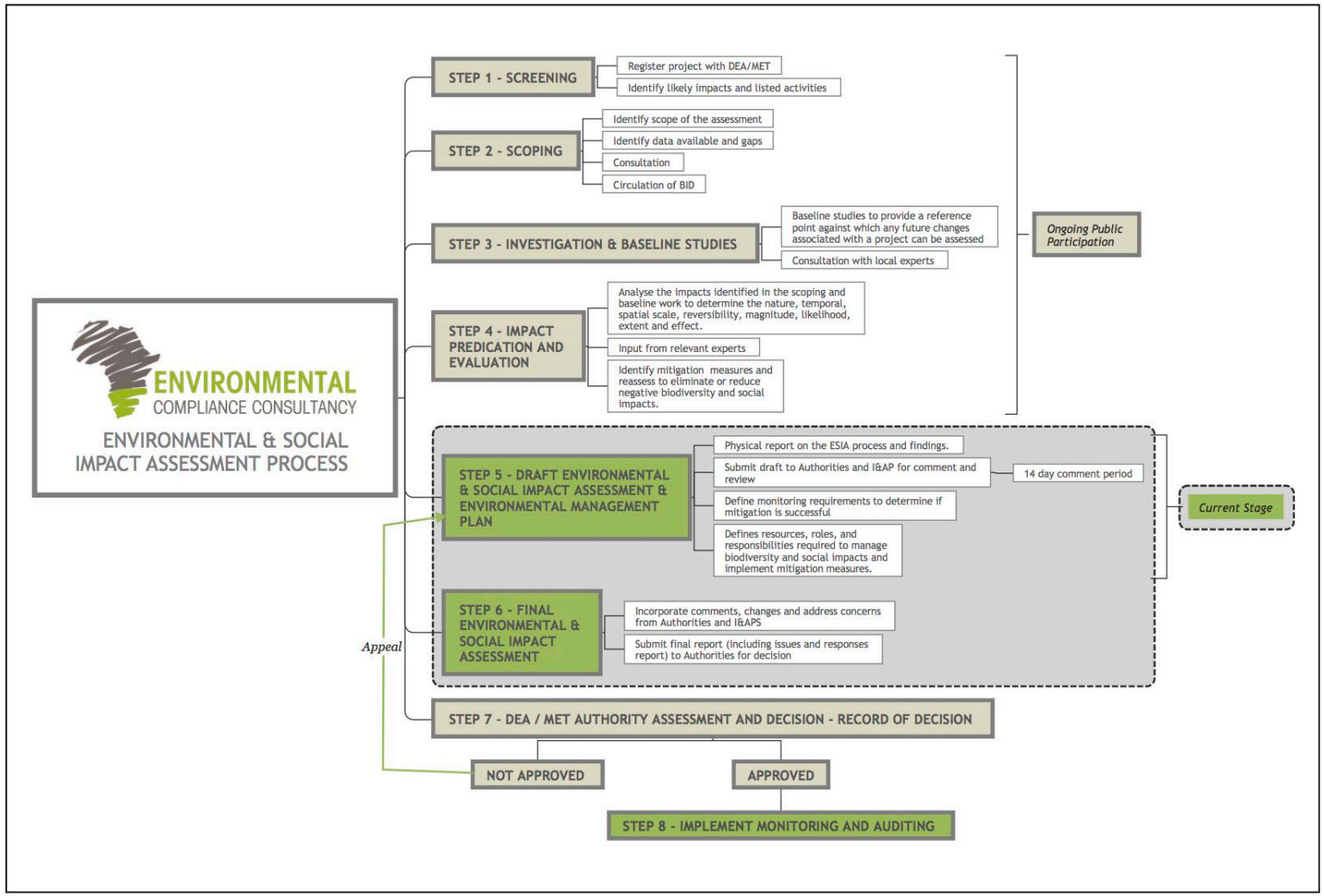

FIGURE 2 - ECC SCOPING PROCESS

4 PROJECT DESCRIPTION

4.1 NEED FOR THE PROPOSED PROJECT

The mining sector in Namibia significantly contributes to the country's Gross Domestic Product (GDP), government tax receipts and export revenues. For this reason, exploration activities are encouraged in Namibia and the vision of the Minerals Policy being to *"further attract investment and enable the private sector to take the lead in exploration, mining, mineral beneficiation and marketing"* supports the development. The proposed project is in line with this vision and has the potential to create employment in the local communities, namely Walvis Bay, Swakomund and the marginalised Topnaar people (ǂAonin). In the event that exploration activities are successful, and a resource can be defined in commercially viable concentrations, exploration operations can potentially transcend into mining operations, which can result in socio-economic development.

Uranium is used in the nuclear industry to produce electricity. Nuclear is the world's second largest source of low-carbon power (>30% of the total in 2015). Approximately, 11% of the world's electricity is generated by approximately 450 nuclear power reactors in 50 countries and around 60 more reactors are under construction. This is equivalent to 16% of existing capacity, while an additional 150-160 are planned, equivalent to nearly half of existing capacity (World Nuclear Association , 2018). Furthermore, uranium is required to supply these reactors and ensure low-carbon power is generated. Namibia is one of the few countries which has uranium deposits and has three significant uranium mines capable of providing 10% of world uranium output. Uranium was discovered in the Namib Desert in 1928 and intensive exploration commenced in the late 1950s.

4.2 ALTERNATIVES

Several uranium deposits occur in Namibia and are grouped into three basic rock types: a) occurrences in and associated with plutonic rocks, b) pedogenic occurrences and c) sedimentary occurrences. An overlap exists between the pedogenic and the other main deposit types. Uranium occurrences in and associated with plutonic rocks comprise both potentially economic deposits and source rocks for uranium deposits in pedogenic and sedimentary sequences. These deposits are confined mainly to the western portion of the Damara Orogen (Schreuder, 1985). Therefore, there are limited areas to explore in Namibia.

An exploration program in the 1970s undertaken by general mining indicated high prospectively for uranium mineralisation in the EPL. Consequently, alternative sites were considered during this early exploration program, however, the potential for mineralisation was not as high as that of EPL 6663. The Environmental assessment has therefore taken a worst-case scenario as per best practice guidance, which includes a review of all likely exploration activities, thus no other technological alternatives are available for consideration at this stage.

Once the exploration programme is further defined, the best available option for methods shall be identified to ensure the impacts on the environment and society are minimised.

4.2.1 NO-GO ALTERNATIVE

Should exploration activities within EPL 6663 not take place, the anticipated environmental impacts from exploration activities would not occur, however, the social and economic benefits associated with the project would also not be realised. There would not be an opportunity to define resources in the project area, a missed opportunity for geological mapping and data collection that if found to be viable for mining could benefit the Namibian economy.

4.3 PROPOSED EXPLORATION ACTIVITIES

Exploration activities on EPL 6663 will include soil and rock sampling, geological mapping, electromagnetic and geophysical surveys, drilling and core sampling. Some vegetation may be cleared to allow access tracks and working areas to be created and for the installation and development of exploration drill holes.

Existing tracks will be used as far as reasonably practical; in the event that new tracks are required they will be developed by hand or by using a bulldozer if the area is heavily bush encroached or hilly. Vegetation clearance shall be required for drill access tracks, drill pads and for a driller's camp (if required). This will also be carried out by hand or bulldozer depending on the bush thickness and the required clearance distances.

The exploration methods on each EPL site may involve the following methods: drilling; aerial or remote sensing; ground penetrating radar; and mineral sampling. Further detail of these methods are as follows.

- **REMOTE SENSING AND GEOPHYSICAL SURVEYS**

  During mineral exploration, remote sensing and geophysical surveys enables explorers to find and assess deposits without having to undertake massive exploration operations. Remote sensing may be used to map the geology and existing faults and fractures that localize the ore deposits or may be used to recognize rocks which have been hydrothermally altered. Remote sensing **includes** a number of tools and techniques including geographical information systems, radar, geographical information systems and sonar.

- **GROUND PENETRATING RADAR**

  Ground penetrating radar is likely to be the preferred method for exploration activities on the EPL. This will most likely be undertaken by foot.

- **ROTARY AIR BLAST (RAB) DRILLING AND DIAMOND DRILLING**

  Drilling to be undertaken in order to obtain drill core samples. The collected samples will be temporarily stored in plastic bags on site and transported to a sample preparation laboratory in Swakopmund.

  All exploration activities will be undertaken in programmed segments. The number of drill holes will be determined on results obtained through the data collection during ground penetrating radar. Equipment used during drilling shall include an RC on trailer-mounted rig towed by a light vehicle.

Pitting and trenching are unlikely as this is not the preferred method of exploration and therefore have not been included in this scoping report.

4.3.1 EXPLORATION SCHEDULE

The duration of exploration activities is anticipated to be conducted over the course of a 3-year period (or for the duration of the mineral licence) and the periods of each exploration programme will vary and will be refined as geological information becomes available. Exploration is intended once the environmental clearance has been granted. The presence of mineralisation shall be determined during the first period of tenor. Non-invasive ground penetrating radar is planned to be undertaken in the first three months on both sites, potentially followed by a drilling program. If mineralisation is identified, further exploration methods shall be applied; if not identified, the EPL shall rehabilitated and returned to government.

4.3.2 WORKERS AND ACCOMMODATION

During the initial exploration stage, approximately seven (7) employees will be required, and workers will mainly be from Swakopmund and Walvis Bay. The roles of the employees include two (2) radar specialists / geologists and five (5) drill crew members. Additional roles may be required which shall be determined by the programme and exploration methods.

The workers will be accommodated in designated camp areas during the exploration programme, however, may be required to stay closer to the site during on ground exploration works and therefore will likely stay in an onsite camp.

4.3.3 RESOURCE USE AND WASTE MANAGEMENT

Water will be required for various uses including human consumption and exploration activities. Potable water will be brought to site by light vehicle and shall be used for human consumption and if required for operation of the drill rig.

During drilling operations, water shall be used, recirculated and stored in lined collections ponds.

Waste including sewerage and solid waste such as packaging, will be produced on site. All solid waste, shall be collected, taken off site and disposed of at the nearest waste management facility. Mobile toilets (of a 'long drop" or pit latrine type) may be brought to site. Any sewerage generated will be managed by the supplier of the toilet or the contactor. The banning of plastics bags in game parks or nature reserve as per the Government notice No.85, published in the Government Gazette No. 6285 in April 2017 shall be adhered to, at all times.

4.3.4 REHABILITATION

The National Policy on the Prospecting and Mining in Protected Areas stipulates that companies involved in prospecting and mining in protected areas take responsibility for carrying out appropriate rehabilitation and restoration, during and upon closure of their activities. Therefore, the proponent shall ensure funds are available to restore/ rehabilitate the EPL site once exploration activities are completed.

5 ENVIRONMENTAL AND SOCIAL BASELINE ENVIRONMENT

5.1 INTRODUCTION

This section provides an overview of the existing biophysical environment through the analysis of the baseline data regarding the existing natural and socio-economic environment.

5.2 METHODOLOGY

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

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

5.3 CONSULTATION

Public participation and consultation are a requirement in terms of section 21 of the Environmental Management Act No.7 of 2007and 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.

5.3.1 NEWSPAPER ADVERTISEMENTS

Notices regarding the proposed project and associated activities were circulated in two newspapers namely the 'Namibian' on the 12th and 19th July 2019 and in the 'Informante' on the 13th and 20th June 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 D.

5.3.2 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 C.

5.3.3 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 EPL as illustrated in Appendix E.

5.3.4 CONSULTATION FEEDBACK

No issues or concerns were raised by the I&APs during the consultation period.

5.4 BASELINE OF THE BUILT ENVIRONMENT

EPL 6663 is located in the Namib-Naukluft National Park. The National Park is approximately 50 955km^2 and extends from the Hardap to the Erongo regional boundary in the north (and bordering onto the Dorob National Park). The National Park was officially established in 1979 through the various amalgamations of several areas. National parks cover 17% of the country's surface area and provides a sanctuary for large mammals. This includes black rhino (reintroduced to their former range in 2007 to mark the centenary of the park), Hartmann's mountain zebra, leopard,

cheetah, spotted and brown hyaena, jackal, caracal, and various species of game. Over 200 bird species have been recorded in the Namib-Naukluft Park and is considered as a globally important bird area (Ministry of Environment and Tourism, 2013).

Natural features and tourist attraction of the park include sand dunes, Sesriem Canyon, gravel plains, Welwitschia Plains, wildlife biodiversity, Naukluft Mountains and inselbergs in the north and ephemeral rivers. The national park is split into zones based upon environmental sensitivity and land uses. EPL 6663 site is in Zone 2, *Areas of Medium Sensitivity,* which is a zone permitted for prospecting and mining activities. The National Park Management Plan states that "*all prospecting and mining activities in other areas should be planned, managed and decommissioned using best available practice, taking into account long-term national benefits vis-à-vis benefits from other current and potential land uses, and applying precautionary and polluter pays principles and due caution so as to minimize negative environmental impacts"* (Ministry of Environment and Tourism, 2013).

5.5 SOCIO-ECONOMIC

5.5.1 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 125th on the Human Development Index out of 188 countries (National Planning Commission, 2017).

5.5.2 DEMOGRAPHIC PROFILE

Namibia is one of the least densely populated countries in the world, with a population of 2.3 million people. Life expectancy is 65 years and expected years of schooling is 11.7 (National Planning Commission, 2017). Namibia's population is expected to increase from an estimated 2.11 million in 2011 to 3.44 million by 2041 (63%)(Namibia Statistics Agency, 2011).

5.5.3 HIV/AIDS IN NAMIBIA

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

5.5.4 EMPLOYMENT

Unemployment rates in Namibia particularly, among the youth are exceedingly high. According to the Namibia Labour Survey (2018), the unemployment rate of the country was 33.4% in 2018. 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).

5.5.5 ECONOMIC ACTIVITIES

The Namibian economy has grown on average by 4.6% per year between 2012 and 2016, however, slowed down in 2016 to 0.2% due to a reduction in productivity in the farming industry. The growth rate over the years has not reduced unemployment; in 2016 nearly 18% of the population lived in poverty. A lack of industrialisation and infrastructure has

contributed to Namibia's economic imbalance. The 5th Namibian NDP (National Planning Commission (2017) states that, by modernising and industrialising of the major sectors of agriculture, fisheries, manufacturing, mining and tourism, and by providing trading opportunities so that workers can upgrade their skills. Namibia will create jobs in a diverse range of industries which will improve the economy.

The mining and quarrying sector is the largest income which contributed an overall 11.3 percent to GDP and 64.2 percent to gross primary industry contribution to GDP, this is then followed by the tourism, fishing and manufacturing (National Planning Commission , 2018).

5.6 CLIMATE

The Namib-Naukluft National Park falls below the 100 mm median annual rainfall isohyet and much of it is below the 50 mm isohyet. With high evaporation rates and low rainfall, the park experiences an average water deficit of approximately 2 mm per year. Rain falls mainly from January to March. Temperatures are generally moderate (average minimum and maximum temperatures during the coldest and hottest months respectively reflecting a range of about 7-32°C), fog is frequent (about 125 days per year on the coast dropping to about 40 days per year 80 km inland) and wind is a dominant feature (Ministry of Environment and Tourism, 2013). Prevailing wind is from the west to north east, with an average of 3.2m/s (refer to FIGURE 3).

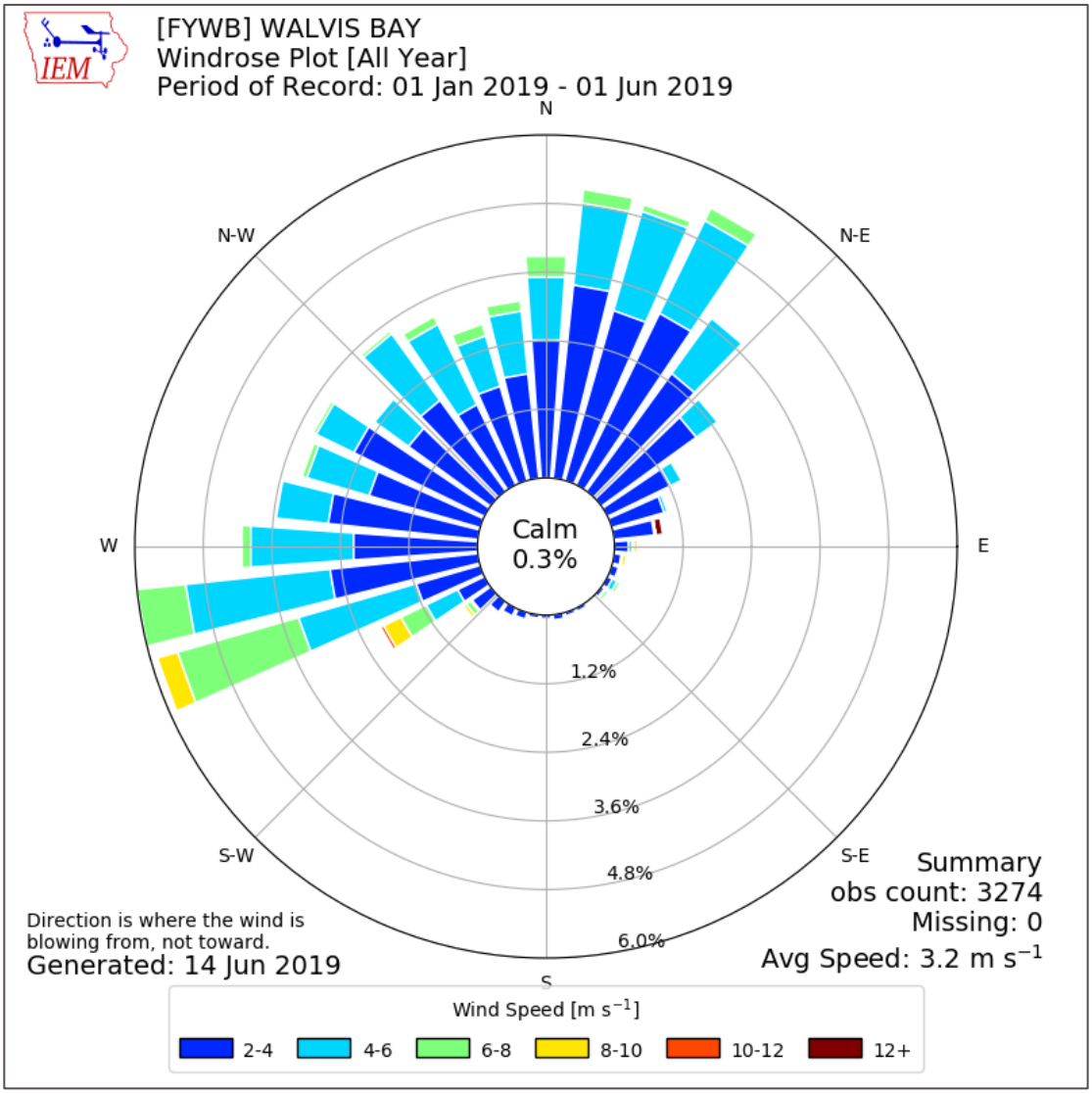

FIGURE 3 - PREVAILING WIND IN WALVIS BAY

5.7 VEGETATION AND WILDLIFE

The area has unique vegetation and wildlife species including reptiles and avifauna, many of which are endemic to the Namib Desert. EPL 6663 lies within the Namib Desert Biome and Central Desert vegetation type, which tends to have grassland occupying the gravel plains. The grass cover is very sparse but nevertheless dominates the little vegetation that grows on the gravel plains. The majority of grasses are annuals including some perennial *Stipagrostis* species and coverage is sparse. The plant diversity of the areas is low (less than 50 species). EPL 6663 has a great diversity of grasses and shrubs, however still sparse, with no visible outcrops for lichen. Additionally, there are *Hypolithic* microbial communities within the EPL 6663 that colonise the quartz rocks at a low sparse density, they provide a productive niche in the desert ecosystem (**Error! Reference source not found.**). Along natural drainage channels within the EPL 6663, camel thorn trees (*Acacia erioloba*) can be found (**Error! Reference source not found.**). The drainage channels provide a unique and important linear oasis for larger mammals within the desert environment. See FIGURES 1 – 13) from EPL 6663 site assessments. A list of plant species is also is presented in Appendix B.

The areas of the EPL has between 141 – 170 bird species, which is of medium diversity in comparison to the rest of Namibia, which has a total of 658 recorded bird species. The diversity of mammals and reptiles in the area is very low and low respectively, compared to the rest of Namibia, with 16 – 30 species of mammals and between 41 and 50 reptiles (Mendelsohn et al., 2003).

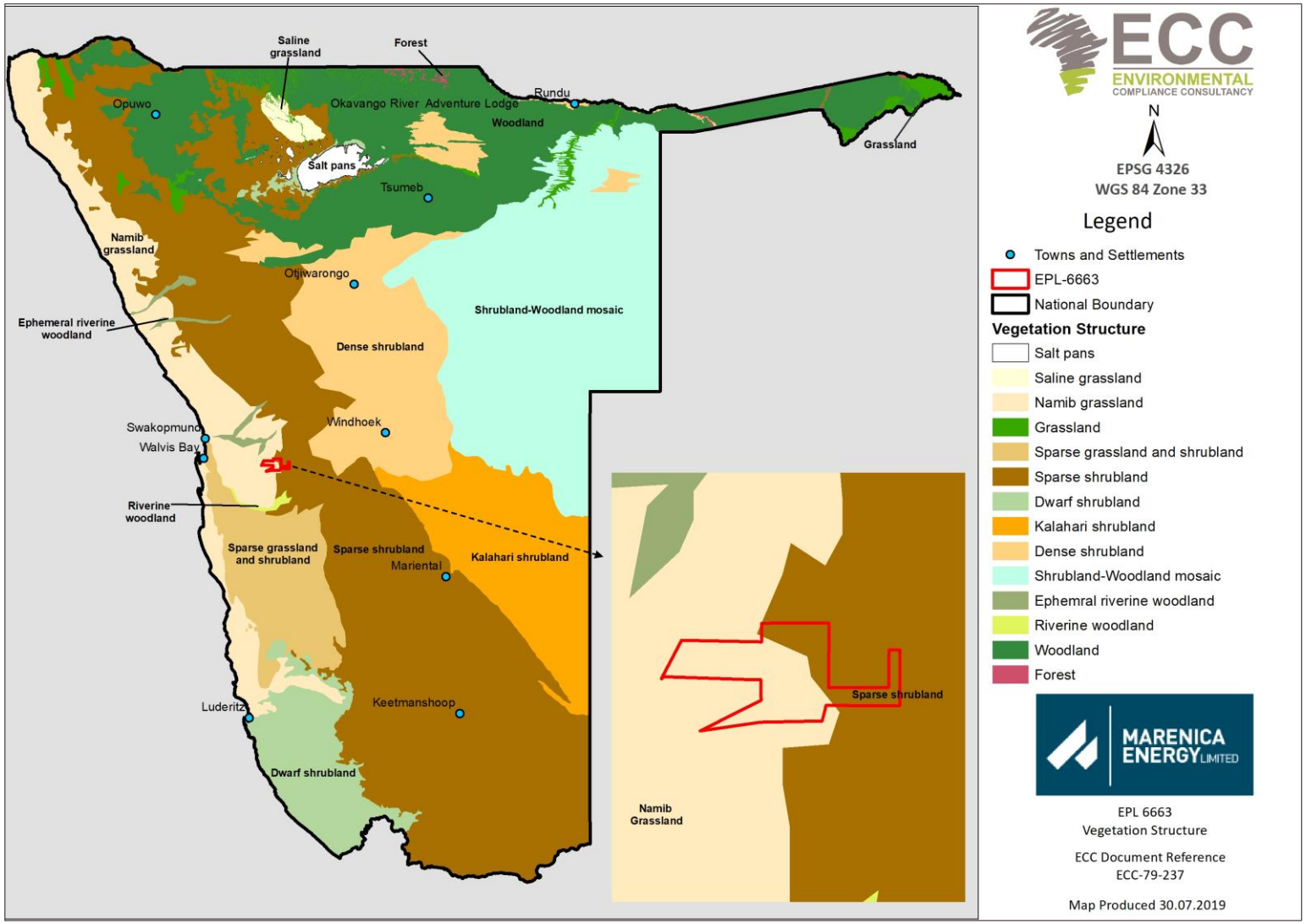

FIGURE 4 - VEGETATION COVER ON THE EPL 6663

5.8 CULTURAL HERITAGE

The Namib Desert has rich archaeological and heritage value and presents valuable information about the occupation of the area dating back 700,000 years. According to the Namibian National Heritage database there are no known national heritage receptors on the EPL, and none were identified during the site visit. In cases where heritage sites are discovered the chance find procedure will be used.

5.9 SOILS AND GEOLOGY

The EPL 6663 stretches over an area that is predominately made up of the both Damara Granite and Khomas Group rock type and Petric Calcisols soils (FIGURE 5 and 6).The characteristics of this dominant soil type are soils with a solid layer at a shallow depth that remains hard even when wet. Soils have accumulations of calcium sulphate, which are restricted to the very dry areas of the central Namib. The soil generally has very low levels of fertility, so only the hardiest of plants will grow in them (Mendelsohn et al., 2003).

The soils of the Namib Desert are formed by various processes, both mechanical and chemical. Soil formation is a slow and weak process on the plains of the Namib, and usually forms a crust that provides a stabilising effect that is very sensitive to any form of disturbance (Soft Chem, 2011). The northern section of the Namib-Naukluft is a very sensitive area with gypsum crusts covering 80% of the area. This makes the area very sensitive for vehicular traffic, and tracks made takes many years to recover even with rehabilitation afterwards (Ministry of Environment and Tourism, Ministry of Mines and Energy, 2018).

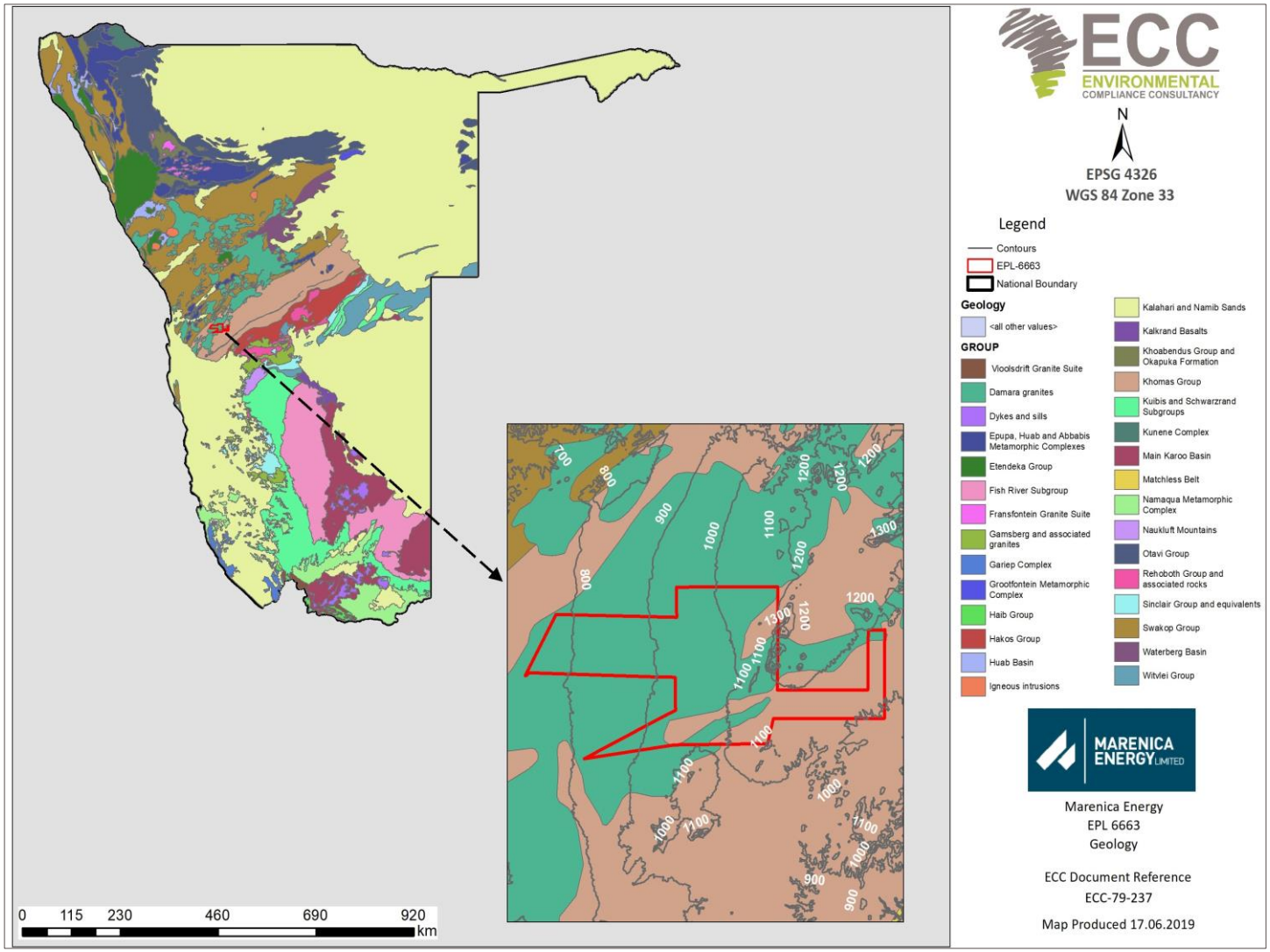

FIGURE 5 – GEOLOGY MAP OF EPL 6663

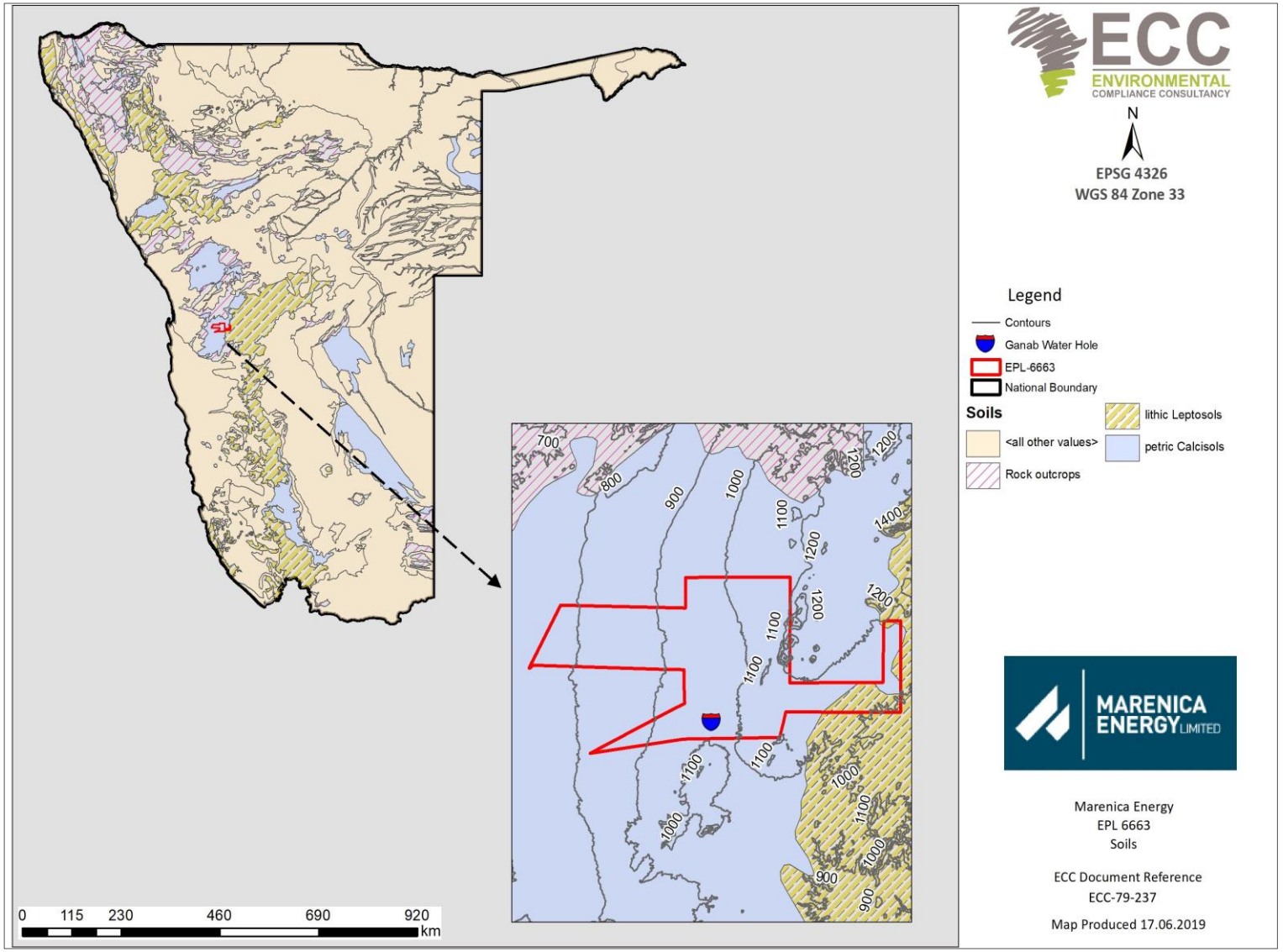

FIGURE 6 – SOIL MAP OF EPL 6663

5.10 HYDROLOGY - GROUNDWATER AND SURFACE WATER

In Namibia, water resources management is carried out at basin level. Hence there are 11 water basins in the country, of which the EPL area is part of the Kuiseb River Basin. The EPL site is mainly composed of dry open plains with various surface water features across the sites that are likely to be flowing during periods of high rainfall.

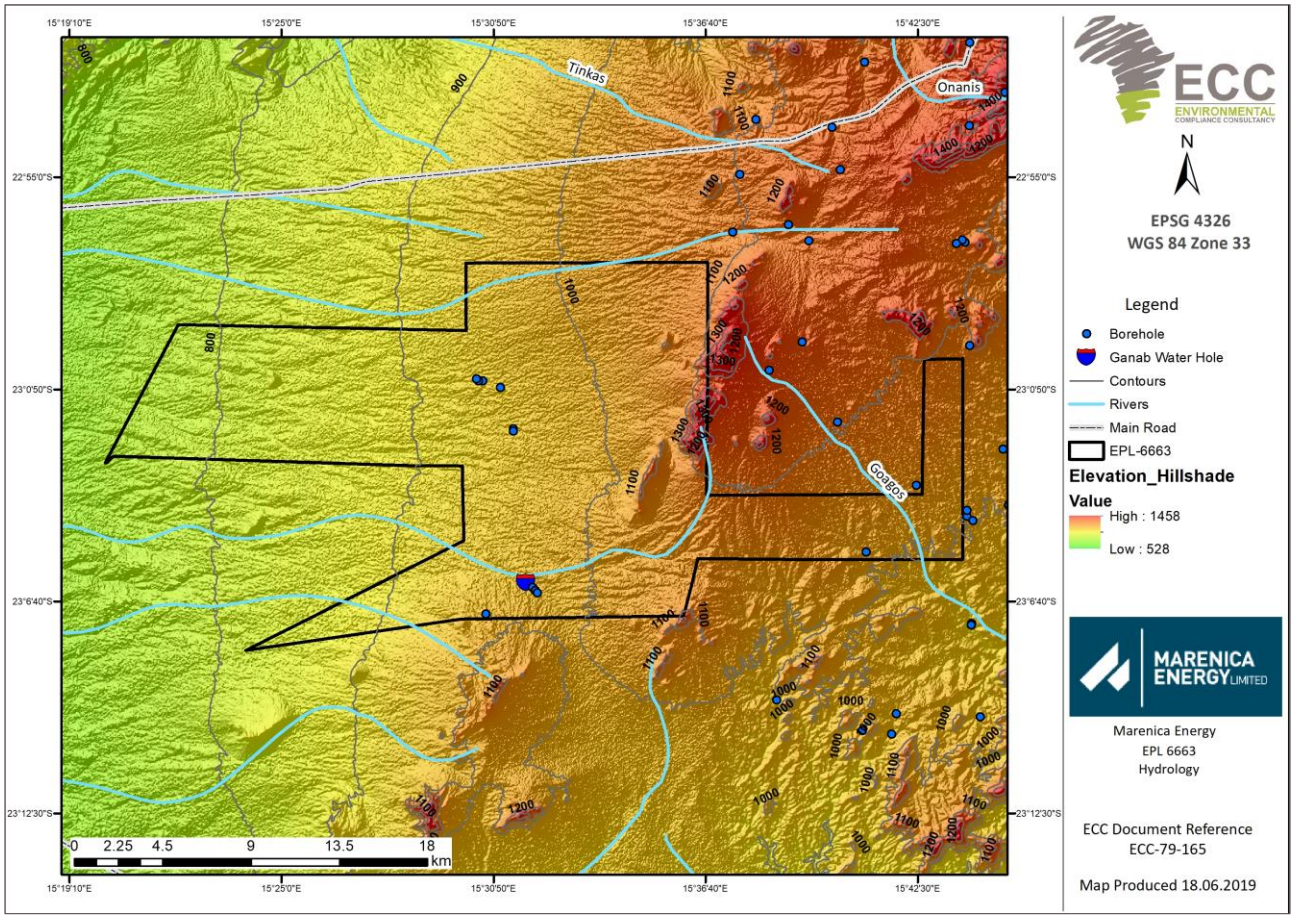

FIGURE 7 – HYDROLOGY OF THE EPL 6663

5.11 LAND USE AND INFRASTRUCTURE

The EPL 6663 is in the Namib-Naukluft National Park which is used primarily for tourism. The EPL site does not have any tourism facilities, neither is it used for tourism activities. Historical land use activities were not observed during the site visits. Previous exploration or mining activities have taken place on EPL 6663; however, they are less obvious because the area has mostly regenerated naturally.

6 PREDICTION AND EVALUATION OF IMPACTS METHODOLOGY

6.1 INTRODUCTION

This section provides an overview of the scoping assessment process detailing each of the steps completed, currently being undertaken and those proposed to be carried out at some future date. Prediction and evaluation of impacts is a key step in the scoping assessment and EIA process. This chapter outlines the method followed to predict and evaluate the impacts arising from the proposed project. The findings of the assessment are presented in Chapter 7.

6.2 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 Marenica Energy 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.

6.3 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 was 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 presented in TABLE 4 and TABLE 5.

- The **sensitivity and value of a receptor** are 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** are determined through consideration of the frequency, duration, reversibility and probability and 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 4- SENSITIVITY AND VALUE OF RECEPTOR

SENSITIVITY AND VALUE	DESCRIPTION
High	Of value, importance or rarity on an international and national scale, and with very limited potential for substitution; and/or very sensitive to change or has little capacity to accommodate a change.

Medium	Of value, importance or rarity on a regional scale, and with limited potential for substitution; and/or moderate sensitivity to change, or moderate capacity to accommodate a change.
Low	Of value, importance or rarity on a local scale; and/or not particularly sensitive to change or has considerable capacity to accommodate a change.

TABLE 5- NATURE OF IMPACT

NATURE	DESCRIPTION
Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.
Direct	Impacts causing an impact through direct interaction between a planned project activity and the receiving environment/receptors.
Indirect	Impacts that result from other activities that are encouraged to happen as a result / consequence of the Project. Associated with the project and may occur at a later time or wider area
Extent / Geographic Scale	
On-site	Impacts that are limited to the boundaries of the proposed project site
Local	Impacts that occur in the local area of influence, including around the proposed site and within the wider community
Regional	Impacts that affect a receptor that is regionally important by virtue of scale, designation, quality or rarity.
National	Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.
International	Impacts that affect a receptor that is internationally important by virtue of scale, designation, quality or rarity.
Duration	
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
Reversibility	
Permanent /Irreversible	Impacts which are not reversible and are permanent
Temporary / Reversible	Impacts are reversible and recoverable in the future
Likelihood	
Certain	The impact is likely to occur
Likely	The impact is likely to occur under most circumstances

Unlikely	The impact is unlikely to occur

TABLE 6 - MAGNITUDE OF CHANGE

MAGNITUDE OF CHANGE	DESCRIPTION
Major	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.
Moderate	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.
Minor	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.
Negligible	Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or Very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element.

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

TABLE 7– LEVEL OF CERTAINTY

LEVEL OF CERTAINTY	DESCRIPTION
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, and – 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, and – 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 8. 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 9.

TABLE 8 - GUIDE TO SIGNIFICANCE RATINGS

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

Sensitivity

Significance is not defined in the Namibian EIA Regulations, however the Draft Procedure and Guidance for EIA and EMP states that the significance of a predicted impact depends upon its context and intensity. Accordingly, definitions for each level of significance has been provided in Table 9. These definitions were used to check the conclusions of the assessment of receptor sensitivity, nature of impact and magnitude of impact was appropriate.

TABLE 9– 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 acceptable limits and standards. Impacts are long-term, but reversible and/or have regional significance. These are generally (but not exclusively) associated with sites and features of national importance and resources/features that are unique and which, if lost, cannot be replaced or relocated.
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 9 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. It most instances, moderate and major adverse impacts are considered as significant, and however, there may be some instances where impacts are lower than this but are considered to be significant. The following thresholds were therefore used to double check the assessment of significance had been applied appropriately; a significant impact would meet at least one of the following criteria:

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

7 ASSESSMENT FINDINGS AND MITIGATION MEASURES

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 were identified. The following topics were considered during the scoping phase:

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

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

TABLE 10- LIMITATIONS AND ASSUMPTIONS OF THE ASSESSEMENT

LIMITATION / UNCERTAINTY	ASSUMPTION
The program of exploration works is not confirmed	It is assumed that exploration work shall take up to seven years and involve drilling; aerial or remote sensing; geophysical surveys; and mineral sampling. Pitting and trenching are unlikely.
Number of employees and area they will come from	It is assumed that most of the workers will come from Swakopmund
Number of boreholes to be created or water source is unconfirmed and needs to be able to supply at least $5m^3$/ hour	Water will be acquired from existing sources on site. If this is not possible, water will be brought on site by a truck or a borehole will be drilled
Access route and creation of new tracks	No new tracks or access roads shall be created, public roads to be used to access the EPL

TABLE 11 – SUMMARY OF THE POTENTIAL IMPACT

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	Exploration drilling can contaminate ground water through potential spillages of drill fluid, lubrication etc.	- Drilling could penetrate the groundwater table, and - Drill fluid could enter the aquifer causing pollution.	Direct Local Medium-Term Temporary/reversible Likely	Medium	Moderate	Moderate (6)	- Ensure drill pads and spill kits are in place - Consider alternative sites when the water table is too high - Drill system should be dug to direct any accidental spills into sumps, and - Extraction volumes of water shall be minimal during exploration and where possible, water from existing water sources shall be used.	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)	**Safe delivery and handling:** - Training employees and toolbox talks - Good housekeeping across the site - Spill kits to be placed at designated areas across the site, - Absorption material should be available and at hand. Where saw dust is used, it should be cleaned up immediately and not left for long periods as this poses a fire hazard	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
							- Any major spill is reported to the project manager and Ministry of Mines and Energy - Equipment to be well maintained and serviced regularly - The use of hydrocarbons under 200 litres can be used for mobile refuelling or servicing **Storage:** All tanks to be stored on a non-porous floor and bunded area - Bund need to be capable of storing at least 110% of the volume of the tank - All containers should to be suitable for use and not damaged - Tanks should be locked at all times **Refuelling:** - Drip tray to be used during refueling of vehicles and must be on permeable flat surface where possible, and - Funnel should be available and used to avoid spillage during decanting.	

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
Soil	- Drilling and the use of equipment can cause reduction in soil quality)	- Drilling can cause reduction in soil quality (through soil contamination), and - Soil erosion can be caused through vegetation clearance and possible creation of tracks.	Direct On-site Short-term Reversible Likely	Medium	Moderate	Moderate (6)	- Topsoil should be separately stockpiled to be re-spread when backfilling - Equipment must be in good condition to ensure that the oil spills do not contaminate the site, and - During drilling oil absorbent matting should be placed under and around the rig.	Low (2)
Terrestrial Ecology and biodiversity	- Exploration activities in sensitive environments - Vegetation clearing - Hauling equipment, and - Vehicle movements	- Possible injury or death of animals - Poaching - Habitat fragmentation from clearing, pitting and trenching, and - Habitat loss from excessive Clearing.	Direct Local Short-term Temporary/reversible Certain	Medium	Low	Minor (2)	- Use existing tracks where possible - Route new tracks around established and protected trees, and clumps of vegetation - Identify rare, endangered, threatened and protected species and demarcate them and avoid cutting them down - All workers on-site are to be notified to avoid any excluded areas or species	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
							- Progressive rehabilitation during the exploration phase should be applied - Natural drainage patterns should be restored and, - Relocation of protected plant species if disturbance cannot be avoided.	
Community	- Dust creation due to drilling activities	- Impacts of public health and visibility, and - Impact on fauna and flora	Direct Local Temporary Reversible Likely	Low	Minor	Minor (3)	- Avoid off-road driving - Apply dust suppression methods- water sprinkling - Communication with farmers/landowners/neighbor, and - Drill rig selection/drill method will be selected depending on proximity to sensitive receptor.	Low (2)
Community and environment	- Noise generation through the use of airborne equipment (remote sensing drone, helicopter)	- Disruption to MET-Ganab office, tourists and nearby farmers - Disturbance of local wildlife - Increased noise levels to sensitive receptors	Direct Local Temporary Reversible Likely	Low	Negligible	Low (2)	– No flying is to be conducted (aerial surveys) between dusk and dawn, on Sundays and on public holidays – When operating a drone, a minimum distance of 50m must be maintained for uninvolved persons and other objects such as vehicles, buildings etc.	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
							– Correspond with wildlife authorities to determine the best time to conduct aerial surveys, and – When possible avoid flying directly over human settlements.	
Neighbours / Tourists	- Visual impact from drill rigs, equipment on and laydown area on site	- Eyesore due to poor housekeeping - Chang in landscape - Obscuring views	Direct Local Short-term Reversible Certain	Low	Minor	Minor (3)	– Make provision for visual barriers at exploration site, and – Maintain good housekeeping on site.	Minor (3)
Topography and landscape	- Creation of new tracks and roads	- Environmental disturbance - Loss of flora and fauna - Disturbance of migratory animals in the area	Direct Local Short-term Reversible Likely	Medium	Moderate	Moderate (6)	- Make use of existing tracks if available - When developing a new track off an existing roadway ensure the junction is discreet but is also safe - Monitor the condition of the track before, during, and after use - Do not needlessly remove vegetation from either side of the roadway, and - Rehabilitate tracks after use.	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
Heritage	- Drilling can destroy heritage remains - Direct and indirect impacts to cultural resources	- Impact on viewshed/landscape surrounding heritage features	Direct On site Long-term Irreversible Unlikely	High	Major	Major (9)	If discovery of unearthed archaeological remains is to be uncovered, the following measures (chance find procedure) shall be applied: – Works to cease, area to be demarcated with appropriate tape by the site supervisor, and the Site Manger to be informed – Site Manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary – 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 – 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) – Inform the police if the remains are human, and – Obtain appropriate clearance or approval from the competent	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
							authority, if required, and recover and remove the remains to the National Museum or National Forensic Laboratory as appropriate.	
Social Economic	- Job creation due to exploration activities	– Employment creation and skills development – Opportunities during the exploration phase (Approx. 10-20 jobs)	Direct Regional Long-term Reversible Certain	Medium	Minor	Minor (4)	– Maximise local employment and local business opportunities to promote and improve the local economy – 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 – Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	Low major beneficial
Community Environment	– Generation of waste due to exploration activities	– Nuisances (odours and visual), and – Litter (nuisance and ecological risk)	Direct On-site Short-term Reversible Likely	Moderate	Low	Minor (3)	– Training and toolbox talk to workers shall be provided – Ensure good housekeeping across site – Implement the waste management hierarchy across the site: avoid, reuse, and recycle – Waste shall be collected and shall be removed on a regular basis to avoid bad odours	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
							– It is unlikely that hazardous material and wastes will be produced, however in the event that they are, 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 – Hazardous and non-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 exploration 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
- Compliance to the Namib-Naukluft National Park Management Plan
- 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, all social and environmental receptors were scoped out as not requiring further assessment as it was unlikely that there would be significant effects. Various best practice and mitigation measures have been identified to avoid and reduce effects as far as reasonably practicable, as well as 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.

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APPENDIX A: ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX B: LIST OF PLANT SPECIES

SPECIES	PLANT DESCRIPTION	LOCATION
Acacia Erubescens Welw. Ex Oliv.	Tree 2 m high. Hooked thorns.	Karibib District
Acacia Tortilis (Forssk.) Hayne Subsp. Heteracantha (Burch.) Brenan	Tree 3-4 m high. Long, straight thorns.	Karibib District
Adenolobus Pechuelii (Kuntze) Torre & Hillc. Subsp. Pechuelii	Low, semi-spreading shrublets, up to 50 cm high. Flowers yellow. Median lobe spotted orange and turning orange. Fruits red.	Karibib District
Aizoanthemum Dinteri (Schinz) Friedrich	Succulent/herb up to 40 cm high. Flowers medium sized, yellow.	Karibib District
Aloe Dichotoma Masson Var. Dichotoma	Plant up to 5 m high. Inflorescence pale yellow.	Karibib District
Aloidendron Dichotomum (Masson) Klopper & Gideon F.Sm.	Trees, gathering in a group of 5, up to 5 m high. Flowers are a bright yellow colour.	Karibib District
Aptosimum Lineare Marloth & Engl. Var. Lineare		Karibib District
Barleria Merxmuelleri P.G.Mey.		Karibib District
Boscia Albitrunca (Burch.) Gilg & Gilg-Ben.		Karibib District
Caesalpinia Rubra (Engl.) Brenan		Karibib District
Cardiospermum Pechuelii Kuntze		Karibib District
Cenchrus Ciliaris L.	Perennial graminoid, up to 1 m high.	Karibib District
Centropodia Mossamedensis (Rendle) Cope	Graminoid.	Karibib District
Cleome Elegantissima Briq.	Annual herb, up to 50 cm high. Flowers big, violet. Capsule long.	Karibib District
Cleome Gynandra L.		Karibib District
Commicarpus Squarrosus (Heimerl) Standl.	Biennial Dwarf Shrub, 0.50-60 M High. Flowers Purple, 5 Mm in Diameter. Bark Greyish. Stem Ascending. Seeds Sticky.	Karibib District
Commicarpus Squarrosus (Heimerl) Standl. Var. Squarrosus	Shrub 0.60 m high.	Karibib District
Commiphora Virgata Engl.	Shrub 2 m high. Bark papery. Fruits pea-size, red when ripe.	Karibib District
Corallocarpus Dissectus Cogn.	Creeper. Leaves Sparse and Scabrous, Dissected. Fruits Clustered (Ca. 4), Globose to Spindle-Shaped.	Karibib District
Crinum Buphanoides Welw. Ex Baker	Leaves Distichous, On Fruiting Plants More or Less Whorled. Infrutescence Sideways. Capsules Up To 5 Cm Long Stemmed, Irregular Round with Up To 6 Cm Long, Green, Thickened Flower Tube.	Karibib District
Crinum Giesii Lehmiller		Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Crotalaria Argyraea Welw. Ex Baker	Erect perennial herb. Flowers yellow.	Karibib District
Crotalaria Heidmannii Schinz	Narrow-leaved.	Karibib District
Crotalaria Podocarpa Dc.		Karibib District
Croton Gratissimus Burch. Var. Gratissimus	Tree 2 m high.	Karibib District
Cuscuta Planiflora Ten. Var. Madagascarensis (Yunck.) Verdc.		Karibib District
Cyamopsis Senegalensis Guill. & Perr.	Annual, erect herb, up to 20 cm high. Flowers bright purple-pink.	Karibib District
Cyperus Schinzii Boeck.	Annual. Flowers brown.	Karibib District
Dipcadi Bakerianum Bolus	Geophyte. Bulb spherical, very small in comparison to whole plat, 2.5 cm in diameter. Outer shell membranes, light brown. Leaves bag-shaped. Inflorescence shorter than leaves. Flowers yellowish.	Karibib District
Dombeya Rotundifolia (Hochst.) Planch. Var. Rotundifolia		Karibib District
Enneapogon Desvauxii P.Beauv.	Annual grass, up to 20 cm high.	Karibib District
Eragrostis Annulata Rendle Ex Scott-Elliot	Grass. Annual tufts, spikelets often purplish.	Karibib District
Eragrostis Homomalla Nees	Annual, erect grass.	Karibib District
Eragrostis Macrochlamys Pilg. Var. Macrochlamys	Grass.	Karibib District
Eragrostis Nindensis Ficalho & Hiern	Grass up to 7 cm high, coloured red. Fully grown tufts up to 50 cm tall, fresh green.	Karibib District
Eriospermum Bakerianum Schinz Subsp. Tortuosum (Dammer) P.L.Perry	Geophyte. Bulb Spherical, White When Cut. Perianth White with Green Centre Stripe.	Karibib District
Eriospermum Roseum Schinz	Geophyte. The Corms Are Yellow in Cross Section. Leaf Is Roundish to Kidney-Shaped, Heart-Shaped at First. Inflorescence Is Up To 12 Cm High. Flowers Are Light Violet in Colour With Violet Stripes Down The Middle.	Karibib District
Euphorbia Damarana L.C.Leach	Succulent-Like Shrub 2 M High. Broom-Like in Appearance Without Leaves. Fruits Attached At Top Of The Branches, Fruit Pendant.	Karibib District
Euphorbia Glanduligera Pax		Karibib District
Faidherbia Albida (Delile) A.Chev.	Tree, 2-3 m high. Catkin with yellow flowers.	Karibib District
Felicia Anthemidodes (Hiern) Mendonça		Karibib District
Ficus Cordata Thunb. Subsp. Cordata	Shrub 4 m high.	Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Ficus Ilicina (Sond.) Miq.	Tree 1 - 2.5 m high. Dark green leaves. Stem with milky latex.	Karibib District
Gazania Jurineifolia Dc. Subsp. Scabra (Dc.) Roessler	Compositae.	Karibib District
Geigeria Rigida O.Hoffm.	Grey-green spherical shrub up to 25 cm high and 40 cm diameter, rigid. Leaves spiny. Flowers small,yellow.	Karibib District
Gisekia Pharnacioides L. Var. Pharnacioides		Karibib District
Grielum Sinuatum Licht. Ex Burch.		Karibib District
Heliotropium Ciliatum Kaplan		Karibib District
Hermbstaedtia Argenteiformis Schinz	Annual, stiffly branched. Plant up to 60 cm high. Spikes up to 10 cm long, lilac - red.	Karibib District
Hermbstaedtia Odorata (Burch.) T.Cooke Var. Odorata		Karibib District
Hirpicium Gazanioides (Harv.) Roessler	Compositae.	Karibib District
Hoodia Gordonii (Masson) Sweet Ex Decne.		Karibib District
Indigofera Auricoma E.Mey.	Prostrate herb. Standard pink with dark pink blotch and striations. Filament tube yellow-green.	Karibib District
Indigofera Heterotricha Dc. Subsp. Pechuelii (Kuntze) Schrire		Karibib District
Indigofera Pechuelii Kuntze	Erect, dwarf shrub, up to 1 m high. Bark grey-brownish. Leaves grey-green. Flowers in long, stiff racemes, red. Peduncles woody.	Karibib District
Indigofera Rautanenii Baker F.	Shrub. Flowers purple.	Karibib District
Indigofera Sp. Engl.	Much branched herb, 20 cm high. Leaves compound, leaflets very small. Inflorescence a dense spike of tiny, reddish flowers, mature.	Karibib District
Ledebouria Undulata (Jacq.) Jessop	Leaves upright, up to 8-leaves, up to 6 mm broad. Peducle longer than leaves.	Karibib District
Leobordea Platycarpa (Viv.) B.-E. Van Wyk & Boatwr. [2]		Karibib District
Limosella Grandiflora Benth.	Hydrophyte.	Karibib District
Lotononis Platycarpa (Viv.) Pic.Serm.	Annual prostrate herb, 0.05 m high. Long petioles with yellow flowers, dried up without setting seed.	Karibib District
Lycium Bosciifolium Schinz		Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Marsilea Aegyptiaca Willd.	Perennial aquatic fern, 0.15 m high.	Karibib District
Melhania Damarana Harv.	Shrub 0.60 m high.	Karibib District
Momordica Humilis (Cogn.) C.Jeffrey	Creeper.	Karibib District
Monandrus Squarrosus (L.) Vorster S	Plant upp to 0.13 m high. Spikelets red brown, green keeled.	Karibib District
Monechma Cleomoides (S.Moore) C.B.Clarke		Karibib District
Monechma Genistifolium (Engl.) C.B.Clarke Subsp. Australe (P.G.Mey.) Munday	Shrub. Flowers purple.	Karibib District
Monechma Genistifolium (Engl.) C.B.Clarke Subsp. Genistifolium		Karibib District
Myrothamnus Flabellifolius Welw.		Karibib District
Nelsia Quadrangula (Engl.) Schinz		Karibib District
Nerine Laticoma (Ker Gawl.) T.Durand & Schinz	Leaves up to 15 cm wide, erect and appressed to the ground. Inflorescence up to 12 cm high. Tepals are pink with a narrow violet-red keel.	Karibib District
Oncocalyx Welwitschii (Engl.) Polhill & Wiens	Flowers deep yellow-orange.	Karibib District
Ophioglossum Polyphyllum A.Braun	Single-leaved. Leaf-blade 6 cm long (with stalk), anthers 2.5 cm long, yellowish.	Karibib District
Ornithogalum Stapffii Schinz	Up to 8 upright leaves, up to 5 mm broad. Flowers upright, white.	Karibib District
Osteospermum Sp.	Compositae.	Karibib District
Pavonia Rehmannii Szyszyl.		Karibib District
Pergularia Daemia (Forssk.) Chiov. Var. Daemia		Karibib District
Pergularia Daemia (Forssk.) Chiov. Var. Leiocarpa (K.Schum.) H.Huber		Karibib District
Petalidium Pilosi-Bracteolatum Merxm. & Hainz	Shrub 0.30 m high.	Karibib District
Petalidium Setosum C.B.Clarke Ex Schinz		Karibib District
Petalidium Variabile (Engl.) C.B.Clarke Var. Spectabile Mildbr.		Karibib District
Phyllanthus Sp.		Karibib District
Ptycholobium Biflorum (E.Mey.) Brummitt Subsp. Angolensis (Baker) Brummitt		Karibib District
Ptycholobium Sp.		Karibib District
Pupalia Lappacea (L.) A.Juss. Var. Lappacea		Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Rhus Marlothii Engl.	Tall, thick shrub.	Karibib District
Sericocoma Heterochiton Lopr.	Small shrub. Flower spikes silvery grey.	Karibib District
Sesamum Rigidum Peyr. Subsp. Merenskyanum Ihlenf. & Seidenst.		Karibib District
Sesamum Sp.		Karibib District
Sesbania Pachycarpa Dc. Subsp. Dinterana J.B.Gillett		Karibib District
Sesuvium Sesuvioides (Fenzl) Verdc. Var. Angustifolium (Schinz) Gonç.		Karibib District
Solanum Rigescentoides Hutch.	Shrub, 0.5 m high.	Karibib District
Sporobolus Consimilis Fresen.	Grass.	Karibib District
Sporobolus Nervosus Hochst.	Perennial, circle-forming grass, up to 25 cm high.	Karibib District
Steganotaenia Araliacea Hochst. Var. Araliacea		Karibib District
Stipagrostis Hirtigluma (Steud. Ex Trin. & Rupr.) De Winter Subsp. Pearsonii (Henrard) De Winter	Grass.	Karibib District
Stipagrostis Hochstetteriana (Beck Ex Hack.) De Winter Var. Hochstetteriana	Erect perennial grass up to 30 cm high.	Karibib District
Stipagrostis Obtusa (Delile) Nees	Grass.	Karibib District
Striga Gesnerioides (Willd.) Vatke	Unfortunately turned black, normally pale, almost white. The same plants flowering white and purple. Strong, hard tuber.	Karibib District
Tephrosia Dregeana E.Mey. Var. Capillipes (Welw. Ex Baker) Torre		Karibib District
Tephrosia Oxygona Welw. Ex Baker Subsp. Lactea (Schinz) A.Schreib.		Karibib District
Tinnea Rhodesiana S.Moore		Karibib District
Tribulocarpus Dimorphanthus (Pax) S.Moore		Karibib District
Tricholaena Monachne (Trin.) Stapf & C.E.Hubb.	Grass.	Karibib District
Tripteris Microcarpa Harv. Subsp. Microcarpa		Karibib District
Triraphis Purpurea Hack.	Grass.	Karibib District
Ursinia Nana Dc. Subsp. Leptophylla Prassler		Karibib District
Vernonia Obionifolia O.Hoffm. Subsp. Obionifolia	Perennial.	Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Zygophyllum Cylindrifolium Schinz	Dwarf shrub, up to 25 cm high, upright. Flowers small, white.	Karibib District

SPECIES	PLANT DESCRIPTION	LOCATION
Anthephora pubescens Nees	Grass.	Erongo
Centropodia glauca (Nees) Cope	Grass.	Erongo
Cleome foliosa Hook.f. var. foliosa		Erongo
Dipcadi viride (L.) Moench	Geophyte 25 cm high. Leaves 2-3, linear. Perianth brown, outer perianth-segments forming long caudate-terete appendages.	Erongo
Eragrostis annulata Rendle ex Scott-Elliot	Grass.	Erongo
Eragrostis nindensis Ficalho & Hiern	Grass.	Erongo
Eriospermum bakerianum Schinz subsp. tortuosum (Dammer) P.L.Perry	Geophytes 8-10 cm high, with an underground tuber. Only single leaf. Flowers are white with a purple stripe in the middle of each perianth segment.	Erongo
Gazania jurineifolia DC. subsp. scabra (DC.) Roessler	Flowers white.	Erongo
Heliotropium tubulosum E.Mey. ex DC.		Erongo
Jamesbrittenia barbata Hilliard		Erongo
Jamesbrittenia hereroensis (Engl.) Hilliard		Erongo
Jamesbrittenia maxii (Hiern) Hilliard	Biennial, woody suffrutex dwarfshrub, 20 cm high. Stem ascending. Flowers white with purple markings, ca 8 mm in diameter.	Erongo
Kissenia capensis Endl.		Erongo
Montinia caryophyllacea Thunb.		Erongo
Ornithogalum stapffii Schinz		Erongo
Parkinsonia africana Sond.	Many stemmed shrubs, 3 m high. Flowers yellow.	Erongo
Psilocaulon salicornioides (Pax) Schwantes		Erongo
Rhus marlothii Engl.		Erongo
Ruppia maritima L.	Low rhizomatous herb.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Sarcocaulon salmoniflorum Moffett	Dwarf shrub. Flowers yellow-orange.	Erongo
Stipagrostis ciliata (Desf.) De Winter var. capensis (Trin. & Rupr.) De Winter	Perennial grass.	Erongo
Stipagrostis hirtigluma (Steud. ex Trin. & Rupr.) De Winter subsp. pearsonii (Henrard) De Winter	Grass.	Erongo
Stipagrostis obtusa (Delile) Nees	Annual grass.	Erongo
Triraphis purpurea Hack.	Grass.	Erongo

SPECIES	PLANTDESC	MAJORAREA
Adenolobus garipensis (E.Mey.) Torre & Hillc.		Erongo
Adenolobus pechuelii (Kuntze) Torre & Hillc. subsp. pechuelii		Erongo
Aizoanthemum rehmannii (Schinz) H.E.K.Hartmann	Annual herb. Flowers large yellow, up to 2 cm in diameter when open. Leaves fleshy.	Erongo
Aristida parvula (Nees) De Winter	Annual grass.	Erongo
Caesalpinia rubra (Engl.) Brenan		Erongo
Commicarpus squarrosus (Heimerl) Standl. var. squarrosus	Perennial dwarf shrub, 0.25 m high. Flower bright purple. Leaves slightly succulent.	Erongo
Commiphora saxicola Engl.	Small tree 3 m high. Leaves clustered, leaflets opposite small round (1 centi-metre) serrated with Terminal leaflet.	Erongo
Corallocarpus dissectus Cogn.		Erongo
Cordia sp. C	Tree 2.5 m high. Fruit with sharp point, 10 mm long, still green.	Erongo
Cucumis meeusei C.Jeffrey		Erongo
Foveolina schinziana (Thell.) Källersjö	Annual herb, 15 cm high. Flowers cream-coloured, strongly aromatic.	Erongo
Hermannia sp.		Erongo
Hibiscus elliottiae Harv.		Erongo
Hoodia currorii (Hook.) Decne. subsp. currorii	Flesh to light brown coloured leaves.	Erongo

SPECIES	PLANTDESC	MAJORAREA
Hoodia pedicellata (Schinz) Plowes	Succulent with dark maroon flowers.	Erongo
Leobordea bracteosa (B.- E. van Wyk) B-E. Van Wyk & Boatwr.		Erongo
Leobordea platycarpa (Viv.) B.-E. van Wyk & Boatwr. [2]		Erongo
Nolletia gariepina (DC.) Mattf.	Perennial dwarf shrub. Flowers yellow, no ray florets.	Erongo
Otoptera burchellii DC.		Erongo
Pavonia rehmannii Szyszyl.		Erongo
Petalidium setosum C.B.Clarke ex Schinz	Less yellow on petal than normal.	Erongo
Ruellia marlothii Engl.	Flowers coral, 4 petals, 5 anthers extending beyond petals. Leaves slightly pubescent, in pairs, pale green above and below.	Erongo
Seddera schizantha Hallier f.		
Sesamum marlothii Engl.	Flowers white and pink.	Erongo
Sesamum triphyllum Welw. ex Asch. var. grandiflorum (Schinz) Merxm.	Herb. Flowers pale violet with a deep violet throat.	Erongo
Stipagrostis ciliata (Desf.) De Winter var. capensis (Trin. & Rupr.) De Winter	Grass up to 0.7 m high.	Erongo
Stipagrostis obtusa (Delile) Nees	Grass.	Erongo
Stipagrostis uniplumis (Licht.) De Winter var. intermedia (Schweick.) De Winter	Annual grass.	Erongo
Triraphis pumilio R.Br.	Annual grass.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Abutilon pycnodon Hochr.		Erongo
Acacia reficiens Wawra subsp. reficiens	Tree 2 m high. Flowers yellow and cream - white.	Erongo
Asparagus pearsonii Kies	Climber. Climbing unsupported to 1.5 m and rest of plant supported on dead shrub.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Barleria merxmuelleri P.G.Mey.	Shrub 0.30 m high. Flowers mauve-blue,spines.	Erongo
Camptoloma rotundifolium Benth.	Herb 1.4 m high. Flowers mauve striped.	Erongo
Capparis hereroensis Schinz	Fruiting, low shrub 40 cm high. Growth forming small dune 9 m X 5 m.	Erongo
Chascanum garipense E.Mey.	Herb 50 cm high. Flowers white.	Erongo
Cleome suffruticosa Schinz	Annual herb, up to 40 cm high. Flowers yolk yellow. Ovaries light violet.	Erongo
Commelina benghalensis L.		Erongo
Commicarpus squarrosus (Heimerl) Standl. var. squarrosus	Herb. Flowers violet.	Erongo
Commiphora pyracanthoides Engl.	Small shrub 50 cm high.	Erongo
Commiphora saxicola Engl.	Tree 2 m high.	Erongo
Corallocarpus dissectus Cogn.	Perennial shrub. Growing in out of woody 10 cm high stem. Lower branches with white bark.	Erongo
Cordia sinensis Lam.	Small tree up to 7 m high. Leaves opposite, elliptical, 2.5 cm long and sand papery.	Erongo
Crinum minimum Milne-Redh.		Erongo
Cryptolepis decidua (Planch. ex Hook.f. & Benth.) N.E.Br.	Shrub 1 m high.	Erongo
Cyperus sp.	Sedge 0.10 m high.	Erongo
Dipcadi bakerianum Bolus	Geophyte. Bulb up to 2 cm diameter, spherical. Leaves bag formed, curving away laterally. Inflorescence up to 30 cm long. Flowers yellow, turning to brown. Capsule rounded on both sides.	Erongo
Dyerophytum africanum (Lam.) Kuntze	Shrub 60 cm high.	Erongo
Ebracteola montis-moltkei (Dinter) Dinter & Schwantes	Shrub, height less than 1 m. Annual cycle seeds and flowers. Mainly flowers in April and May. Only capsules left behind in August.	Erongo
Foveolina schinziana (Thell.) Källersjö		Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Helichrysum micropoides DC.	Annual herb, 2-5cm high. Inflorescence smaller than 1mm. Flower yellow. Leaves very hairy, 2-3mm in length.	Erongo
Hermannia affinis K.Schum.	Shrub 20 cm high.	Erongo
Jamesbrittenia barbata Hilliard		Erongo
Jamesbrittenia maxii (Hiern) Hilliard	Subshrub 40 cm high. Flowers white.	Erongo
Kissenia capensis Endl.	Subshrub 0.45 m high.	Erongo
Ledebouria undulata (Jacq.) Jessop		Erongo
Monechma cleomoides (S.Moore) C.B.Clarke	Shrub 0.40 m high with silver hairs and a lot of glands. Petiole middling. Flowers blue. Fruit capsules M-shaped. Leaves have marginal teeth and recurved tips.	Erongo
Montinia caryophyllacea Thunb.	Shrub 1.8 m high. Fruits present.	Erongo
Orbivestus cinerascens (Sch.Bip.) H.Rob.		Erongo
Ornithogalum stapffii Schinz	Geophyte. Bulb pear-shaped extended into short neck, up to 8 cm long and up to 4.5 cm in diameter. Up to 5-leaved. Leaves up to 40 cm long, 2.5 cm broad, usually furrowed, conspicuously striped. Peduncle up to 30 cm long. Flowers white. Capsules clearly 3-loculate, up to 3 cm in diameter and 1.2 cm high.	Erongo
Pancratium tenuifolium Hochst. ex A.Rich.		Erongo
Phragmites australis (Cav.) Steud.	Grass.	Erongo
Polygala guerichiana Engl.	Flowers purple.	Erongo
Ruellia marlothii Engl.	Dwarf shrub. Petals yellowish with red/pink tips and green flecks.	Erongo
Salsola tuberculatiformis Botsch.	Low twisted shrub. Several branches dead or apparently so. Several shrubs with no sign of life.	Erongo
Sarcocaulon marlothii Engl.	Shrub up to 1.5 m high. Flowers pale blue to mauve.	Hardap
Solanum rigescens Jacq.	Shrub 1.5 m high.	Hardap
Stipagrostis dinteri (Hack.) De Winter	Grass.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Stipagrostis hirtigluma (Steud. ex Trin. & Rupr.) De Winter subsp. hirtigluma	Grass 30 cm high.	Erongo
Stipagrostis obtusa (Delile) Nees	Perennial, very hairy grass.	Erongo
Tephrosia dregeana E.Mey. var. capillipes (Welw. ex Baker) Torre	Notes: Height: 35 cm. Semi-scandent. Purple flowers.	Hardap
Tripteris microcarpa Harv. subsp. microcarpa	Flowers yellow. Leaves hairy.	Erongo
Zygophyllum cylindrifolium Schinz	Shrub 20 cm high.	Erongo
Zygophyllum simplex L.	Succulent 20 cm high. Flowers very small and greenish. Near top of small rocky wash in granite outcrop; very shallow lithosol.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Abutilon pycnodon Hochr.	Tall upright, perennial shrub. Flowers red/pink.	Erongo
Acanthosicyos naudinianus (Sond.) C.Jeffrey		Erongo
Acrotome fleckii (Gürke) Launert		Erongo
Adenolobus pechuelii (Kuntze) Torre & Hillc. subsp. pechuelii	Perennial shrub, about 40 cm high. Flowers yellow with one red petal.	Erongo
Aizoanthemum rehmannii (Schinz) H.E.K.Hartmann	Prostrate, annual herb wih somewhat succulent leaves. Flowers up to 1.5 cm in diameter, yellow.	Erongo
Aloe hereroensis Engl. var. lutea A.Berger	Stemless. The leaf rosettes are some 50 cm in hight and 65 cm in diameter. The inflorescence is sparcely branched. The flowers are a bright lemon-yellow in colour.	Erongo
Amphiasma divaricatum (Engl.) Bremek.	Flowers white.	Erongo
Anthephora pubescens Nees	Grass.	Erongo
Aptosimum spinescens (Thunb.) F.E.Weber	Shrub, up to 0.40 m high. Spines thin, arched back. Few flowers blue-purple, white in throat with dark purple patch at base of corolla lobes. Calyx lobed to less than half, tube yellowish, slightly inflated. Capsules to 5 mm in diameter. Leaves fascicled.	Erongo
Argemone ochroleuca Sweet subsp. ochroleuca	Perennial shrub 60 m high. Flowers pale yellow.	Erongo
Aristida congesta Roem. & Schult. subsp. congesta	Annual grass up to 30 cm high.	Erongo
Asparagus pearsonii Kies		Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Barleria lancifolia T.Anderson subsp. lancifolia	Shrub 0.60 m high, 1.20 m in diameter. Bark light. Flowers 4 cm in diameter, violet with dark throat. Many-flowered.	Erongo
Barleria merxmuelleri P.G.Mey.	Flowers pale violet.	Erongo
Blepharis grossa (Nees) T.Anderson	Annual herb, 0.25 m high. Inflorescence spiny.	Erongo
Blepharis obmitrata C.B.Clarke		Erongo
Brachiaria glomerata (Hack.) A.Camus	Annual grass, 35 cm high.	Erongo
Calicorema capitata (Moq.) Hook.f.	Shrub 30 cm in diameter.	Erongo
Cardiospermum pechuelii Kuntze	Tangled perennial shrub. Flowers white.	Erongo
Centropodia glauca (Nees) Cope	Perennial grass, 40 cm high.	Erongo
Chascanum garipense E.Mey.	Shrub 1 m high. Flowers wite clustered at the tip of branch.	Erongo
Chloris virgata Sw.	Grass.	Erongo
Citrullus lanatus (Thunb.) Matsum. & Nakai		Erongo
Citrullus rehmii De Winter		Erongo
Cleome angustifolia Forssk. subsp. diandra (Burch.) Kers		Erongo
Cleome foliosa Hook.f. var. foliosa		Erongo
Cleome foliosa Hook.f. var. lutea (Sond.) Codd & Kers	Perennial shrub, 20 cm high. Flowers yellow.	Erongo
Cleome paxii (Schinz) Gilg & Gilg-Ben.	Annual erect herb, 0.2 m high. Flowers pink.	Erongo
Coccinia rehmannii Cogn.		Erongo
Codon royenii L.	Shrub. Leaves and stem covered with shorty white spines. Flowers pale yellow.	Erongo
Commicarpus squarrosus (Heimerl) Standl. var. squarrosus	White-rimmed shrub up to 0.50 m high. Inflorescence, delicately brached. Flowers dainty, violet.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Corallocarpus dissectus Cogn.		Erongo
Cordia sp. C	Tree.	Erongo
Crinum lugardiae N.E.Br.		Erongo
Crinum sp.		Erongo
Crotalaria damarensis Engl.	Annual herb, up to 45 cm high. Plants covered with long white hairs. Flowers yellow.	Erongo
Cucumella aspera (Cogn.) C.Jeffrey	Fruits yellow.	Erongo
Cucumis africanus L.f.		Erongo
Cuscuta planiflora Ten. var. madagascarensis (Yunck.) Verdc.	Parasite, twiner in Indigofera species. Flowers clustered, whitish.	Erongo
Dactyloctenium aegyptium (L.) Willd.		Erongo
Dichrostachys cinerea (L.) Wight & Arn. subsp. africana Brenan & Brummitt var. africana	Small bushy tree. Flowers pink and yellow or white and yellow catkin.	Erongo
Dipcadi bakerianum Bolus	Geophyte. Bulb spherical. Skin membraneous, light brown. Leaves bag-like. In bud.	Erongo
Dyerophytum africanum (Lam.) Kuntze		Erongo
Enneapogon desvauxii P.Beauv.	Grass.	Erongo
Eragrostis brizantha Nees	Annual grass up to 30 cm tall.	Erongo
Eragrostis macrochlamys Pilg. var. macrochlamys	Annual grass, 20 cm high.	Erongo
Eragrostis nindensis Ficalho & Hiern	Perennial grass, 45 cm high.	Erongo
Eragrostis porosa Nees	Grass.	Erongo
Eragrostis procumbens Nees	Grass.	Erongo
Eragrostis walteri Pilg.	Semi-decumbent perennial grass, 35 cm high.	Erongo
Euclea undulata Thunb.		Erongo
Euphorbia glanduligera Pax	Shrub.	Erongo
Felicia smaragdina (S.Moore) Merxm.	Annual herb, up to 0.05 m high. Stem ascending. Flowers yellow.	Erongo
Flaveria bidentis (L.) Kuntze		Erongo
Geigeria alata (Hochst. & Steud.) Benth & Hook.f. ex Oliv. & Hiern	Prostrate plant.	Erongo
Grielum sinuatum Licht. ex Burch.	Prostrate herb, 25 cm in diameter.	Erongo
Helichrysum candolleanum H.Buek	Annual herbs, 20 cm high.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Helichrysum tomentosulum (Klatt) Merxm. subsp. tomentosulum		Erongo
Heliotropium oliveranum Schinz	Annual or biannual herbs, 0.45 m high. Flowers white.	Erongo
Heliotropium tubulosum E.Mey. ex DC.	Spreading perennial shrub, ± 0.20 m high. Flowers white in two rows.	Erongo
Hermannia affinis K.Schum.	Grey-green herb, woody at base. 25 cm high. Flowers pale violet, droopy.	Erongo
Hermbstaedtia argenteiformis Schinz	Annual herb up to 40 cm high. Flowers bright red - violet.	Erongo
Hibiscus elliottiae Harv.	Perennial shrub. Flowers red.	Hardap
Hirpicium echinus Less.	Annual herb. Flowers yellow.	Erongo
Hirpicium gazanioides (Harv.) Roessler	Annual herbs, 35 cm high. Plant as a whole covered with bristles. Flowers yellow.	Erongo
Indigofera auricoma E.Mey.	Prostrate herb, 70 cm in diameter. Flowers reddish-purple.	Erongo
Indigofera damarana Merxm. & A.Schreib.	Annual herb, 25 cm high.	Erongo
Indigofera sp. Engl.	Annual forb 5 cm high. Flowers pale red and white.	Erongo
Jamesbrittenia hereroensis (Engl.) Hilliard	Annual herb, 40 cm high. Flowers blue with an orange centre.	Erongo
Jamesbrittenia maxii (Hiern) Hilliard	Perennial shrub, 50 cm high. Flowers white.	Erongo
Kissenia capensis Endl.	Shrub about 2/3 m high.	Erongo
Kohautia caespitosa Schnizl. subsp. brachyloba (Sond.) D.Mantell	Annual herb, 25 cm high.	Erongo
Kohautia cynanchica DC.	Perennial, with white barked woody base, up to 45 cm high. Flower tube 1 cm long. Flower cream-white.	Erongo
Lapeirousia littoralis Baker subsp. littoralis	With a single leaf. Inflorescence up to 25 cm long. Perianth tps long, cream coloured, later turining pale-brown.	Erongo
Ledebouria undulata (Jacq.) Jessop	Geophyte. Bulb, 4 cm in diameter, gradually narrowing into a neck, neck 12 cm long. Inflorescence up to 10 cm tall. Flowers violet.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Leobordea bracteosa (B.- E. van Wyk) B-E. Van Wyk & Boatwr.	Semi-prostrate, annual herb, 10 cm high, up to 25 cm in diameter.	Erongo
Leobordea platycarpa (Viv.) B.-E. van Wyk & Boatwr. [2]	Herb. Prostrate herbs up to 35 cm in diameter. Flowers yellow.	Erongo
Lessertia benguellensis Baker f.		Erongo
Limeum argute-carinatum Wawra ex Wawra & Peyr. var. argute-carinatum	Prostrate, annual herb.	Erongo
Lophiocarpus dinteri Engl.	Annual erect herb, 0.25 m high. Leaves linear.	Erongo
Lotononis bracteosa B.-E.van Wyk	Annual prostrate herb, 0.01 m high.	Erongo
Lotononis curtii Harms		Erongo
Melinis repens (Willd.) Zizka subsp. grandiflora (Hochst.) Zizka	Grass	Erongo
Microcharis disjuncta (J.B.Gillett) Schrire var. disjuncta	Annual herb, 30 cm high. Flowers bright red.	Erongo
Microloma hereroense Wanntorp	Half shrub, corolla pink, corona with pink, longitudinal stripes and green tips.	Erongo
Monechma cleomoides (S.Moore) C.B.Clarke	Long untidy hairs.	Erongo
Monechma desertorum (Engl.) C.B.Clarke	Hairy, annual herb. Flowers white.	Erongo
Monechma genistifolium (Engl.) C.B.Clarke subsp. genistifolium	Herb 0.55 m high. Stems covered with white hairs.	Erongo
Monsonia umbellata Harv.	Very small annual. Flowers white.	Hardap
Ornithogalum tubiforme (Oberm.) Oberm.	Geophyte. Bulb elongate with up to 7 cm long neck, pale brown skin, membranous. Flowers white.	Erongo
Orthanthera albida Schinz	Shrub 2-3 m high.	Erongo
Otoptera burchellii DC.	Perennial shrub. Flowers purple-red.	Erongo
Oxygonum alatum Burch. var. alatum	Flowers white on to pinkish in drying.	Erongo
Pancratium tenuifolium Hochst. ex A.Rich.		Erongo
Panicum arbusculum Mez	Grass.	Erongo
Pavonia rehmannii Szyszyl.	Small perennial shrub. Flowers yellow.	Erongo
Pegolettia senegalensis Cass.	Annual herbs up to 45 cm high. Flowers yellow.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Pergularia daemia (Forssk.) Chiov. var. leiocarpa (K.Schum.) H.Huber		Erongo
Petalidium canescens (Engl.) C.B.Clarke	Perennial herb, 0.20 m high. Flowers reddish purple.	Erongo
Petalidium setosum C.B.Clarke ex Schinz		Erongo
Polygala pallida E.Mey.	Annual herbs, 25 cm high.	Erongo
Raphionacme haeneliae Venter & Verhoeven	Root tuber had texture like a turnip. More than one tuber branching off the below ground stem. Tubers vary in size, watery when cut. Above ground stem exudes milky latex when damaged.	Erongo
Ruellia marlothii Engl.	Shrub 0.33 m high.	Erongo
Salsola nollothensis Aellen	Flowers yellow. Stems brittle.	Erongo
Salsola tuberculata Aellen	Dwarfshrub. Perennial 10-20 cm high. Stem gnarled, woody, younger branch grey-brown, decumbent.	Erongo
Sarcocaulon marlothii Engl.		Erongo
Schmidtia kalahariensis Stent	Grass.	Erongo
Sericocoma heterochiton Lopr.	Perennial herb, 60 cm high. Inflorescence with brownish - grey hairs.	Erongo
Sesamum sp.		Erongo
Sesbania pachycarpa DC. subsp. pachycarpa	Accession No. 9-849-90.10165. Serial No. 008248-2. R.B.G. KEW Seed Bank.	Erongo
Sesuvium sesuvioides (Fenzl) Verdc. var. angustifolium (Schinz) Gonç.	Annual herb, 0.35 m high. Leaves semi-succulent. Flowers red.	Erongo
Solanum rigescentoides Hutch.		Erongo
Sporobolus nebulosus Hack.	Grass.	Erongo
Sterculia africana (Lour.) Fiori var. africana	Large tree. Bark smooth, thin, violet-brown.	Erongo
Stipagrostis ciliata (Desf.) De Winter var. capensis (Trin. & Rupr.) De Winter	Perennial grass, 50 cm high. Some inflorescene misformed.	Erongo
Stipagrostis giessii Kers	Grass. Tufts blue-green. Inflorescence short, branched. Glumes hairy.	Erongo
Stipagrostis hirtigluma (Steud. ex Trin. & Rupr.) De Winter subsp. patula (Hack.) De Winter	Grass.	Erongo
Stipagrostis hochstetteriana (Beck ex Hack.) De Winter var. hochstetteriana	Perennial grass, 70 cm high.	Erongo

SPECIES	PLANT DESCRIPTION	LOCATION
Stipagrostis hochstetteriana (Beck ex Hack.) De Winter var. secalina (Henrard) De Winter	Grass.	Erongo
Stipagrostis lutescens (Nees) De Winter var. marlothii (Hack.) De Winter	Dense perennial grass, 1.2 m high, forming large tufts. Leaves spiny.	Erongo
Stipagrostis obtusa (Delile) Nees	Grass.	Erongo
Stipagrostis schaeferi (Mez) De Winter	Perennial grass, 1.2 m tall. Leaves woolly at the base.	Erongo
Stipagrostis uniplumis (Licht.) De Winter var. uniplumis	Grass.	Erongo
Tephrosia dregeana E.Mey. var. capillipes (Welw. ex Baker) Torre	Annual herb, 45 cm high. Sometimes woody at the base. Flowers purple.	Hardap
Tribulocarpus dimorphanthus (Pax) S.Moore	Perennial herbs, 50 cm high. Fruit compound, fused to spious bracts.	Erongo
Tribulus zeyheri Sond. subsp. zeyheri	Spreading annual. Flowers yellow.	Erongo
Tricholaena monachne (Trin.) Stapf & C.E.Hubb.	Annual grass, 20-35 cm high.	Erongo
Trichoneura eleusinoides (Rendle) Ekman	Grass, 13 cm high.	Erongo
Tripteris microcarpa Harv. subsp. septentrionalis (Norl.) B.Nord.	Annual herbs up to 80 cm high. Plants sticky. Flowers yellow.	Erongo
Tripteris sp.	Annual forb. Flowers yellow.	Erongo
Triraphis pumilio R.Br.	Annual grass rarely 10 cm high.	Erongo
Ziziphus mucronata Willd. subsp. mucronata	Small bushy tree, 1.5 m high. Flowers yellow. 1 straight and recurved spine.	Erongo
Zygophyllum cylindrifolium Schinz	Succulent.	Erongo
Zygophyllum simplex L.	Anual herb 2 cm high. Crown diameter 5 cm. Leaves round, 0.5 cm in diameter, up to 15mm long. Stem decumbent.	Erongo

APPENDIX C: NON-TECHNICAL SUMMARY

ENVIRONMENTAL
COMPLIANCE CONSULTANCY






ECC-79-237-NTS-01-B

NON-TECHNICAL SUMMARY

EXPLORATION ACTIVITIES ON EPL 6663 FOR BASE AND RARE METALS, INDUSTRIAL MINERALS, NUCLEAR FUEL MINERALS, PRECIOUS METALS, PRECIOUS STONES, SEMI- PRECIOUS STONES

PREPARED FOR

MARENICA ENERGY LTD

MARENICA ENERGY LIMITED

DECEMBER 2019

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

NON-TECHNICAL SUMMARY

PROPOSED EXPLORATION ACTIVITIES ON EPL 6663 FOR BASE AND RARE METALS, INDUSTRIAL MINERALS, NUCLEAR FUEL MINERALS, PRECIOUS METALS, PRECIOUS STONES, SEMI-PRECIOUS STONES

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. The project involves exploration activities on the following EPL 6663 for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi-Precious Stones in the Erongo Region. 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 (Marenica Energy Ltd) to undertake an Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP) in terms of the Environmental Management Act of 2007 and its Regulations. An environmental clearance application will be submitted to the relevant competent authorities: The Ministry of Mines and Energy (MME) and Ministry of Environment and Tourism (MET).

2.2 Location

The project is located in the Erongo Region. The EPL is located in the Namib-Naukluft National Park. Refer to the location map provided in FIGURE 1.

2.3 What is Proposed

Marenica Energy Ltd undertakes mineral exploration in Namibia and propose to undertake low impact exploration activities on EPL 6663 for Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones in the Erongo Region.

2.4 Operation Phase

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

- Potential creation of access tracks, where existing tracks cannot be utilised
- Limited vegetation clearing for the creation of tracks
- Drilling of exploration boreholes, and
- Exploration methods may include soil and rock sampling, geological mapping, electromagnetic surveys, drilling and drill-core sampling.

2.5 Why is the Project Needed

Marenica Energy Ltd intends to pursue exploration opportunities with the aim of identifying new mining prospects. Namibia is rich in natural resources and the mining industry is the largest income earner in Namibia. Exploration could lead to mining activities which would contribute to the national and local earnings of the country.

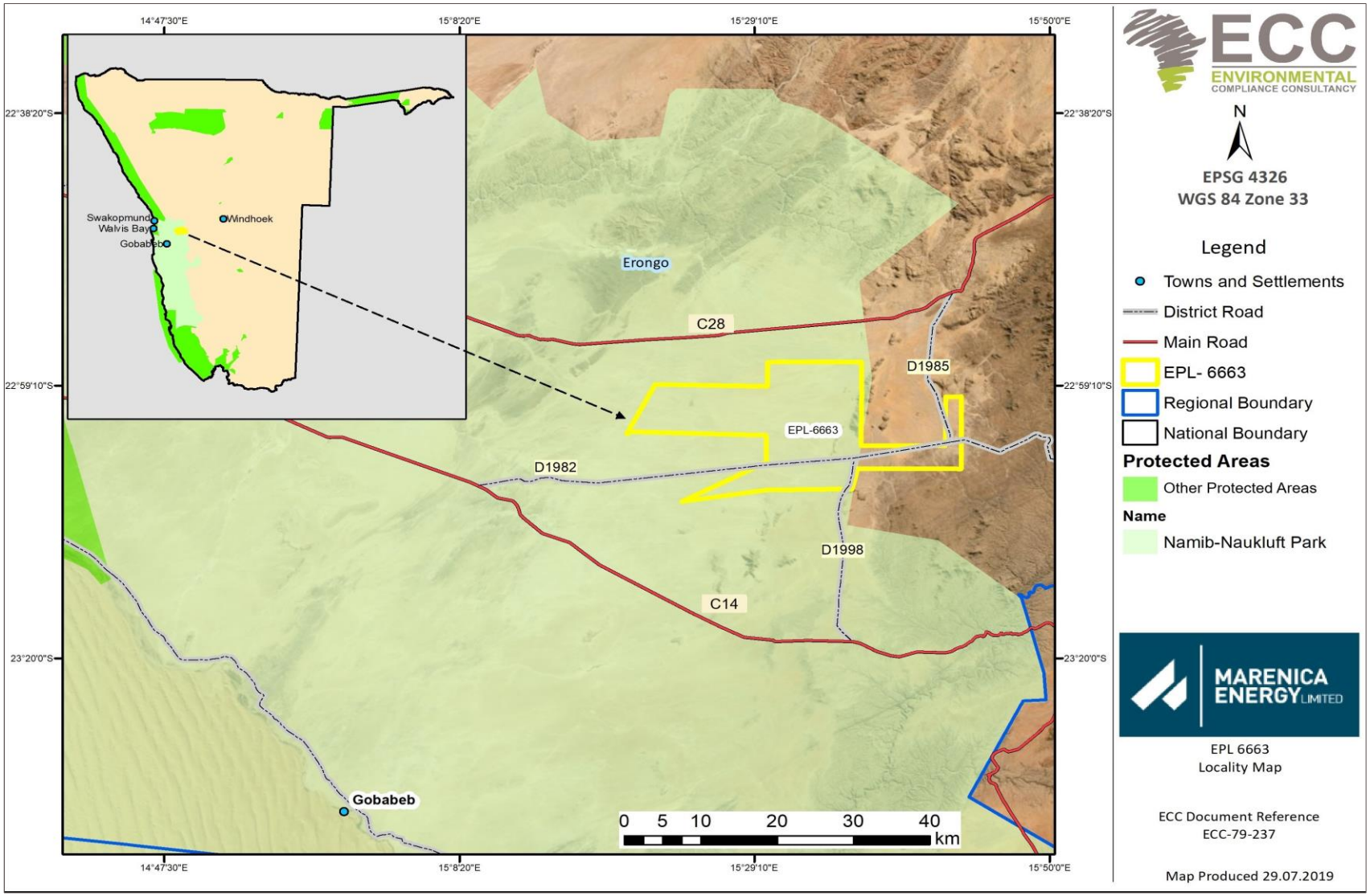

FIGURE 1 – LOCATION MAP OF FOR EPL 6663

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 EPL sites, these potential impacts may include the following:

- Potential to unearth, damage or destroy undiscovered heritage remains
- Minor disruption to the residents within the EPLs, including some increase in noise levels and dust arising from drilling and vehicle use
- Some jobs will be created as a result of the project, and
- There will be economic benefits due to increased investment and investor confidence in the Namibian minerals sector.

2.6.2 The environment

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

- Some potential vegetation loss due to possible tracks creation
- Minor risk of loss of contaminant of hydrocarbon, chemical or drill fluids from exploration activities potentially leading to localised ground contamination.

3 CONSIDERATION OF ALTERNATIVES

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

In project such as these ones, it is difficult to identify alternatives to satisfy the need of the proposed project; the activities shall be specific to the EPLs which were granted by the MME on the 16th May 2019.

During the assessment, alternatives will take the form of a consideration of optimisation and efficiency to reduce potential effects e.g. different types of technology or operations, route access and exploration methods.

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 22 below.

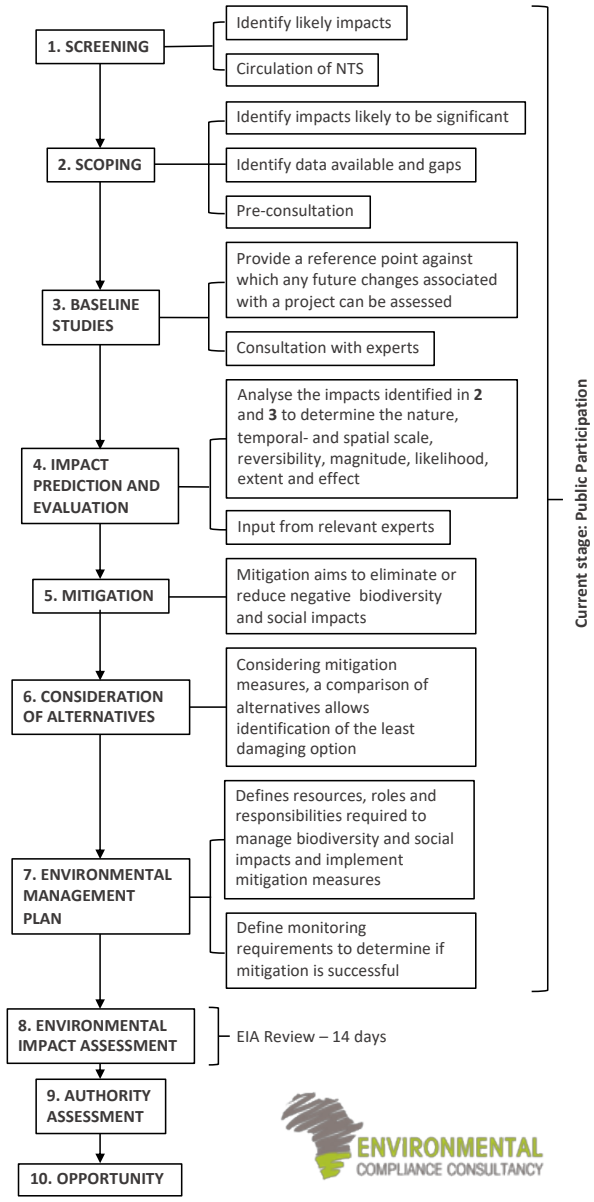

FIGURE 2 - FLOWCHART OF THE ENVIRONMENTAL ASSESSMENT PROCESS

4.1 SCREENING

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

MINING AND QUARRYING ACTIVITIES

(3.1) The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992

- The proposed project requires a licence for extraction of Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones

(3.2) Other forms of mining or extraction of any natural resources whether regulated by law or not

- Minerals (soil and sand), Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones will be sourced out within the project's footprint/ locally as far as possible

(3.3) Resource extraction, manipulation, conservation and related activities

- The proposed project will extract Base and Rare Metals, Industrial Minerals, Nuclear Fuel Minerals, Precious Metals, Precious Stones, Semi- Precious Stones The potential environmental and social effects are anticipated to be of minor significance, and those that may occur shall be contained on the EPL site.

4.2 SCOPING

Due to the nature of the proposed project, and the implementation of industry, best practice mitigation measures during the mineral exploration phase of the project, the effects on the environment and society are expected to be minimal and localised. It is acknowledged that the majority of the EPLs are located in the Namib-Naukluft National Park. It is therefore imperative that the potential impacts within the national park be thoroughly assessed and in particular, shall be reviewed against the 'no mining and prospecting zones' identified in National Policy on the Prospecting and Mining in protected areas recently passed by the Cabinet. During the assessment process and in the event that part or any of the EPL is found to be within any of these zones, further engagement with all relevant stakeholders shall be undertaken.

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 projects. 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. ECCs 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 Marenica Energy Ltd 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. These projects are 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 submitted with the application, and
- Circulate I&AP comments to the project team for consideration of project design.

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)

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Tel: +264 81 669 7608

www.eccenvironmental.com

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

Follow us online to be kept up to date:

APPENDIX D: ADVERTS

Photo: Contributed

of having fulfilled its mandate as set out by the minister in March 2016 during their initial appointment. Seated, tourism minister Pohamba Shifeta (left) and public enterprises minister Leon Jooste with the re-appointed board. (See story on page 13).

UK economy shrinks in April

BRITAIN'S economy contracted sharply in April after the biggest decline in car production since records began, as manufacturers were unable to reverse closures planned for Britain's expected departure from the European Union.

Early in 2019, many motor vehicle manufacturers announced temporary shutdowns in Britain for April, anticipating trade disruption around the time Britain was due to leave the European Union on 29 March.

In the event, prime minister Theresa May delayed departure with just days to go and subsequently set a new date of 31 October – but that was too late for businesses to change their plans.

Britain's economy overall contracted by 0,4% in April after a 0,1% decline in March, the Office for National Statistics said yesterday, a bigger drop than any economist had forecast in a Reuters poll last week.

Growth in the three months to April slowed to 0,3% from 0,5% in the first quarter of 2019, also a sharper deceleration than most economists had expected. Annual growth slowed to 1,3%. But this masked a far bigger impact for manufacturing, which shrank by 3,9% for the month in April, the biggest fall since June 2002.

Car production fell 24% in April, the biggest drop since records began in 1995, and the broader category of "transport equipment" showed its largest drop since 1974.

"Gross domestic product growth showed some weakening across the last three months with the economy shrinking in April, mainly due to a dramatic fall in car production, with uncertainty ahead of the UK's original EU departure date leading to planned shutdowns," ONS statistician Rob Kent-Smith said.

BMW shut its UK Mini and Rolls-Royce plants for all of April. Peugeot's Vauxhall car factory and Jaguar Land Rover also brought forward planned summer shutdowns to April.

Yesterday's data confirms the economy is slowing after getting a bigger-than-expected boost in the first three months of 2019 from businesses stockpiling before a Brexit that never came.

The Bank of England forecast last month that GDP growth would slow to 0,2% during the three months to June from 0,5% in the first quarter of the year, though on Saturday its chief economist, Andy Haldane, wrote that he still expected "solid" growth of 1,5% for 2019 overall.

May's purchasing managers' index surveys pointed to the economy being close to stagnation, although they were similarly gloomy in the first quarter when official data turned out strong, despite business concerns about Brexit.

"April's dip in GDP and apparent ongoing softness in May reinforces our belief that the economy is headed for a markedly weakened performance in the second quarter," Howard Archer, chief economist at consultants EY ITEM Club, said in a note.

"We had expected GDP growth to be no more than 0,2% quarter-on-quarter in the second quarter, but even this muted performance is now looking somewhat optimistic."

Britain's economy has lost momentum since 2016's Brexit referendum – before which growth would typically exceed 2% a year – but the job market has strengthened, and Haldane said the time for another rate rise was approaching.

This stance contrasts with the view in markets, where concern about the trade conflict between the United States and China has intensified, alongside the risk that Britain could still face a disruptive departure from the EU on 31 October.

The impact of the twin concerns of trade tensions and Brexit could also be seen in trade data, also released yesterday. Britain saw its biggest monthly fall in goods imports since records began in 1998, down 14,4% in April. Exports also slid on a monthly basis, down 10,9% in April, the biggest fall since July 2006.

The trade deficit narrowed as elevated levels of imports by businesses to prepare for Brexit before the 29 March deadline fell back. The trade balance for goods narrowed to £12,1 billion (N$220 billion) from £15,4 billion in March. – ***Nampa-Reuters***

Erkki Nghimtina

their jobs due to incapacity.

The report says 2 933 left their jobs for unspecified reasons.

In the construction sector, 5 383 employment contracts were discontinued.

"Non-renewal of employment contracts accounted for 48% of employment contract terminations, followed by resignations (18%), and dismissals through retrenchments, 15%," reads the report.

The next sector hit by terminations is the fishing industry, which saw 2 510 contracts terminated, a 25% increase from the figure for the 2016/17 financial year.

Most employees (62%) left the fishing industry due to non-renewal of employment contracts, while only 16% resigned.

A further 9% of contracts were terminated on account of misconduct.

In the manufacturing sector, 2 202 jobs were terminated. A total of 38% of employees resigned, followed by 22% who parted ways with their employers for unspecified reasons, while the employment contracts of 14% were not renewed.

During the period under review, the mining sector had a combined workforce of 10 177 workers.

As for the public service, 6 328 cases of termination were recorded. This is 30% less than the previous financial year. Most civil servants vacated their employment positions for unspecified reasons (48%), followed by 30% whose contracts were not renewed, while 19% resigned.

Furthermore, the tourism sector recorded 2 350 employment contract terminations. Most employees (59%) left their jobs in this sector through resignation, while 16% left for unspecified reasons.

Meanwhile, 14% of employees in this sector were dismissed for misconduct, while dismissal due to incapacity constituted 0,3% of terminations. – ***Nampa***

ECC ENVIRONMENTAL COMPLIANCE CONSULTANCY

MARENICA ENERGY LIMITED

NOTICE OF ENVIRONMENTAL ASSESSMENT
EXPLORATION ACTIVITIES ON EPL 6663, 7435, 7436, 7278, & 7279
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:	**Marenica Energy Ltd**
Environmental Assessment Practitioner (EAP):	**Environmental Compliance Consultancy**
Location:	**Erongo Region, Namibia**

Project: Exploration activities on EPL 6663,7435, 7436, 7278, & 7279 for Nuclear Fuel Minerals in Erongo Region, Namibia.

Proposed Activity: The proponent proposes to carry out low impact, non-intrusive exploration activities for Nuclear Fuel Minerals on the following EPLs: EPL 6663, EPL 7435, EPL 7436, EPL 7278, & EPL 7279. Exploration methods may include aerial, remote sensing, electromagnetic surveys, drilling and minerals sampling.

Application for Environmental Clearance Certificate: In terms of the Environmental Management Act, 2007 (No 7 of 2007), ECC on behalf of Marenica Energy Ltd is required to apply for Environmental Clearance Certificate to the Competent Authority and the Ministry of Environment and Tourism.

Review Period: The review and comment period are effective from: 12/06/2019 to 26/06/2019

How you can participate: To ensure that all potential issues and concerns are included in the assessment, Interested and Affected Parties (I&APs) and stakeholders are requested to register for the project using the website provided and have the opportunity to have all comments considered and captured in the assessment.

Environmental Compliance Consultancy CC
Registration Number: CC/2013/11404
Members: Mr JS Bezuidenhout and Mrs J Mooney
PO Box 91193, Klein Windhoek
Tel: +264 81 669 7608
E-mail: info@eccenvironmental.com
Website: https://eccenvironmental.com/projects/
Project ID: ECC-79-237

ECC ENVIRONMENTAL COMPLIANCE CONSULTANCY

THE NAMIBIAN mOshiwambo WEDNESDAY 19 JUNE 2019 23

Oveta natango oya pitika Aazaizai ya lande evi moshilongo-Omuprimaminista

OMUPRIMAMINISTA Saara Kuugongelwa-Amadhila okwa ti paveta yaNamibia aazaizai oye na uuthemba wokulanda evi moshilongo, nonande opu na eindilo moshigwana opo uuthemba ye wu kuthwe.

Nonande moshigongi shopashigwana shevi omvula ya zi ko okatokolitho kokukutha aazaizai uuthemba wokulanda evi moshikongo oka li ka pitithwa, Kuugongelwa-Amadhila okwa ti natango oveta otayi pe aazaizai uuthemba wokulanda evi. Ndhino okwa li e dhi popi sho a li ta popitha iikundaneki nokutseyithila aakuluntuleli kombinga yomikundu ndhoka dha taalela epangelo mokugandja omayakulo koshigwana.

Omuprima okwa li a pulwa ngele epangelo otali ka landitha po tuu ofaalama yopaumwene yedhina Erindi Game Reserves kOmunangeshefa omuzaizai omvalele yaMexico Alberto Baillères konima sho okatokolitho hoka ka li ka pitithwa omumvo gwa zi ko koshigongi shopashigwana shevi.

Baillères okwa li a nothelwa ko opo a lande ofaalama ndjoka yi li popepi nondoolopa yaMaruru, ndjoka ya kala tayi landithwa uule woomvula ntano dha piti, koshimaliwa shi thike lopoobiliyona oo-N$2. Ofaalama ndjoka yedhina Erindi Game Reserve oya thikama po miipambu itatu, Erindi, Constania osho wo Otjimakaru. Ofaalama ndjoka oyi li pokati kondoolopa yaMaruru noyaKahandja, noyi na uunene woohekta 65 000.

Epangelo olya li li ikutha mo mokulanda ofaalama ndjoka, oshoka oyi na ondilo, shoka sha gandja ompito ye eguluka koohandimwe nenge kaanangeshefa yopaumwene mboka ye na ehalo noshimaliwa ya lande po ofaalama ndjoka. Inashi yela nee ngele epangelo otali ka gandja oompango nomalandulathano gofaalama ndjoka.

Omuprimaminista okwa li a tseyitha kutya epangelo itali ki idhopa mo nande melando lyofaalama ndjoka oshoka Erindi ofaalama yopaumwene.Nonande opu na mboka tayi indile opo epangelo li kaleke elando lyofaalama komuzaizai ngoka Baillères, Saara-kuugongelwa okwa ti oveta yoshilongo natango oya pitika aazaizai no ye na uuthemba oku landa evi moshilongo.

Kuugongelwa-Amadhila okwa ti poshigongi shevi shopashigwana omumvo gwa zi ko ,epangelo olya li li na edhiladhilo okukutha po oveta ndjoka ya pa uuthemba aazaizai ya lande evi moshilongo ashike yamwe yomaakwashigwana oya li ye li ompinge nasho, onkene etokolo olya ningwa opo oveta kaayi lundululwe. "Omolwoveta ndjoka ya pa aazaizai uuthemba wokulanda evi, epangelo olye shi yeleka kutya kali na oshimaliwa shokulanda ofaalama ndjoka, onkene aazaizai oye na uuthemba woku yi landa," Kuugongelwa-Amadhila ta yelitha.

Kuugongelwa-Amadhila okwa ti epangelo oli na oonkondo okusa oshimpwiyu kehe shoka tashi ningwa mokulanditha ofaalama ndjoka shi kale shi li pampango nomuuwanawa woshilongo.

"Kehe etokolo ndyoka tali ka ningwa epangelo oli na okukwashilipaleka kutya olya ningwa paveta. Epangelo otali longo neitulomo notali longitha omayele niizemo mbyoka ya zile moshigongi shahugunina shevi shopashigwana opo aakwashigwana mboka kaaye na evi ya mone oompito dhokumona evi," Kuugongelwa-Amadhila a tsikile ko ngaaka.

Seervaas van den Bosch, omuwiliki gwehangano lyedhina Emergo, ehangano ndyoka tali gandja omayakulo ge na sha niipambele yoshigwana kuBaillères, okwa ti iifuta yofaalama natango otayi talululwa kehangano lyedhina Namibian Competition Commission (NCC).

Ehangano lyo-NCC oli lile po okukonanakona omalandithilo osho wo omalando goongeshefa dhomoshilongo.

Van den Bosch okwa ti Uuministeli wOmatendululo gEvi osho wo wUunamapya nUunimuna owa gandja nale oombapila dhomapitikilo opo elando lyofaalama li ningwe pokati ko-Erindi no Rembo Ltd (okampani yaBaillères)

Van den Bosch okwa gwedha ko ta ti ofaalama ndjika yo-Erindi Game Reserve otayi landwa ashike uuna iipumbiwa ayihe ya gwanithwa po.

Ethano: Henry van Rooi

HAYA LANDITHA OMAKENDE ... Methano ndika otamu monika aakalimo yomoKaisosi kooha dhondoolopa yaRundu, Teresia Nyambu (51) (kolumoho) e li nomwana Dominica Hamunyera (35) osho wo aatekulu ye, yi ipyakidhila nokutoola omakende gooplastika ngoka haya landitha. Oya hokolola kutya ohaya meneka ongula onene lwopo-06h00 taya toola omakende ngoka gooplastika sigo okomatango, aanona ohaye ya waiminine uuna ya zimbuka kosikola. Hamunyera okwa ti ohaya gongele omakende gooplastika mooshako omulongo mesiku, uuna esiku lye enda nawa ohaya vulu okumona mo oshimaliwa shi thike po-N$ 200 mesiku.

Infomante on the 13 and 20th June 2019, newspaper is available online

APPENDIX E: SITE NOTICE

APPENDIX F: ECC CVS

Stephan Bezuidenhout

ENVIRONMENTAL ASSESSMENT PRACTITIONER

ENVIRONMENTAL COMPLIANCE CONSULTANCY

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

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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

Current

Managing Director

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

ENVIRONMENTAL CONSULTANT & PRACTITIONER

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

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

Stephan Bezuidenhout

Managing Director
+264 81 262 7872

References

Feel free to ask the boss :)

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

ESCA COETZEE
Environmental Scientist
Sasol Technology

PHIL BARKER
Pipeline Construction Superintendent
Worley Parsons

Or ask those who have worked for me?

Michael Moreland
Environmental Scientist
CSP Solar Energy Projects

Professional Associations

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

Fun Facts:

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

Words I live by:

'Do what makes you happy the rest will follow'

Experience & Work History

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

Examples of projects successfully completed include:

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

Environmental Coordinator

ROMPCO PIPELINE – Worley Parsons
Mozambique and South Africa

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

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

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

Current

Environmental Graduate

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

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

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

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

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."

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

Jessica Mooney

Environment & Safety Specialist

Hello! :)

ABOUT ME

Name
Jessica Mooney

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24 October 1984

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Jessica Mooney

Education & Qualifications

Federation University Australia
2003-2006

Bachelor of Applied Science -Environmental Management

Additional Qualifications

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

Experience & Work History

Current

Environment and Safety Specialist

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

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

Group HSE Manager

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

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

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

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