

Reconnaissance Energy Namibia (Pty) Ltd

Final Environmental Management Plan (EMP) Report to Support the Application for Environmental Clearance Certificate (ECC) for the Proposed 2D Seismic Survey covering the Area of Interest (AOI) in the Petroleum Exploration License (PEL) No. 73, Kavango Sedimentary Basin, **KAVANGO WEST AND EAST REGIONS, NORTHERN NAMIBIA**

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March 2021



OPERATOR

Reconnaissance Energy Namibia (Pty) Ltd Subsidiary of
Reconnaissance Energy Africa Ltd (ReconAfrica)

ECC REFERENCE APPLICATION No.

APP-002250

LICENSE PEL 73

Degree Square Blocks 1719, 1720, 1721, 1819, 1820 and 1821

WORKING INTERESTS

ReconAfrica owns 90%
National Petroleum Corporation of Namibia (Namcor)
(A State-Owned Company) 10% with costs carried to the development stage

TYPE OF PETROLEUM EXPLORATION ACTIVITIES

2D Seismic Survey Operations

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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr Sindila Mwiya (*PhD, PG Cert, MPhil, BEng (Hons), Pr Eng*)

CITATION: *Risk-Based Solutions (RBS), 2021. Final Environmental Management Plan (EMP) Report to Support the Application for Environmental Clearance Certificate (ECC) for the Proposed 2D Seismic Survey covering the Areas of Interest (AOI) in the Petroleum Exploration License (PEL) No. 73, Kavango Sedimentary Basin, Kavango West and East Regions, Northern Namibia.*

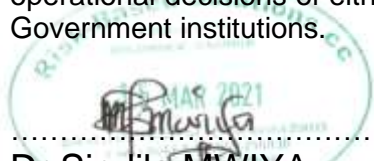
ENVIRONMENTAL MANAGEMENT PLAN (EMP) CONSULTING TEAM

Name	Project Role / Position / Specialisation	Affiliation / Company
Dr Sindila Mwiya	Environmental Assessment Practitioner (EAP), Engineering Geology / Geotechnical / Geoenvironmental / Environmental Engineering, Artificial Intelligence and Knowledge-Based Systems with special focus on EIAs, EMPs, EMSs, SEAs and SEMPAs with respect to subsurface resources (minerals, petroleum, water) and energy in Arid and Semiarid Environments (Engineering and Environmental Geologist).	Risk-Based Solutions (RBS) CC
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**DR SINDILA MWIYA, ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)
DECLARATION**

I Dr Sindila Mwiya, the EAP for this Environmental Assessment process conducted to support the application for Environmental Clearance Certificate (ECC) for the proposed 2D seismic survey operations over the Areas of Interest in the Petroleum Exploration License (PEL) No. 73, Kavango Sedimentary Basin, Kavango West and East Regions for Reconnaissance Energy Namibia (Pty) Ltd (Proponent), hereby declares that:

1. This Environmental Management Plan (EMP) Report has been prepared in accordance with the provisions of the Environmental Protection Clause 11 of the Model Petroleum Agreement, Petroleum (Exploration and Production), 1991, (Act No. 2 of 1991), Petroleum Laws Amendment Act, 1998, (Act 24 of 1998), the Environmental Management Act, 2007, (Act No. 7 of 2007) and all other applicable national laws and Regulations.
2. As an EAP for this ECC application, I am highly qualified and experienced and hold a PhD with research interests, academic training and knowledge in Engineering Geology / Geotechnical / Geoenvironmental / Environmental Engineering, Artificial Intelligence and Knowledge-Based Systems with special focus on EIAs, EMPs, EMSs, SEAs and SEMPAs with respect to subsurface resources (minerals, petroleum, water) and energy in Arid and Semiarid Environments (**Engineering and Environmental Geologist**).
3. I have knowledge and experience in conducting environmental assessments, management, and monitoring, and have undertaken more than 200 projects since 2004, including more than 55 oil and gas exploration and production related environmental assessments, management, and monitoring projects in different parts of the World.
4. I have performed the work relating to this ECC application in an objective manner, even if the outcomes will result in views or Records of Decision that may not be favourable to the Interested and Affected Parties (I&APs) or the Proponent.
5. I am an independent consultant not related to the Proponent, I co-own and operate an independent company (Risk-Based Solutions CC) not related to the Proponent and I have no shares, interests, or involvement in the license, financial or other affairs or business or operational decisions of either the Proponent or the decision-making structures of the relevant Government institutions.



.....
Dr Sindila MWIYA
Environmental Assessment Practitioner (EAP)
RISK-BASED SOLUTIONS (RBS) CC

STATEMENT OF QUALIFICATIONS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) – DR SINDILA MWIYA

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining, energy and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. He continues to work internationally in the resources (mining and petroleum) and energy sectors, from permitting through to exploration and production. From the frontier regions (high risk hydrocarbons exploration zones) of South Africa and Namibia, to the prolific oil and gas fields of the Middle East, Angola and the West African Gulf of Guinea, Dr Mwiya has been directly involved in field-based aerial, ground and marine geophysical (gravity, magnetics and seismic) surveys, been onboard exploration drilling rigs, onboard production platforms, conducted public and stakeholder consultations and engagements, and worked with highly technical and well organised and committed clients and third-party teams from emerging and well established global resources and energy companies from many countries such as the UK, France, USA, Russia, Canada, Croatia, Norway, the Netherlands, Spain, Brazil, China, South Africa, Equatorial Guinea, Angola and Nigeria. He is fully aware of all the competing interests and niche donation-based business environmental advocacy opportunism that exists in the resources sector from the local, regional, and international perspectives.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd which he founded, he has undertaken more than 200 projects for Local (Namibian), Continental (Africa) and International (Global) based clients. He has worked and continue to work for Global, Continental and Namibian based reputable resources (petroleum and mining / minerals) and energy companies such as Dundee Precious Metals (Namibia / Canada), Headspring Investment (Namibia/ Russia), EMGS (UK/ Norway), Lepidico (Australia / UK), Best Sheer / Bohale (Namibia / China), CGG Services UK Limited (UK/ France/Namibia), BW Offshore (Norway/Singapore /Namibia), Shell Namibia B. V. Limited (Namibia/ the Netherlands), Tullow Oil (UK/Namibia), Debmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Osino Resource Corporation (Canada/USA/Namibia), Petrobras Oil and Gas (Brazil) / BP (UK)/ Namibia, REPSOL (Spain/ Namibia), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA/ Namibia), Chariot Oil and Gas Exploration (UK/ Namibia), NABIRM (USA/ Namibia), Serica Energy (UK/ Namibia), Eco (Atlantic) Oil and Gas (Canada / USA/ Namibia), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-NOPEC (UK), Maurel & Prom (France/ Namibia), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea/ Namibia), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia Ltd (Russia/ Namibia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia/ Namibia), Namibia Underwater Technologies (NUTAM) (South Africa/Namibia), InnoSun Holdings (Pty) Ltd and all its subsidiary renewable energy companies and projects in Namibia (Namibia / France), HopSol (Namibia/Switzerland), Momentous Solar One (Pty) Ltd (Namibia / Canada), OLC Northern Sun Energy (Pty) Ltd (Namibia) and more than 100 local companies. Dr Sindila Mwiya is highly qualified with extensive practical field-based experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non-Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management, and monitoring (Scoping, EIA, EMP, EMP, EMS) and overall industry specific HSE, cleaner production programmes, Geoenvironmental, geological and geotechnical engineering specialist fields.

Dr Sindila Mwiya has undertaken and continue to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals, and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. He continue to worked as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment, Forestry and Tourism / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and Namibian development partners. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), Strategic Environmental Assessment (SEA) Regulations, Environmental Impact Assessment (EIA) Regulations as well as the SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD within the broader fields of Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence with a research thesis titled Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semi-arid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

Namibia, Windhoek, March 2021

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NON-TECHNICAL SUMMARY

Reconnaissance Energy Namibia (Pty) Ltd, (the “**Proponent**”), is a subsidiary of Reconnaissance Energy Africa Ltd (ReconAfrica), a Canadian publicly listed company. The Proponent holds petroleum exploration rights under the Petroleum Exploration License (PEL) No. 73 covering Degree Square Blocks 1719, 1720, 1721, 1819, 1820 and 1821 over the newly discovered Kavango Sedimentary Basin, Kavango West and East regions in northern Namibia.

ReconAfrica is the Operator of PEL 73 holding 90% of the license interests and the remaining 10% is held by the National Petroleum Corporation of Namibia (Namcor) with its costs carried to the development stage. As part of the provisions of the Petroleum Agreement signed between ReconAfrica and the Government of the Republic of Namibia represented by the Ministry of Mines and Energy (MME), the Proponent has committed to undertaking petroleum exploration activities in PEL 73. The Petroleum Agreement provides for the initial exploration period (4 years), first and second two (2) years renewal exploration periods subject to possible one-year extension. In an event of a discovery of economic oil and gas reserves, the Proponent may apply for a 25-year production license, which should be granted within six (6) months of the date of application.

In fulfilment of the environmental requirements for the proposed 2D seismic survey, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant and led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to conduct an Environmental Assessment comprising the preparation of the Scoping, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports to support the application for Environmental Clearance Certificate (ECC) for the proposed 2D seismic survey operations.

The Environmental Assessment process, has taken into considerations all the applicable national regulations, the corporate requirements of the Proponent, oil and gas exploration and environmental assessment international best practices, the inputs of the public and stakeholders and sensitivity of the receiving environment (physical, biological, socioeconomic and ecosystem services and functions). The following is the summary of the key sources of positive and negative impacts likely to be associated with the proposed 2D seismic survey operations:

- (i) Planning and mobilisation (Pre-survey preparation).
- (ii) Camp sites setups and widening of tracks and creation of limited new access as may be applicable.
- (iii) Actual data acquisition along the individual profiles / survey lines.
- (iv) Demobilisation and Closure (Survey Completion), and.
- (v) Any accidental event that may be associated with the routine and physical presence operational activities.

The proposed survey operations covering the key exploration Areas of Interest (AOI) within PEL 73 will be conducted along existing roads and tracks, using a limited footprint and efficient light trucks called the Explorer 860 Accelerated Weight Drop (AWD) as the energy sources and will utilise wireless receivers that will allow for greater line offsets. The “weight-drop” which will generate a thump as it hits the ground at a frequency of 300Hz, is not expected to have any frequency specific interference with the local fauna such as the elephants known to have communication frequency ranges of between 14-35Hz, far below survey frequency. 2D seismic survey waves are different from earthquake created seismic waves. Earthquake generate seismic waves have periods and resolution of minutes and kilometres, respectively, while the 2D seismic survey operations produces waves with periods and resolution of tenths of a second and tens of meters respectively.

During the seismic survey operations to be conducted only during the day times, the weigh drop will generate acoustic waves which will travel into the earth’s crust and gets reflected by various subsurface formations, and will returns to the surface where it will be recorded by the receivers called geophones. The resultant product following complex processing is a vertical sonic cross-section of the subsurface

beneath the survey line showing the geological materials (de-risked geological sub-model) and structures that the acoustic wave has travelled through. The interpreted 2D seismic survey data is used to find specific potential areas (potential reservoirs) within the AOI where oil or gas may be trapped in sufficient quantities. Further targeted site-specific exploration activities such as exploration and appraisal drilling operations may or may not be undertaken subject to the results of the 2D seismic survey.

This Environmental Management Plan (EMP), described in this report, is based on the findings and recommendations of the Environmental Impact Assessment (EIA) Report Vol. 2 of 3 and specialist inputs and recommendations. The Proponent shall incorporate the EMP in the Environmental Management System (EMS) in line with the Environmental Policy of the company. The Proponent must implement precautionary measures / approach to environmental management.

All the responsibilities to ensure that the recommendations are executed accordingly, rest with the Proponent. Reconnaissance Energy Namibia (Pty) Ltd as the Proponent and operator shall provide all appropriate human and financial resources necessary for the effective implementation and monitoring of this EMP. It is the responsibility of the Proponent to make sure that all members of the workforce including contractors and subcontractors are aware of the EMP provisions and its overall objectives.

1. BACKGROUND TO THE PROJECT

1.1 Introduction

ReconAfrica Energy Namibia (Pty) Ltd, herein referred as ReconAfrica holds petroleum exploration rights under the Petroleum Exploration License (PEL) No. 73 covering Degree Square Blocks 1719, 1720, 1721, 1819, 1820 and 1821 in Kavango Sedimentary Basin, Kavango West and East regions, northern Namibia (Figs. 1.1 and 1.2). ReconAfrica is the Operator of PEL 73 holding 90% of the license interests. The National Petroleum Corporation of Namibia (Namcor), a Namibian State-owned company (Parastatal) holds the remaining 10% interest in the Licence, with its costs carried to the development stage.

ReconAfrica has delineated the Kavango Sedimentary Basin subsurface feature as a key exploration Area of Interest (AOI) based on the interpretation of the available Government high resolution aerial geophysical data, regional structural geological mapping, and historical well data from the Etosha Basin. In order to confirm the presence of an active petroleum system and validate the existence of the Kavango Sedimentary Basin, stratigraphic wells will be drilled to study the geology of the AOI and the first of such wells is currently being drilled near Kawe Village in Kavango East Region. Following on the drilling of the stratigraphic wells, the Proponent intends to conduct 450 km long of 2D seismic survey operations over the AOI in order to search for geological structures called reservoirs which could have the potential for holding economic hydrocarbon resources. Depending on the outcomes of the proposed 2D seismic survey operations, exploratory drilling operations over the 2D seismic survey delineated hydrocarbon structural reservoirs may be undertaken over the AOI followed by more appraisal exploration drilling if there is a commercial discovery.

1.2 Petroleum Exploration License (PEL) No. 73

PEL 73 was granted in January 2015 and exploration period continues to January 2024 with the rights to extend to January 2026. Following declaration of a commercial discovery, the Petroleum Agreement entitles ReconAfrica to apply for a production licence having a 25-year term. The fiscal terms of the Petroleum Agreement call for a 5% royalty, and an additional profits tax that applies late in the life of a producing field. ReconAfrica's Namibian subsidiary, Reconnaissance Energy Namibia (Pty) Ltd, is required to pay Namibian corporate income tax of 35%.

1.3 Proposed Project Location

1.3.1 Regional Settings

PEL 73 and the proposed 2D seismic survey area covers parts of both the Kavango West and East Regions in northern Namibia (Figs. 1.1 and 1.2). The key Areas of Interest (AOI) (potential sedimentary basin areas) within PEL 73 falls within Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) (Fig. 1.3). KAZA TFCA is a multiple land use international transboundary conservation initiative with a common vision of promoting and supporting sustainable livelihoods through coexistence and utilisation of multiple resource and resources areas for the greater benefits of the local communities of the member states (www.met.gov.na). KAZA TFCA is a transboundary initiative covering portions of Angola, Botswana, Namibia, Zambia, and Zimbabwe (Fig. 1.3).

The key multiple surface resources use areas found within KAZA TFCA includes: National parks, game reserves, forest reserves, conservancies, game/wildlife management areas, communal lands, but also subsurface resources such as water, minerals, geothermal energy, and petroleum that have not been acknowledged in the vision. Key targeted beneficiaries of the KAZA TFCA initiative are the local people especially the rural communities living around these resources and whose livelihoods are dependent on seasonal subsistence agriculture, animal husbandry, fishing, natural resource harvesting, tourism, trading, and hunting. In Namibia and in other KAZA TFCA member states, the exploration and utilisation of potential subsurface resources under KAZA TFCA, are allowed, except in the formally national member state proclaimed sensitive areas such as national parks. Sensitive areas within the Namibian portion of KAZA TFCA are known and the proposed 2D seismic survey operations in PEL 73 does not fall in such sensitive area such as a national park, legally excluded from oil and gas exploration.

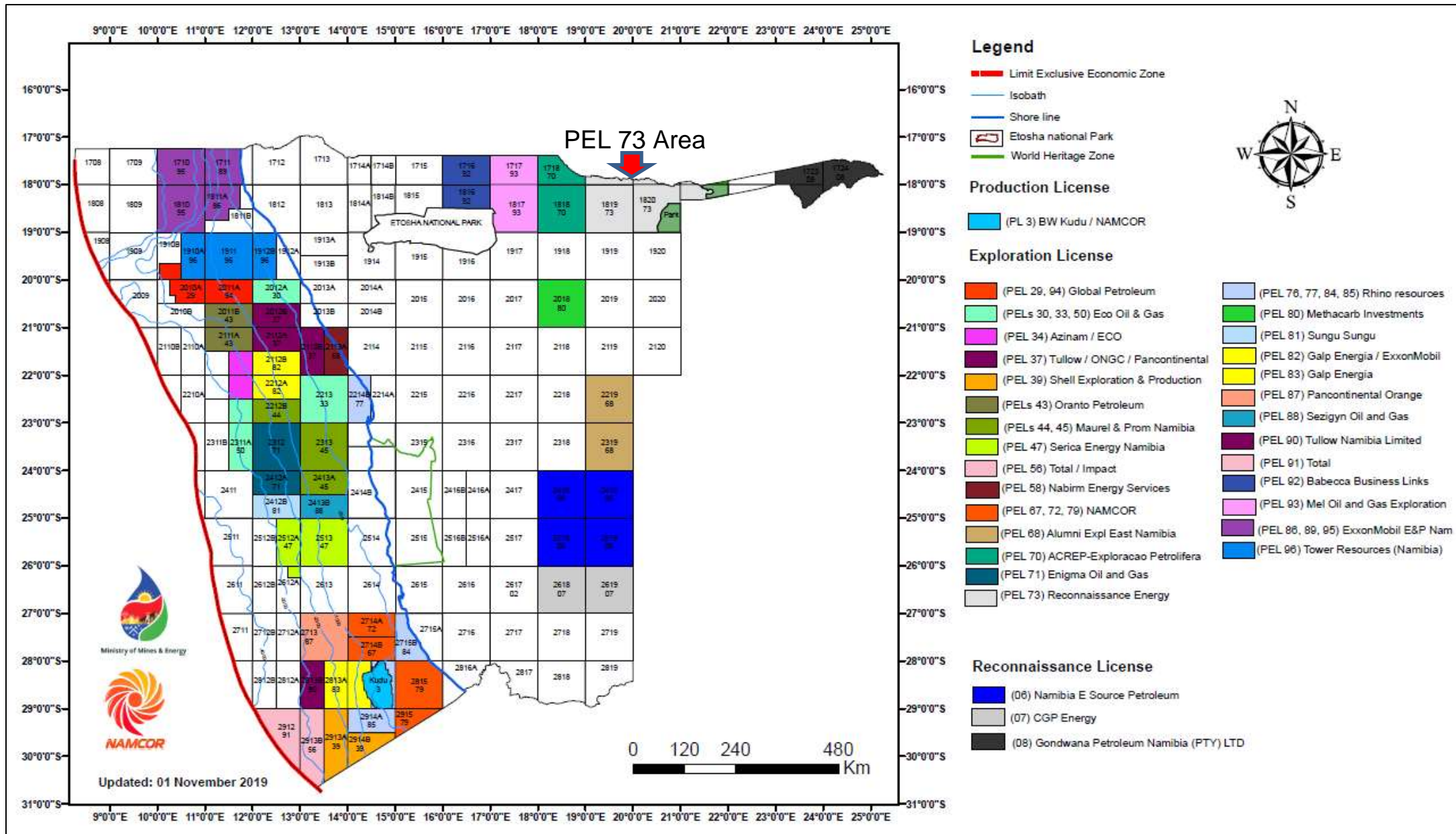


Figure 1.1: Hydrocarbon Map of Namibia (Source: www.namcor.com.na or www.mme.gov.na). Petroleum Licenses are granted as degree (Latitude and Longitude) Square Blocks and several such license have been granted both in the offshore and onshore environments.

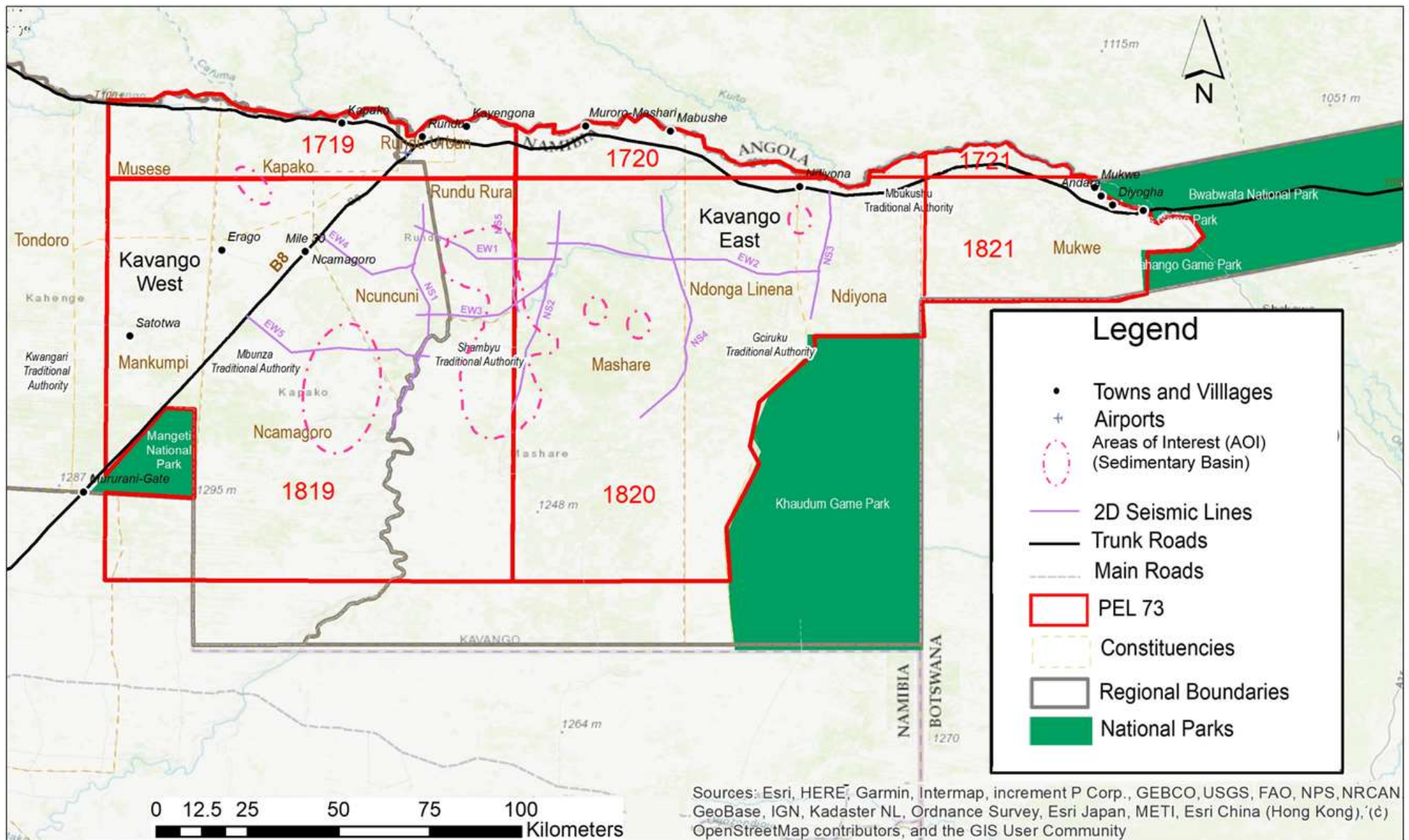


Figure 1.2: Regional location of PEL No. 73 covering degree squares Blocks 1719, 1720, 1721, 1819, 1820 and 1821 and showing the Areas of Interest (AOI) (Kavango Sedimentary Basin), the proposed 2D seismic survey lines, regional council constituencies and traditional authorities boundaries.

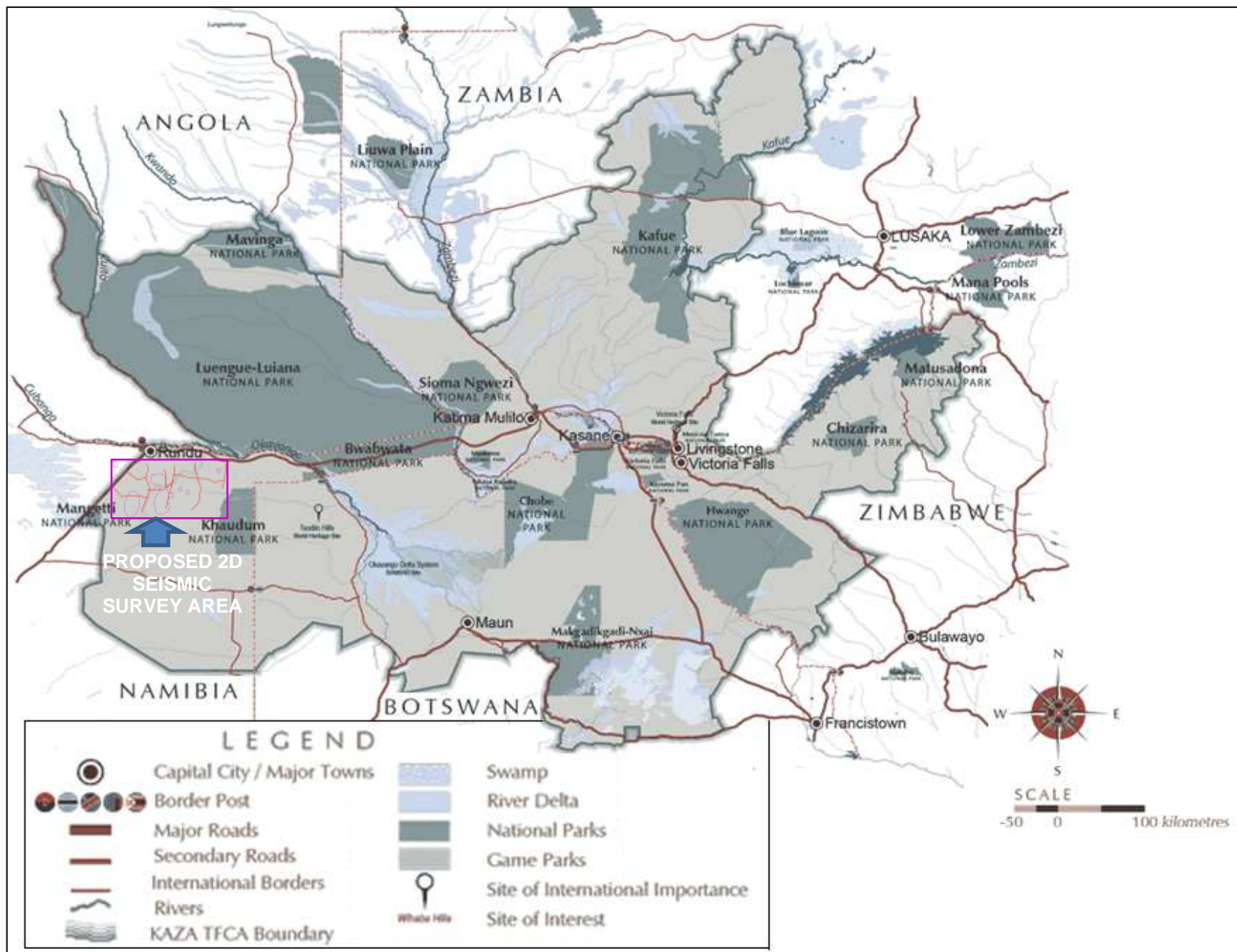


Figure 1.3: The Transboundary Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) initiative and location of the survey area (www.kavangozambezi.org/en/).

1.3.2 Local Settings

The key AOI interests (Potential Sedimentary Basin Area) targeted by the Proponent does not fall in proclaimed national park or highly sensitive area such as a groundwater protection zone. The proposed 2D seismic survey area and the AOI is not situated in the active catchment areas of the Okavango River Basin but in fossil channels of the Omatako–Omuramba Ephemeral river and its ephemeral tributaries (Fig. 1.4).

According to Oldeland *et. al.*, (2013), the Omatako Ephemeral River has not contributed to runoff from the Okavango for over 50 years. Overall, the key central exploration interests within PEL 73 are situated about 55 km south of Rundu, 80 km south of the Okavango River, more than 260 km from the Okavango Delta in Botswana and not related to the active catchment area of the Okavango Delta whatsoever, more than 40 km from the boundary of the Khaudum National Park and more than 70 km from the Mangetti National Park.

The overall general area falls in the sparsely populated but not pristine communal areas of the Ncamangoro and Mashare Constituencies of the Kavango West and East Regions, respectively. Ncamangoro and Mashare Constituencies falls within the boundaries of the Mbunza and Shambyu Traditional Authorities, respectively.

The following is the summary of the detailed locations of the proposed 2D seismic survey lines with respect to the regional and traditional authorities administrative / governance boundaries as shown in Fig. 1.5 and Plates 1.1 -1.32):

- (i) Line NS-1: Covers Kavango East and West Regions. Ncuncuni, Ncamagoro and Mashare Constituencies. and Mbunza and Shambyu Traditional Authorities (Fig. 1.5 and Plates 1.1 -1.4).
- (ii) Line NS-2: Covers Kavango East Region. Mashare Constituency. and Shambyu Traditional Authority (Fig. 1.5 and Plates 1.5 -1.8).
- (iii) Line NS-3: Covers Kavango East Region. Ndiyona Constituency. and Gciruku Traditional Authority (Fig. 1.5 and Plate 1.9).
- (iv) Line NS-4: Covers Kavango East Region. Mashare and Ndonga Linena Constituencies. and Shambyu Traditional Authority (Fig. 1.5 and Plates 1.10 and 1.11).
- (v) Line NS-5: Covers Kavango East Region. Rundu Rural Constituency. and Shambyu Traditional Authority Fig. 1.5 and Plates 1.12 -1.14).
- (vi) Line EW-1: Covers Kavango East and West Regions. Ncuncuni, Rundu Rural and Mashare Constituencies. and Mbunza and Shambyu Traditional Authorities (Fig. 1.5 and Plates 1.15 -1.17).
- (vii) Line EW-2: Covers Kavango East Region. Mashare Ndonga Linena and Ndiyona Constituencies. and Shambyu and Gciruku Traditional Authorities (Fig. 1.5 and Plates 1.18-1.20).
- (viii) Line EW-3: Covers Kavango East and West Regions. Ncuncuni, Rundu Rural and Mashare Constituencies. and Mbunza and Shambyu Traditional Authorities (Fig. 1.5 and Plates 1.21 -1.25).
- (ix) Line EW-4: Covers Kavango West Region. Ncuncuni Constituency and Mbunza Traditional Authority (Fig. 1.5 and Plates 1.26 -1.28).
- (x) Line EW-5: Covers Kavango West and East Regions. Ncamagoro, Ncuncuni and Mashare Constituencies and Mbunza and Shambyu Traditional Authorities (Fig. 1.5 and Plates 1.29-1.31), and.

- (xi) Plate 1.32 shows one of the alternatives survey line EW with other alternative survey lines shown in Fig. 1.5.

1.3.3 Accessibility

The main access to the survey area can be undertaken by 4 by 4 vehicles either through the already existing gravel roads, sandy roads and tracks connecting small settlement (Fig. 1.5 and Plates 1.1 - 1.32).

The survey area and all the profiles / survey lines do follow existing road or tracks (Fig. 1.4 and Plates 1.1 -1.32). Very few areas along the survey lines will require the widening of the existing sandy access resulting in cutting of the local bushes.

No big trees shall be cut unnecessary because of widening access because no new cut line will be created. The survey will be conducted from the month of April which is the dry season with no effect on the local subsistence farmland.

The location of the proposed profiles / survey lines follows existing tracks and are based on the results of the field-based scouting and verification undertaken by Risk-Based Solutions team during the months of November and December 2020 and January 2021 (Plates 1.1-1.32).

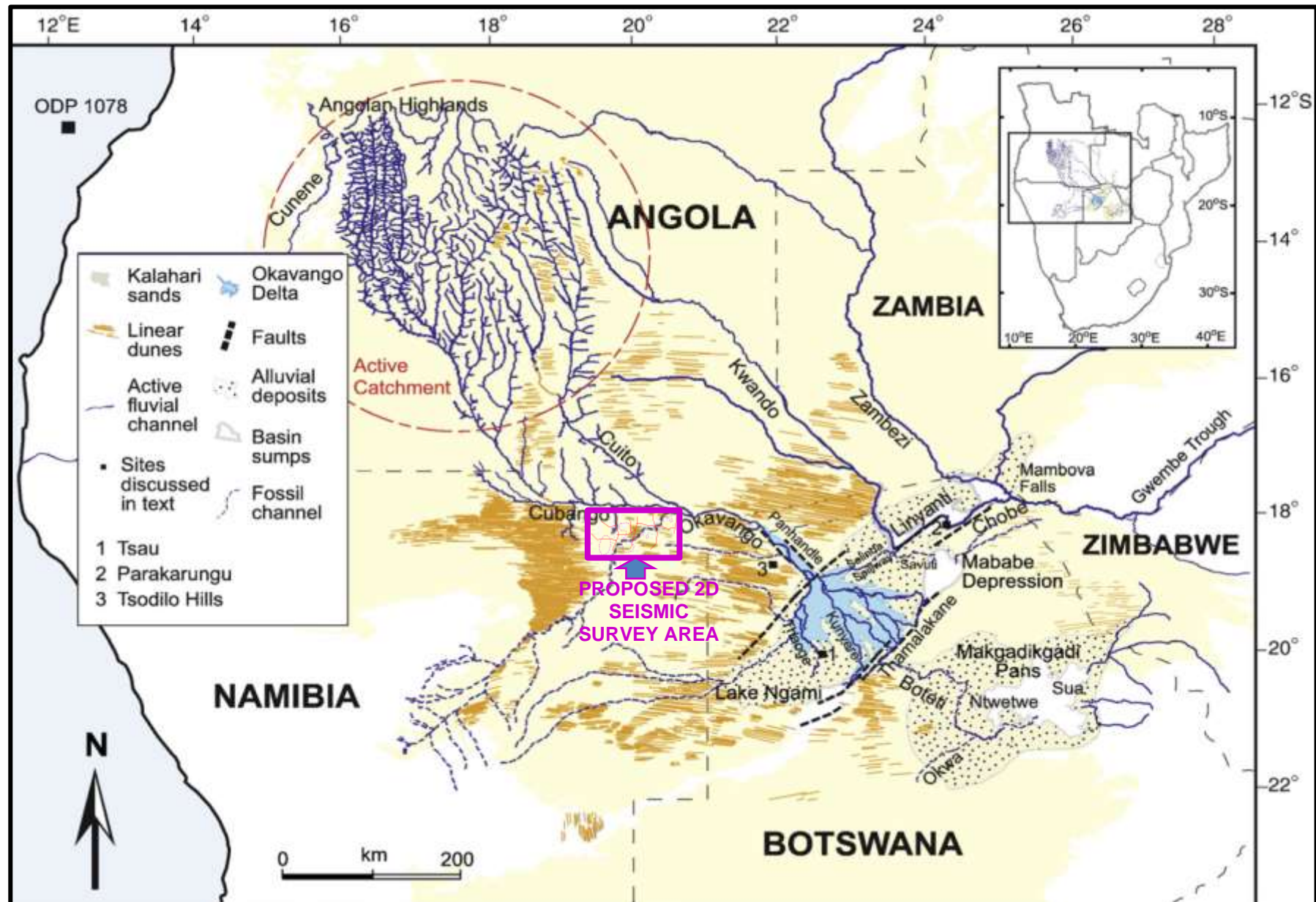


Figure 1.4: Regional map of the Middle Kalahari and the hydrological systems of the Okavango, Kwando, and Zambezi catchments in relation to the sump basins (Lake Ngami, the Mababe Depression and the Makgadikgadi pans). The proposed 2D seismic survey area is not situated in the active catchment areas but in fossil channels of the Omatako–Omuramba Ephemeral rivers. According to Oldeland *et al.*, (2013), the Omatako Ephemeral River has not contributed to runoff from the Okavango for over 50 years.

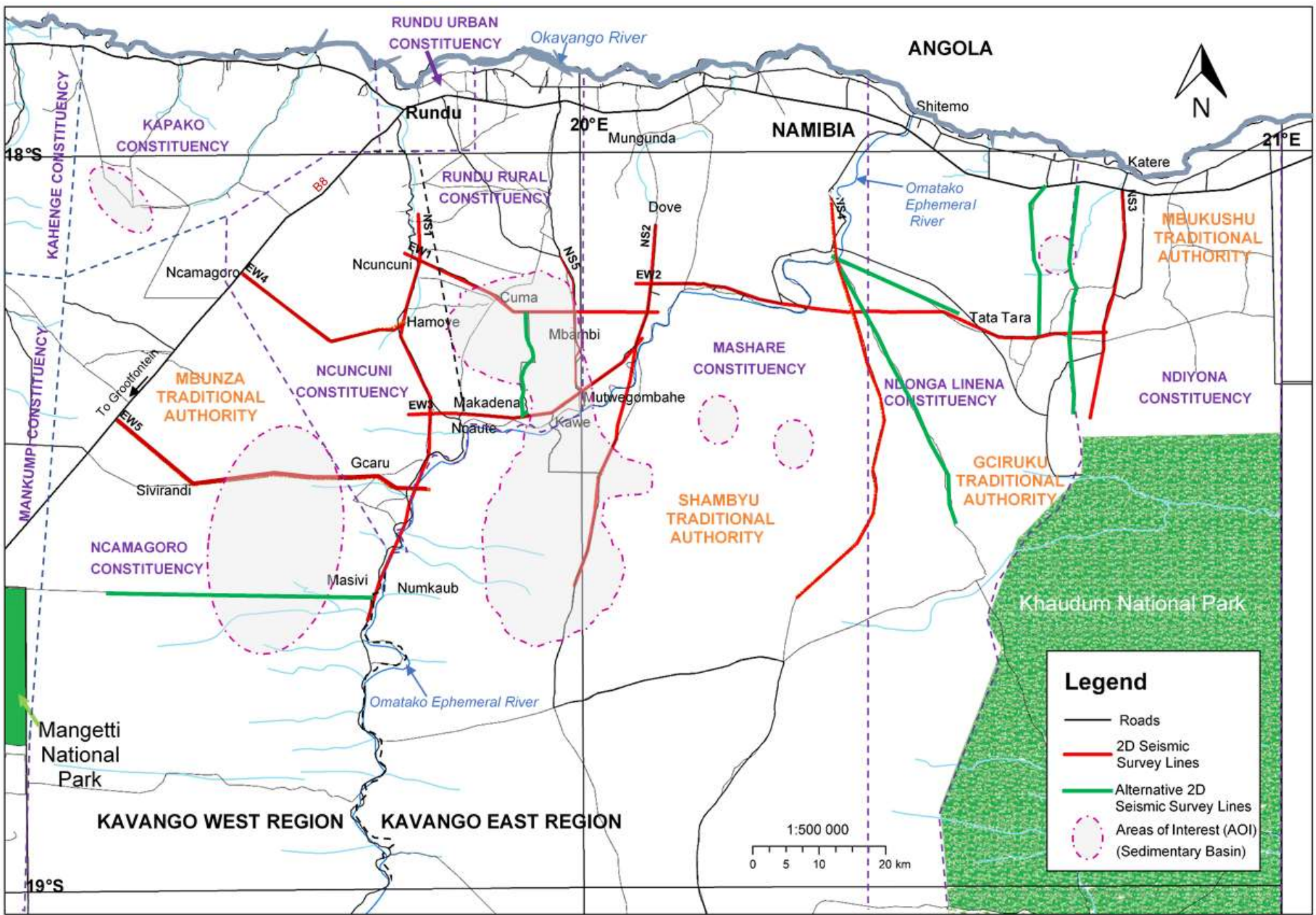


Figure 1.5: Detailed location of the key exploration Areas of Interest (AOI) and proposed and alternative 2D seismic survey lines along exiting roads and tracks with respect to the various regional and traditional authorities and settlements.

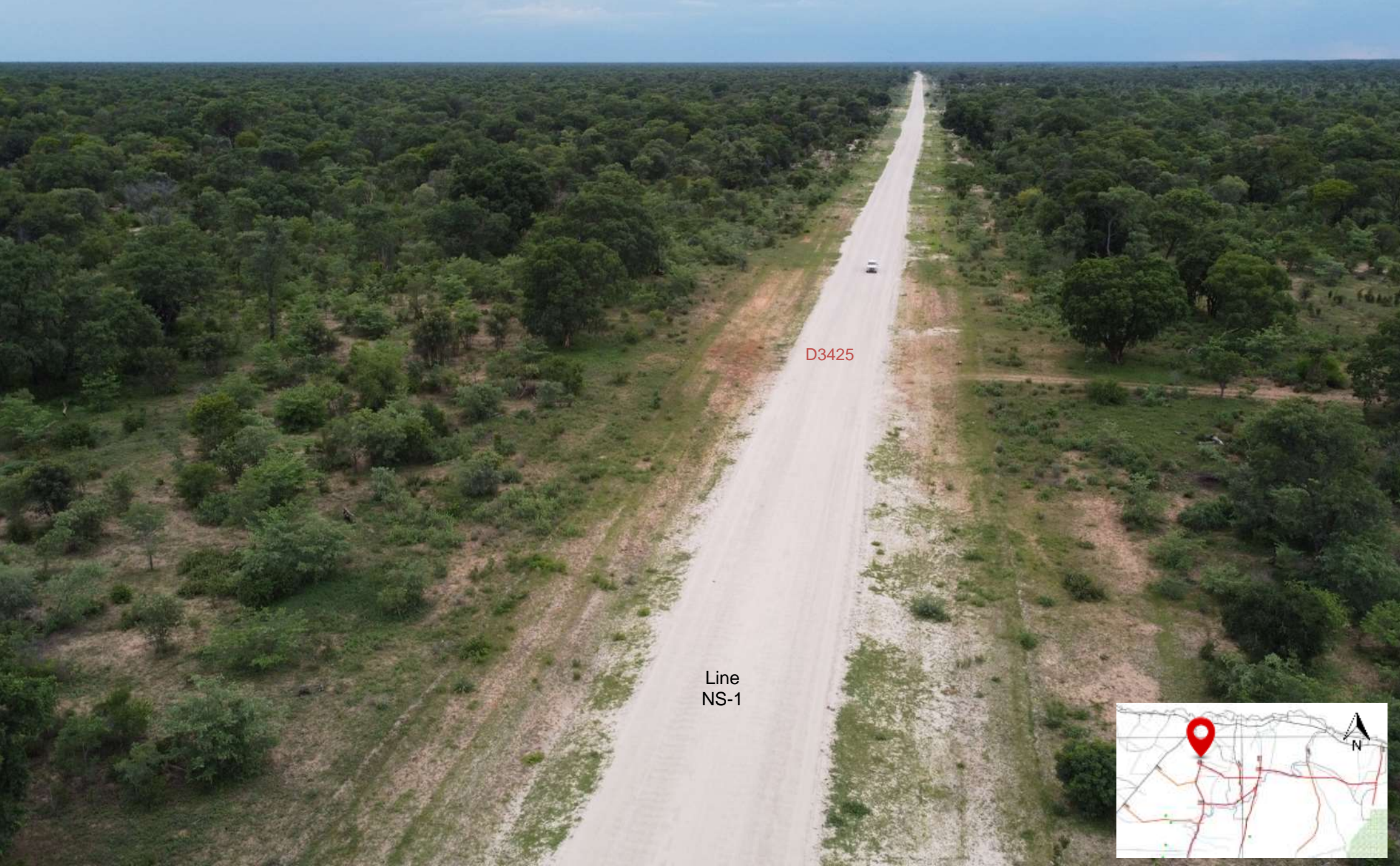


Plate 1.1: Northern section of the proposed 2D seismic survey Line NS-1 detailed location shown by a drone aerial view to the south along the D3425 road from Rundu to Ncaute.



Plate 1.2: Middle section of the proposed 2D seismic survey Line NS-1 detailed location near Hamoye shown by a drone aerial view to the south along the D3425 road from Rundu to Ncaute.



Plate 1.3: Southern middle section of the proposed 2D seismic survey Line NS-1 detailed location shown by a drone aerial view to the north (towards Ncaute) along the D3425 road near Gcaru and west of the Omatako Ephemeral River Channel.



Plate 1.4: Southern end-section of the proposed 2D seismic survey Line NS-1 detailed location shown by a drone aerial view to the north along the D3425 road near Namkaub at the junction of the track leading to the northern boundary of the Mangetti National Park.

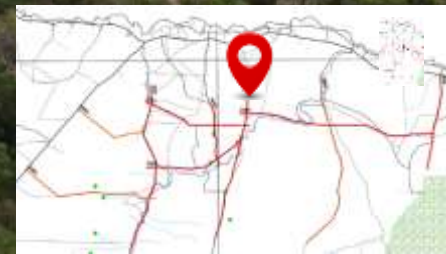


Plate 1.5: Northern section of the proposed 2D seismic survey Line NS-2 detailed location shown by a drone aerial view to the north (towards Dove) along the existing tracks linking Dove to the D3400.



Plate 1.6: Northern section of the proposed 2D seismic survey Line NS-2 detailed location shown by a drone aerial view to the south (towards D3400 Road junction) along the existing tracks linking Dove to the D3400.



Plate 1.7: Middle section of the proposed 2D seismic survey Line NS-2 detailed location shown by a drone aerial view to the north along the D3400 Road towards junction with the existing tracks linking Dove to the D3400.

Line NS-2 →

Omatako Ephemeral River

Line NS-2 →



Plate 1.8: Middle section of the proposed 2D seismic survey Line NS-2 detailed location shown by a drone aerial view to the south along the existing track linked to the D3400.



Plate 1.9: Northern section of the proposed 2D seismic survey Line NS-3 detailed location shown by a drone aerial view to the south along the existing 4 by 4 sandy track linking Khaudum National Park to the B8 at Katere.



Plate 1.10: Northern section of the proposed 2D seismic survey Line NS-4 detailed location shown by a drone aerial view to the south along the D3400 linked to the B8.

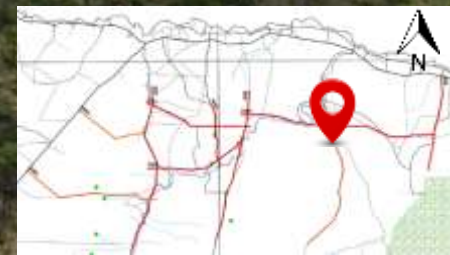


Plate 1.11: Middle section of the proposed 2D seismic survey Line NS-4 detailed location shown by a drone aerial view to the south along the D3400 linked to the B8.



Plate 1.12: Northern section of the proposed 2D seismic survey Line NS-5 detailed location shown by a drone aerial view to the south along the new Rundu to Mbambi Roads D3448.



Plate 1.13: Middle section of the proposed 2D seismic survey Line NS-5 detailed location shown by a drone ground view to the east showing the new Rundu to Mbambi Roads D3448 and D3468 from the junction to Cuma along the new D3401 Road.



Plate 1.14: Southern section of the proposed 2D seismic survey Line NS-5 detailed location shown by a drone ground view to the south (Kawe) between Mbambi and the D3400 Road near Kawe.



Plate 1.15: Western section of the proposed 2D seismic survey Line EW-1 detailed location shown by a drone aerial view to the east along the new D3401 Road from Ncuncuni to Cuma passing through the community forestry.

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Plate 1.16: Middle section of the proposed 2D seismic survey Line EW-1 detailed location shown by a drone aerial view at Cuma towards the west along the new D3401 Road from Ncuncuni to Cuma passing through the community forestry.

Fires Damage to the Forest



Line
EW-1
↓

Line NS-5
(To Mbambi)



Plate 1.17: Eastern section of the proposed 2D seismic survey Line EW-1 detailed location shown by a drone aerial view to the east at cross cutting with NS-5 at the Rundu to Mbambi Roads D3448 and D3468 from the junction to Cuma along the new D3401 Road.



Plate 1.18: West section of the proposed 2D seismic survey Line EW-2 detailed location shown by a drone aerial view to the east along the D3400 and passing through the community forestry.



Plate 1.19: Western section of the proposed 2D seismic survey Line EW-2 detailed location shown by a drone aerial view to the east from the D3400 junction with the road to Taratara. This road is recommended as the alternative survey line for the EW-2 for the eastern section.



Plate 1.20: Eastern section of the proposed 2D seismic survey Line EW-2 detailed location shown by a drone aerial at view at Taratara looking towards west and along the recommended alternative survey line towards D3400 from Taratara.



Plate 1.21: Western section along D3400 Road of the proposed 2D seismic survey Line EW-3 detailed location shown by a drone aerial view to the south toward Ncaute along the D3400 Road.



Plate 1.22: Middle section of the proposed 2D seismic survey Line EW-3 detailed location shown by a drone aerial view to the east along the D3400 Road from Kawe settlement.



Plate 1.23: Middle section of the proposed 2D seismic survey Line EW-3 detailed location shown by a drone aerial view to the west along the D3400 Road at Kawe wood processing facility.



Plate 1.24: Middle eastern section of the proposed 2D seismic survey Line EW-3 detailed location shown by a drone aerial view taken at Mutwegombahe towards the western direction (towards Kawe and current drilling location 1) along the D3400 Road.



Plate 1.25: Middle eastern section of the proposed 2D seismic survey Line EW-3 detailed location shown by a drone aerial view at Mutwegombahe towards the east along the D3400 Road.



Plate 1.26: Eastern section of the proposed 2D seismic survey Line EW-4 detailed location shown by a drone aerial view to the east from the B8 Road. The EW-4 survey line run through an existing Community Forestry track to Hamoye along the D3400 Road from Rundu to Ncaute.



Line
EW-4

Plate 1.27: Middle section of the proposed 2D seismic survey Line EW-4 detailed location shown by a drone aerial view to the northeast within the middle of the community forestry. The EW-4 survey line run through an existing Community Forestry track to Hamoye along the D3400 Road from Rundu to Ncaute.



Plate 1.28: Eastern-section of the proposed 2D seismic survey Line EW-4 detailed location shown by a drone aerial view to the west through the community forestry near Hamoye along the D3400 Road from Rundu to Ncaute.



Plate 1.29: Western-section of the proposed 2D seismic survey Line EW-5 detailed location shown by a drone aerial view to the east along the existing track from the B8 junction to Gcaru through Sivaradi.



Plate 1.30: Western-section of the proposed 2D seismic survey Line EW-5 detailed location shown by a drone aerial view to the east along the existing track from the B8 junction to Gcaru through Sivaradi.



Plate 1.31: Eastern-section of the proposed 2D seismic survey Line EW-5 detailed location shown by a drone aerial view to the west along the existing track from Gcaru to Sivaradi.



Plate 5.32: Access track linking the D3425 to the B8 tarred Road from Grootfontein to Rundu passing north of Mangetti National Park is an alternative potential East-West seismic survey line if required. This specific track was inspected by the Ministry of Environment, Forestry and Tourism team during the field inspection visit undertaken on the 18th and 19th January 2021 to the project area.

2. THE EMP FRAMEWORK

2.1 Likely Sources Impacts

This Environmental Assessment process has taken into consideration the sensitivity of the receiving environment (physical, biological, socioeconomic and ecosystem) with respect to the proposed 2D seismic survey operations. The following is the summary of the likely sources of negative impacts on the receiving environment that have been evaluated during the EIA process:

- ❖ Planning and mobilisation (Pre-survey preparation).
- ❖ Camp sites setups and widening of tracks and creation of limited new access as may be applicable.
- ❖ Actual data acquisition along the individual profiles / survey lines.
- ❖ Demobilisation and Closure (Survey Completion), and.
- ❖ Any accidental event that may be associated with the routine and physical presence operational activities.

2.2 Summary of the Impact Assessment Results

2.2.1 Likely Positive Impacts

Based on the results of the EIA report, the following is the summary of the key positive impacts that the proposed 2D seismic survey will have:

- ❖ Payment of the annual license rental fees to the Central Government averaging N\$2 million per year and this is vital revenue streams for the State paid by all petroleum exploration companies in Namibia and for the benefit of all Namibians.
- ❖ USD50, 000.00 annual contributions to the Petroleum Training and Education Fund (PETROFUND) paid by all petroleum exploration companies in Namibia. The PetroFund provides local regional and international bursaries and scholarships to seventy (70) Namibians annually.
- ❖ Short-term contractual employment opportunities (3-4 months) for the local communities during the survey operations.
- ❖ Expansion of the subsurface knowledge-base: The seismic survey data to be generated will be highly useful in the search for other subsurface resources such as minerals, water, geothermal and general geoscience research, and development, and.
- ❖ Contribution to the development of local infrastructures such as rural water supply through Corporate Social Responsibility (CSR) that the Proponent is current supporting in Kavango East Region.

2.2.2 Likely Negative Positive Impacts

2.2.2.1 Summary Overview

Based on the finding of the EIA Process, the following is the summary of the key likely negative environmental impacts that the proposed activities may have on the receiving environment:

1. Disruption / disturbance of the habitats.
2. Reptiles.

3. Amphibian.
4. Mammals.
5. Avian.
6. Tree and shrub species.
7. Grass.
8. Socioeconomic environment.
9. Existing infrastructure, current and future land uses.
10. Ecosystem functions, services, use values and non-use or passive use.
11. Physiography and geology.
12. Visual and land degradation.
13. Surface and groundwater quality.
14. Increased water consumption / depletion of water resources.
15. Existing local community water supply infrastructure along the proposed survey lines (existing roads and tracks).
16. Community and workers security, public safety, Occupational Health, and Safety.
17. Noise and vibrations.
18. Dust and air quality.
19. Waste (solid and liquid) management.
20. Accidental events.
21. Archaeological, paleontological, and historical resources.
22. Contributions to global Climate Change, and.
23. Cumulative impacts.

The above listed likely sources of negative impacts have been evaluated during the EIA for the proposed for the proposed 2D seismic survey operations in PEL 73 with mitigation measures provided in this EMP Report.

2.2.2.2 Overall Impact Individual Components Assessment Results

The overall impact assessment of the individual components of the receiving environment covered the magnitude, duration, extent, and probability of the potential impacts due to the proposed 2D seismic survey activities interacting with the various components of the receiving environment as presented in form of a matrix table shown in Table 2.1. The overall assessment is based on the grading of the impact assessment results of the individual positive and negative components of the receiving environment shown in EIA Report, Tables 6.3-6.8 and 6.9-6.31, respectively.

The overall severity of potential environmental impacts of the proposed 2D seismic survey activities on the receiving environment will be of low magnitude, temporally duration, localised extent, and low probability of occurrence due to the limited scope of the proposed activities and the use of step progression approach in advancing exploration. The standard resources step by step approach to exploration represented by the proposed 2D seismic survey operations will allow the Proponent to continuously review and update the various component of the receiving environment as may be applicable against the results of exploration success. The implementation of the subsequent stage/s of exploration will be subject to the positive outcomes of previous activities as graded.

2.2.2.3 Assessment Results of the Overall Significant Impacts

The assessment results of the overall significant impacts depended upon the degree to which the proposed 2D seismic survey activities are likely to results in unwanted consequences on the receptor. Overall, the assessment of significant impacts has focused on the ecosystem-based approach that considers potential impacts to the ecosystem.

The main key sources of impacts that have been used in the determination of significant impacts are all the activities associated with the proposed 2D seismic survey operations. Each of the main areas of impact have been identified and assessed as follows:

- ❖ Positive impacts are classified under a single category. they are then evaluated qualitatively with a view to their enhancement, if practical.
- ❖ Negligible or low impacts will require little or no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, or that the receptor is of low sensitivity), and.
- ❖ Medium or high impacts require the adoption of management or mitigation measures to limit or reduce the impact to an acceptable level.

Overall, the results of the significant impact assessment for the proposed 2D seismic survey are shown in Tables 2.2. It is important to note that the assessment of the likely impacts as shown in Table 2.1, have been considered without the implementation of mitigation measures detailed in this EMP Report.

The need for implementation of the appropriate mitigation measures as presented in this EMP Report have been determined on the results of the impact assessment (Tables 2.1) and the significant impacts as detailed in Table 2.2.

Table 2.1: Summary results of the overall likely impacts of the proposed 2D seismic survey activities on the individual components of the receiving environment with respect to duration, geographical extent, and probability occurrence.

RECEIVING ENVIRONMENT SENSITIVITY			PHYSICAL ENVIRONMENT						BIOLOGICAL ENVIRONMENT					SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT						
			Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Subsistence Agriculture	Community Forestry	Tourism and Recreation	Cultural, Biological and Archaeological Resources		
SENSITIVITY RATING	CRITERIA																			
1	Negligible	The receptor or resource is resistant to change or is of little environmental value.																		
2	Low	The receptor or resource is tolerant of change without detriment to its character, is of low environmental or social value, or is of local importance.																		
3	Medium	The receptor or resource has low capacity to absorb change without fundamentally altering its present character, is of high environmental or social value, or is of national importance.																		
4	High	The receptor or resource has moderate capacity to absorb change without significantly altering its present character, has some environmental or social value, or is of district/regional importance.																		
5	Very High	The receptor or resource has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental or social value, or is of international importance.																		
SOURCES OF POTENTIAL IMPACT	ROUTINE AND PHYSICAL PRESENCE OPERATIONAL ACTIVITIES	1.	Planning and mobilisation (Pre-survey preparation)	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	1	1
		2.	Camp sites setups and widening of tracks and creation of limited new access as may be applicable	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	1	1
		3.	Actual data acquisition along the individual profiles / survey lines	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	1	1
		4.	Demobilisation and Closure (Survey Completion)	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	1	1
	UNPLANNED ACCIDENTAL EVENTS	5.	Any accidental event that may be associated with the routine and physical presence operational activities	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	1	1

Table 2.2: Summary results of the overall likely significant impacts that the proposed 2D seismic survey activities will have on the components of the receiving environment with respect to duration, geographical extent, and probability occurrence.

IMPACT SEVERITY <small>Magnitude, Duration, Extent, Probability</small>		RECEPTOR CHARACTERISTICS (SENSITIVITY)					PHYSICAL ENVIRONMENT					BIOLOGICAL ENVIRONMENT				SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT						
		Very High (5)	High(4)	Medium (3)	Low (2)	Negligible (1)	Water Quality	Physical infrastructure and Resources	Air Quality, Noise and Dust	Landscape Topography	Soil Quality	Climate Change Influences	Habitat	Protected Areas	Flora	Fauna	Ecosystem functions, services, use values and non-Use or passive use	Local, regional, and national socioeconomic settings	Subsistence Agriculture	Community Forestry	Tourism and Recreation	Cultural, Biological and Archaeological Resources
Very High (5)	Major [5/5]	Major [4/5]	Moderate [3/5]	Moderate [2 /5]	Minor 1/5																	
High (4)	Major [5/4]	Major [4/4]	Moderate [3/4]	Moderate [2/4]	Minor[1/4]																	
Medium (3)	Major [5/3]	Moderate[4/3]	Moderate[3/3]	Minor[2/3]	None[1/3]																	
Low (2)	Moderate [5/2]	Moderate[4/2]	Minor[3/2]	None[2/2]	None[1/2]																	
Negligible (1)	Minor [5/1]	Minor [4/1]	None [3/1]	None [2/1]	None [1/1]																	
SOURCES OF POTENTIAL IMPACT	ROUTINE AND PHYSICAL PRESENCE OPERATIONAL ACTIVITIES	1.	Planning and mobilisation (Pre-survey preparation)				2/2	2/2	2/2	2/2	2/2	1/2	2/2	1/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2	
		2.	Camp sites setups and widening of tracks and creation of limited new access as may be applicable				2/2	2/2	2/2	2/2	2/2	1/2	2/2	1/2	2/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2
		3.	Actual data acquisition along the individual profiles / survey lines				2/2	2/2	2/2	2/2	2/2	1/2	2/2	1/2	2/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2
		4.	Demobilisation and Closure (Survey Completion)				2/2	2/2	2/2	2/2	2/2	1/2	2/2	1/2	2/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2
	UNPLANNED ACCIDENTAL EVENTS	5.	Any accidental event that may be associated with the routine and physical presence operational activities				2/2	2/2	2/2	2/2	2/2	1/2	2/2	1/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2	

2.2.3 Summary of the EIA Conclusion and Recommendations

The Proposed 2D seismic survey will have high positive impacts on the socioeconomic environment at national, regional and community levels. The overall severity of potential negative environmental impacts of the proposed 2D seismic survey activities on the receiving environment will likely be of low magnitude, temporally duration, localised extent, and low probability of occurrence due to the limited scope of the proposed activities to be conducted along existing roads and tracks.

Mitigation measures have been recommended and are contained in this EMP Report for the proposed project. Through the effective implementation and monitoring of the recommended mitigation measures, the overall likely negative impacts of the proposed 2D ground seismic survey activities on the receiving environment (physical, socioeconomic, and biological) will likely to be low and localised with negligible significant impact.

2.3 Implementation of this EMP

2.3.1 Objectives of this EMP

This Environmental Management Plan (EMP) provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively.

The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the exploration.

Regular assessments and evaluation of the environmental liabilities during the exploration will need to be undertaken and will ensure adequate provision of the necessary resources towards good environmental management at various stages of the proposed project development.

2.3.2 Roles and Responsibilities

2.3.2.1 Overview

This EMP report identifies the activity groups / environmental elements, the aspects / targets, the indicators, the schedule for implementation and who should be responsible for the management to prevent major impacts that the different exploration activities may have on the receiving environment (physical, biological and socioeconomic, cultural and archaeological).

2.3.2.2 Proponent's Representative (PR) / Project Manager (PM)

The Proponent is to appoint a **Proponent's Representative (PR) / Project Manager (PM)** with the following responsibilities with respect to the EMP implementation:

- ❖ Act as the site project manager and implementing agent.
- ❖ Ensure that the Proponent's responsibilities are executed in compliance with the relevant legislation.
- ❖ Ensure that all the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the exploration contractor/s in finding environmentally responsible solutions to challenges that may arise.

- ❖ Should the PR be of the opinion that a serious threat to, or impact on the environment may be caused by the exploration activities, he/she may stop work. the Proponent shall be informed of the reasons for the stoppage as soon as possible.
- ❖ The PR has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the PR can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.
- ❖ Maintain open and direct lines of communication between the landowners and Proponent, as well as any other identified Interested and Affected Parties (I&APs) with regards to environmental matters, and.
- ❖ Attend regular site meetings and inspections as may be required for the proposed exploration programme.

2.3.2.3 Project Health, Safety and Environment (Project HSE)

The Proponent is to appoint a Project Health, Safety and Environment (Project HSE) with the following responsibilities with respect to the EMP implementation:

- ❖ Assist the PR in ensuring that the necessary environmental authorizations and permits have been obtained.
- ❖ Assist the PR and Contractor in finding environmentally responsible solutions to challenges that may arise.
- ❖ Conduct environmental monitoring as per EMP requirements.
- ❖ Carry out regular site inspections (on average once per week) of all exploration areas with regards to compliance with the EMP. report any non-compliance(s) to the PR as soon as possible.
- ❖ Organize for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through each field-based exploration activity. audit reports to be submitted to the PR.
- ❖ Continuously review the EMP and recommend additions and/or changes to the EMP document.
- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site.
- ❖ Keep records of all activities related to environmental control and monitoring. the latter to include a photographic records of the exploration activities, rehabilitation process, and a register of all major incidents, and.
- ❖ Attend regular site meetings.

2.3.2.4 Contractors and Subcontractors

The responsibilities of the **Contractors and Subcontractors** that may be appointed by the Proponent to undertake certain field-based activities of the proposed 2D seismic survey operations include:

- ❖ Comply with the relevant legislation and the EMP provision.

- ❖ Preparation and submission to the Proponent through the Project HSE of the following Management Plans:
 - Environmental Awareness Training and Inductions.
 - Emergency Preparedness and Response.
 - Waste Management, and.
 - Health and Safety.
- ❖ Ensure adequate environmental awareness training for senior site personnel.
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the Project HSE is to provide the course content and the following topics, at least but not limited to, should be covered:
 - The importance of complying with the EMP provisions.
 - Roles and Responsibilities, including emergency preparedness.
 - Basic Rules of Conduct (Do's and Don'ts).
 - EMP: aspects, impacts and mitigation.
 - Fines for Failure to Adhere to the EMP, and.
 - Health and Safety Requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and.
- ❖ Attend regular site meetings and environmental inspections.

3. SPECIFIC MITIGATION MEASURES

3.1 Hierarchy of Mitigation Measures Implementation

A hierarchy of methods for mitigating significant adverse effects has been adopted in order of preference and as follows:

- (i) Enhancement, e.g. provision of new habitats.
- (ii) Avoidance, e.g. sensitive design to avoid effects on ecological receptors.
- (iii) Reduction, e.g. limitation of effects on receptors through design changes, and.
- (iv) Compensation, e.g. community benefits.

3.2 Specific Mitigation Measures

Based on the findings of the impact assessment process as described in the EIA Report Vol. 2 of 3, Table 3.1–3.21 provides the detailed specific mitigations measures to be implemented by the Proponent with respect to the proposed 2D seismic survey operations.

The following is the summary of the key areas of the migration measures provided in Tables 3.1-3.21 with respect to survey area, campsites, layover sites, survey locations and along the survey lines:

1. Project planning and implementation.
2. Implementation of the EMP, roles and responsibilities with resources allocation.
3. Management of public and stakeholders relations and continuous community engagements.
4. Measures to enhance positive socioeconomic impacts.
5. Environmental awareness briefing and training.
6. Erection of infrastructure to support the proposed 2D seismic survey.
7. Use of existing access roads, tracks, and general vehicle movements with respect to fauna, flora, and habitat protection.
8. Specific mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.
9. Specific mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation.
10. Mitigation measures to be implemented for the preservation of the receiving environment through effective environmental management practices.
11. Mitigation measures for protection of surface and groundwater and water supply infrastructure protection.
12. Mitigation measures to minimise negative socioeconomic impacts.
13. Mitigation measures to always minimise negative health and safety impacts.
14. Mitigation measures to minimise visual impacts.
15. Management of sites and surrounding traffic and equipment movements.

16. Equipment / vehicles noise, vibrations, emissions influence on air quality and climate change.
17. Management of dust and influence on air quality / health receiving environment.
18. Spillages and accidental products or fuel leaks.
19. Mitigation measures for waste (solid and liquid) management.
20. Rehabilitation plan.
21. Environmental performance monitoring and data collection.

Table 3.1: Project planning and implementation.

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<p>Establish a strong environmental awareness protocol from project implementation to final closure in order to ensure the least possible impact to the receiving environment.</p>	<ol style="list-style-type: none"> 1. Resources (Human and Financial) are provided for the Environmental Awareness and Training, Regular Safety, Health and Environment meetings and for internal and external environmental monitoring costs as well as for any rehabilitation costs that may arise. 2. Appointment of a senior and experienced persons as Proponent's Representative (PR), Project Manager (PM) and Project HSE to assume responsibility for environmental issues. 3. All individuals including sub-contractors who work on, or visit, the sites are aware of the contents of the Environmental Policy and the EMP. 4. The EMP and Environmental Policy will be included in Tender Documents. 5. Field visit will take place during which main access tracks will be discussed in cooperation with the land owner/s 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.2: Implementation of the EMP, roles and responsibilities with resources allocation.

OBJECTIVES	INDICATOR	SCHEDULE	RESPONSIBILITY
<ol style="list-style-type: none"> 1. Define roles and responsibilities in terms of the EMP implementation and monitoring to make all personnel, contractors and subcontractors are aware of their roles and responsibilities to ensure compliance with the EMP provisions. 2. Implement environmental management that is preventative and proactive. 3. Establish the resources, skills, etc. required for effective environmental management and monitoring. 	<ol style="list-style-type: none"> 1. Senior staff and senior contractors are aware of, EMP provisions and requirements. These persons shall be expected to know and understand the objectives of the EMP and will, by example, encourage suitable environmentally friendly behaviour to be adopted at all time sat the campsite and along the survey lines 2. Recognition will be given to appropriate environmentally acceptable behaviour. 3. Inappropriate behaviour will be corrected. An explanation to why the behaviour is unacceptable shall be given, and, if necessary, the person will be disciplined. e.g., disciplinary procedure initiated for non-compliance 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.3: Management of public and stakeholders relations and continuous community engagements.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Maintain sound local community relationships and other stakeholders / public / Interested and Affected Parties (I&APs)	<ol style="list-style-type: none"> 1. Prior to the project team going to the field as part of the preparatory, implementation, operation, closure of the proposed 2D seismic survey, the local community shall be informed through the Governors and local Councillors or traditional leaders. 2. Project implementation updates shall be provided to the Competent Authority (MME) (Petroleum Commissioner), MEFT, Kavango West and East Regional Governors and Councillors as well as Traditional Authority and local community as may be applicable 3. All applicable permits, certifications and consents shall be obtained before project implementations. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.4: Measures to enhance positive socioeconomic impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Effective management of socioeconomic benefits of the proposed project activities with direct links to Corporate Social Responsibility (CSR)	<ol style="list-style-type: none"> 1. Proponent continue to pay license rental fees and contributions to the PeteoFund as well as delivering on CSR especially on rural water supply for the local communities 2. Stipulate a preference for local contractors in its tender policy. Preference to local contractors should be based on competitive business principles and salaries and payment to local service providers should still be competitive. 3. Develop a database of local businesses that qualify as potential service providers and invite them to the tender process. 4. Stipulate that residents from the villages along the survey lines should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy. 5. Must ensure that potential employees are from the area by recruiting with the help of the traditional authority 6. Must ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws. This could be accomplished with a contractual requirement stipulating that monthly proof should be submitted indicating payment of minimum wages to workers, against their ID numbers, payment of social security and submission of affirmative action data. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.5: Environmental awareness briefing and training.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Promote effective environmental management through environmental awareness at the campsite and along the survey lines	<ol style="list-style-type: none"> 1. Conduct regular environmental awareness debriefing and training to all the camp site and field survey workers. 2. All victors to the campsite or along the survey lines shall always be given environmental awareness debriefing 3. Every senior/supervisory member of the team shall familiarise themselves with the contents of the EMP. They shall understand their roles and responsibilities regarding personnel and project compliance with the EMP. 4. Subject to agreement of the parties, the Environmental Coordinator will hold an Environmental Awareness Briefing meeting, which shall be attended by all contractors before the start of the proposed 2D seismic survey operations. 5. Briefings on the EMP and Environmental Policy shall discuss the potential dangers to the environment of the following activities: public relations, littering, off-road driving, waste management, poaching and plant theft etc. The need to preserve soil, conserve water and implement water saving measures shall be presented. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.6: Erection of infrastructure to support the proposed 2D seismic survey.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
All proposed 2D seismic survey supporting infrastructure such as the camp site and other infrastructure as may be required along the survey lines to be installed inharmony with the receiving environment	<ol style="list-style-type: none"> 1. Get Environmental Clearance Certificate (ECC) and any other additional permits before implementation 2. Obtain consent from the local land owner / surface rights holder/s 3. Always develop structures on already disturbed areas and with least disturbance to the environment and within the non-sensitive areas such as unused cleared fields for campsite and old tracks and wide paths for survey lines / tracks extensions 4. All on site exploration infrastructure (e.g. water tanks, sewage tanks, waste disposal) chemical toilets along survey lines are not situated on environmental sensitive area. 5. No littering signage around the site or along the survey lines 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.7: Use of existing access roads, tracks, and general vehicle movements with respect to fauna, flora, and habitat protection.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promote effective management of the receiving environment especially the habitats, fauna, flora and overall ecosystem</p>	<ol style="list-style-type: none"> 1. Avoid unnecessary affecting areas viewed as important habitat – i.e. Omuramba Omatako and its various tributaries, pans, clumps of protected tree species 2. Avoid placing tracks/roads through sensitive areas – e.g. along ephemeral drainage lines and pans. Use existing access routes. This would minimise the effect on localised potentially sensitive habitats/fauna in the area. 3. Avoid felling protected tree species (especially large specimens and indigenous fruit trees – i.e. follow a meandering approach which avoids such species rather than straight lines). avoid dead trees (habitat to a variety of cavity dwellers – e.g. bats, geckos, hornbills, red-billed oxpeckers, etc.). avoid ephemeral pan areas. avoid vehicle activity within the ephemeral drainage lines, etc. as much as possible. 4. Prune overhanging branches, that may affect vehicle access, rather than removing the entire tree, especially for protected and fruit tree species. 5. Avoid driving randomly through the area (i.e. “track discipline”), but rather stick to permanently placed tracks/roads. This would minimise the effect on localised potentially sensitive habitats/fauna in the area. 6. Stick to speed limits of maximum 30km/h as this would result in fewer faunal road mortalities. Lower speeds would also minimise dust pollution. 7. Implement erosion control. – i.e. avoid constructing tracks within ephemeral drainage lines and pans. incorporate erosion furrows (runoff sites) and humps along tracks to channel water off the tracks to minimise erosion problems. cross drainage lines at right angles, etc. The area(s) towards & adjacent the drainage line(s) are easily eroded and further development may exacerbate this problem. Avoid construction within 100m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated flora and fauna. 8. Use of "3-point-turns" rather than "U-turns". 9. Where tracks have to be made to potential exploration sites off the main routes, the routes should be selected causing minimal damage to the environment – e.g. use the same tracks. cross drainage lines at right angles. avoid placing tracks within drainage lines. avoid collateral damage (i.e. select routes that do not require the unnecessary removal of trees/shrubs, especially protected species). 10. Before any trees or vegetation are removed protected species shall be identified and must not be removed. 11. Removal of protected flora will require permission form the Department of Forestry in the Ministry of Environment, Forestry and Tourism 12. Leave vehicles on tracks and walk to point of interest, when possible. 13. Rehabilitate all new tracks created. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.8: Specific mitigation measures for preventing flora and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Prevent flora and ecosystem destruction and promote conservation	<ol style="list-style-type: none"> 1. Limit the development to actual tracks/roads to be cleared and avoid affecting adjacent areas, especially the Omaramba Omatako and other ephemeral drainage lines and pans, throughout the entire area. 2. Avoid development & associated infrastructure in sensitive areas – e.g. Okavango River. Omaramba Omatako. other ephemeral drainage lines and pans and undeveloped areas (See 3.9). This would minimise the negative effect on the local environment especially unique features serving as habitat to various flora species. 3. Remove unique and sensitive flora (e.g. all <i>Aloe</i> spp., etc.) before commencing with the development activities and relocate to a less sensitive/disturbed site in the immediate area. 4. Prevent and discourage the collecting of firewood as dead wood has an important ecological role – especially during the during the track/road building phase(s). Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g. chopping down of live and/or protected tree species such as <i>Acacia erioloba</i>, <i>Burkea africana</i>, etc. which are good quality wood. 5. Attempt to avoid the removal of bigger trees during the track/road clearing phase(s) as these serve as habitat for a myriad of fauna. Avoid the destruction of larger trees associated with the ephemeral drainage lines. 6. Prevent and discourage fires – especially during the track/road clearing phase(s) – as this could easily cause runaway veld fires causing problems (e.g. loss of grazing & domestic stock mortalities, etc.) for the neighbouring communities. 7. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and associated tracks as well as temporary camp sites. Preferably workers should be transported in/out to the track/road clearing sites on a daily basis to avoid excess damage to the local environment (e.g., fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company’s environmental integrity, but also show true local commitment to the environment. 8. Eradicate – destroy – all invasive alien plants encountered on site – e.g. <i>Eucalyptus</i>, <i>Opuntia</i> & <i>Sisal</i> spp., etc. This would ensure that the spread is limited and show environmental commitment. 9. Educate/inform contractors and staff on protected species to avoid and the consequences of illegal collection of such species. 10. Investigate the idea of employing an Environmental Officer during the track/road building phase(s) to ensure compliance and minimise the overall impact on the flora and the environment. 11. Liaises with MET officials whilst working close to the Mangetti and Kaudum NP’s. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent’s Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.9: Specific mitigation measures for preventing faunal and ecosystem destruction and promotion of conservation.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Prevent faunal and ecosystem destruction and promote conservation</p>	<ol style="list-style-type: none"> 1. Limit the development to actual tracks/roads to be cleared and avoid affecting adjacent areas, especially the Omaramba Omatako and other ephemeral drainage lines and pans, throughout the entire area. 2. Avoid development & associated infrastructure in sensitive areas – e.g. Okavango River. Omaramba Omatako. other ephemeral drainage lines and pans and undeveloped areas (See 3.9). This would minimise the negative effect on the local environment especially unique features serving as habitat to various vertebrate fauna species. 3. Remove (e.g. capture) unique fauna and sensitive fauna (e.g. tortoises, monitor lizard) before commencing with the development activities and/or species serendipitously located during this period and relocate to undisturbed sites in the immediate area. 4. Prevent and discourage the setting of snares (poaching), illegal collecting of veld foods (e.g. tortoises, etc.), indiscriminate killing of perceived dangerous species (e.g. snakes, etc.) and collecting of wood as this would diminish and negatively affect the local fauna – especially during the fieldwork phase(s). 5. Attempt to avoid the removal of bigger trees during the track clearing phase(s) as these serve as habitat for a myriad of fauna. Rather prune branches affecting access only. 6. Prevent and discourage fires – especially during the track clearing phase(s) – as this could easily cause runaway veld fires affecting the local fauna, but also causing problems (e.g. loss of grazing & domestic stock mortalities, etc.) for the neighbouring communities. 7. Rehabilitation of the disturbed areas – i.e. initial development access route “scars” and associated tracks as well as temporary camp sites. Preferably workers should be transported in/out to the track clearing sites on a daily basis to avoid excess damage to the local environment (e.g. fires, wood collection, poaching, etc.). Such rehabilitation would not only confirm the company’s environmental integrity, but also show true local commitment to the environment. 8. Prevent domestic pets – e.g. cats & dogs – accompanying the workers during the track clearing phase(s) as cats decimate the local fauna and interbreed & transmit diseases to the indigenous African wildcat found in the area. Dogs often cause problems when bonding on hunting expeditions thus negatively affecting the local fauna. The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all costs. 9. Initiate a suitable waste removal system (i.e. remove to Rundu and not store on site) as this often attracts wildlife – e.g. jackals, crows, etc. – which may result in human-wildlife conflict issues. 10. Educate/inform contractors and staff on protected species to avoid and the consequences of illegal collection of such species. 11. Investigate the idea of employing an Environmental Officer during the track clearing phase(s) to ensure compliance and minimise the overall impact on the fauna and the environment. 12. Liaises with MEFT officials whilst working close to the Mangetti and Kaudum NP’s. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent’s Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.10: Mitigation measures to be implemented for the preservation of the receiving environment through effective environmental management practices.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of conservation and effective environmental management through preservation of the receiving environment around the campsites, temporary layover sites and along each of the survey lines</p>	<ol style="list-style-type: none"> 1. Select camp sites and other temporary layover sites along the survey lines with care – i.e. avoid important habitats (e.g. raptor breeding sites, pans). 2. Use portable chemical toilets or French Drain systems or suitable portable system to avoid faecal pollution at the temporary campsites. 3. Use portable chemical toilets to avoid faecal pollution at temporary layover sites and along each of the proposed 2D seismic survey lines. 4. Initiate a suitable and appropriate refuse removal policy at the campsite and along the survey lines as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios for the local community and visitors– e.g. baboon, black-backed jackal, crows, etc.. 5. Avoid and/or limit the use of unnecessary extremely brighter spot lights at the campsites as this could influence and/or affect various nocturnal species – e.g. bats and owls, etc. Use focused lighting for least effect. 6. Prevent the killing of species viewed as dangerous – e.g. various snakes – when found around the campsites or along the survey lines. 7. Prevent the setting of snares for ungulates (i.e. poaching) or collection of veld foods (e.g. tortoises, monitor lizard) and unique plants (e.g. <i>Harpagophytum procumbens</i>) or any form of illegal hunting activities. 8. Avoid introducing dogs and cats as pets to camp sites or along the survey lines as these can cause significant mortalities to local fauna (cats) and even stock losses (dogs). 9. Remove and relocate slow moving vertebrate fauna (e.g. tortoises, chameleon, snakes, etc.) to suitable habitat elsewhere in the general area. 10. Avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. various <i>Baikiaea plurijuga</i>, <i>Pterocarpus angolensis</i>, etc. Removal of protected plants can only be done with permission from the Department of Forestry in the MEFT 11. Avoid introducing ornamental plants, especially potential invasive alien species, as part of the landscaping of the camp sites, etc., but rather use localised indigenous species, should landscaping be attempted, which would also require less maintenance (e.g. water). 12. Remove all invasive alien species wherever encountered – e.g. <i>Prosopis</i> spp. This would not only indicate environmental commitment, but actively contribute to a better landscape. 13. Rehabilitate all areas disturbed by the exploration activities – i.e. campsites, tracks and layover sites along the survey lines etc.. 14. Ensure that adequate firefighting equipment (e.g. fire beaters, extinguishers, etc.) is available at camp sites, layover sites and along the survey lines to manage any accidental fires . 15. Liaises with MEFT officials whilst working close to the Mangetti and Kaudum National Parks 16. Employ an independent environmental auditor to ensure compliance, especially of the rehabilitation of all the affected areas. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.11: Mitigation measures for protection of surface and groundwater and water supply infrastructure protection.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Effective management / protection of surface, groundwater resources and water supply infrastructure</p>	<ol style="list-style-type: none"> 1. Conduct hydro-census, which will form the baseline of groundwater data for the study area prior to the implementation of the proposed survey. Typical groundwater information will be collected and includes rest water levels, pumping regimes, water demand, rate of abstraction and of course water quality. To have greater transparency on the water monitoring activities, the affected landowners / farmers/ local community shall be given access to the results of the water monitoring analyses. 2. Several strategically located boreholes will be selected which will form the monitoring network. These boreholes will be monitored over time to determine the impact of operations surrounding the exploration activities of the operator. 3. Limit the operation to a specific site and avoid sensitive areas and in particular the Ephemeral River Channel along the survey lines. This would sacrifice the actual area for other adjacent Ephemeral River areas and thus minimise any likely negative effect on water resources. 4. Disposal of wastewater into any public stream is prohibited. 5. Pits for disposal of domestic and sanitary effluents should be sited with knowledge of the geological and soil characteristics of the area and not too close to the water supply borehole/s 6. Buffer zone distances of between 500m – 1 km between seismic lines and water sources / supply locations will be established through extensive in-field ground vibration testing. Distances may vary between seismic source types, as per International Association of Geophysical. Contractors (IAGC) Guidelines. 7. Spill kits to be carried by service and refuelling vehicles along the survey lines and the survey crew shall be trained and debriefed regularly on the use of spill skits. 8. Ensure that all vehicles and machinery operating in the field (and in the campsite) are properly maintained so as not to have any oil leaks that could contaminate the soils. 9. Ensure that all drivers and technicians are familiar with drip-tray and spill kit use through daily tool-box talks. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.12: Mitigation measures for promotion of effective general water usage.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promote effective use and management of local water resources</p>	<ol style="list-style-type: none"> 1. The Proponent shall obtain permission from the land owner/s / community before utilising any water resources or any associated water infrastructure near the campsites, layover sites or along the survey lines. 2. Always use as little water as possible. 3. Reduce, Reuse and Re-Cycle (3Rs) water where possible. 4. All leaking pipes / taps shall be repaired immediately they are noticed. 5. Never leave taps running. 6. Close taps after you have finished using them. 7. Immediately report to your Contractor or Environmental Control Officer / Site Manager when you notice overflowing water or unhygienic conditions at the ablution facilities. 8. No washing of vehicles, equipment and machinery, containers, and other surfaces. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.13: Mitigation measures to minimise negative socioeconomic impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Manage unrealistic employment expectations, in-flux of job seekers, social friction with local people, increase in crime, protect family structures, reduce Covid-19 and other diseases, and reduce pressure on local resources (land, water etc),</p>	<ol style="list-style-type: none"> 1. Address unrealistic expectations about large numbers of jobs that would be created before project implementation. 2. Providing information such as the number and types of jobs available 3. The employment of local residents and local companies should be a priority. To ensure that potential employees are from the area through working with the traditional authorities and village headmen/ women / foremen/ ladies. 4. Campsites, layover sites and implementation of the surveys in community tracks should be done after consultation with the land owners and affected local community to avoid any conflicts. 5. When contracts of employees outside the local survey area are terminated or not renewed, contractors should transport the employees out of the local area to their hometowns within two days of their contracts ending. 6. Tender documents could stipulate that contractors have COVID-19 and HIV/Aids workplace policies and programmes in place and proof of implementation should be submitted with invoicing to the Proponent. 7. Develop strategies in coordination with local health officers and NGO's to protect the local communities, especially young girls. 8. Contract companies could submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the campsite, layover areas or along the survey lines. Disciplinary actions should be in accordance with Namibian legislation. 9. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily as may be applicable and especially for all drivers. 10. Ensure that drivers adhere to speed limits and that speed limits are strictly enforced. 11. Ensure that vehicles are road worthy and drivers are qualified. 12. Train drivers in potential safety issues to avoid accidents that may create conflicts with the local communities. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.14: Mitigation measures to always minimise negative health and safety impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of health and safe working environment in line with national Labour, Health and Safety Regulations and international best practices for conducting 2D seismic survey operations</p>	<ol style="list-style-type: none"> 1. Request the Roads Authority for permission to erect warning signs of heavy/ survey vehicles on affected public roads. 2. An onsite ambulance, qualified medical practitioner and essential medical kits shall always be available around the campsite, layover sites and along the survey lines. 3. Physical hazards: Follow national and international regulatory and guidelines provisions, always use of correct Personal Proactive Equipment (PPE), training programme, as well as the implementation of Health and Safety Programmes in accordance with the Labour Act. 4. All exploration equipment shall be in good working condition and services accordingly. 5. Ensure that all workers can be identified by staff uniform and badges where applicable. 6. Restrict access to the campsites, layover sites and survey locations along the survey lines through as may be required. 7. The campsites shall be temporally secured as required and the type of fencing to be used would, however, be dependent on the impact on the visual resources and/or cost. 8. Notice or information boards relating to COVID-19 requirements, public safety hazards and emergency contact details to be put up at the campsite gate(s) and on key support field vehicles. 9. Rubber gloves and masks always be used in case of an accident to reduce the risk of contracting HIV/AIDS or COVID-19 10. All workers shall be made aware and given instructions concerning the dangers of dehydration or hyperthermia. Encourage all to drink plenty of clean water not directly from the surface water bodies or unknow water wells. 11. No person under the influence of alcohol or drugs shall be allowed at the campsites, layover sites or survey locations along the survey lines. 12. Ensures compliance with the requirements of the relevant Namibian Labour, Health and Safety Regulations always. 13. Dangerous or protected / sensitive areas shall be clearly marked and access to these areas shall be controlled or restricted. 14. Due care shall be taken when driving any vehicles on any roads particularly the gravel roads. ALL Drivers must drive with their headlights switched on when travelling on the gravel roads (day and night). 15. Persons driving a vehicle shall be in possession of a valid driver's license 16. Awareness on HIV/AIDS among workers is raised 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.15: Mitigation measures to minimise visual impacts.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Preserve the landscape character in the development of supporting infrastructure and choice of visual screening</p>	<ol style="list-style-type: none"> 1. Consider the landscape character and the visual impacts of the survey area, campsites, layover sites, survey locations and along the survey lines from all relevant viewing angles, particularly from public roads. 2. Always use the existing roads, tracks, paths, disturbed cleared fields / areas for creation of new access, campsite, or layover sites 3. Always use vegetation screening when selecting a campsites or layover sites along the survey lines. 4. DO NOT cut down vegetation unnecessary around the survey area, campsites, layover sites, and along the survey lines use it for site screening as may be applicable. 5. Avoid the use of very high fencing around the campsites. 6. Minimise the creation or widening of access roads and no off-road that could result in land scarring. 7. Minimise the presence of secondary structures: remove inoperative support structures. 8. Littering along the survey area, campsites, layover sites, survey locations and along the survey lines is strictly prohibited 9. Remove all infrastructure and reclaim, or rehabilitate and clean the survey area, campsites, layover sites, survey locations and areas along the survey lines on completion of the operations. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.16: Management of sites and surrounding traffic and equipment movements.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Management of any likely increase traffic and equipment movements around the survey area, campsites, layover sites, survey locations and along the survey lines	<ol style="list-style-type: none"> 1. Adhere to the site and national public roads speed limits. 2. Adhere to all the Road Authority road restrictions requirements 3. Adhere site equipment / vehicles movement procedures and protocols / operational manuals. 4. Ensure safety of traffic movement, trip schedule should be advised for all scheduled heavy-duty vehicles, all drivers should be in possession of valid driver's licence, speed limits should be adhered to. 5. The use of traffic and safety warning signs and flag persons to warn and control traffic should be advised where required. 6. Always drivers and support teams shall be on a lookout for people on roads / tracks, wild animals, domestic animals, and other obstacles such as fallen trees 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.17: Equipment / vehicles noise, vibrations, emissions influence on air quality and climate change.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Minimise the noise, vibrations, and other emissions associated with equipment / vehicles movements	<ol style="list-style-type: none"> 1. All seismic operations should be carried out only during daylight hours. 2. Campsite's delivery of materials and equipment to sites shall be scheduled to avoid pick traffic hours around the public roads to minimise congestion 3. Always adhere to equipment / vehicles noise and other emissions management procedures 4. Adhere to the project buffer zones established for the campsites (500m) from the nearest village and along the survey lines 500m to 1km from the school, clinic or sensitive infrastructure as may be applicable. 5. Equipment / vehicles engines must maintain well to minimise the noise. 6. At campsite, use silent generators 7. Use noise screens if required 8. Neighbours shall be alerted of operations that are likely to produce excessive noise, vibrations, and other emissions 9. Personal Protective Equipment shall be always use. 10. Clean fuels such as Liquefied Petroleum Gas (LPG) and electric vehicles / equipment should be used. LPG is non-toxic, non-corrosive, and free of tetra-ethyl lead or additives, it burns more cleanly than petrol. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.18: Management of dust and influence on air quality / health receiving environment.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Management of any likely site dust that may be generated around the survey area, campsites, layover sites, survey locations and along the survey lines	<ol style="list-style-type: none"> 1. Adhere to the site / public roads and as per Road Authority road restrictions requirements speed limits. 2. Adhere to the survey operations speed limit of between 30-60km/h 3. Temporary measure: Use high pressure water dust control spray system with manual or automated, high frequency, light watering of materials to prevent dust lift off around the campsite. 4. Workers must always use Personal Protective Clothing / Equipment. 5. If there is excessive dust being generated along a specific survey line with nearby villages / communities or sensitives environment or infrastructure likely to be negatively impacted, the use a water tanker to wet the specific section of road surface may be undertaken 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.19: Spillages and accidental products or fuel leaks.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
Contaminant spill management with respect to survey vehicles, trucks, and earthmoving equipment	<ol style="list-style-type: none"> 1. Always adhere to site management procedures to prevent spillages. 2. Ensure that any in-field refuelling or maintenance is performed in a bunded area or while using a drip tray with a spill-kit available. 3. Refuelling areas shall be underlain with spill-proof hardstanding or bund, with spill kits readily available and operatives trained in their use only. 4. All fuels and other non-aqueous fluids to be stored in suitable bunded enclosures. 5. All refuelling operations to be carefully overseen and managed. 6. Ensure that the integrity of any storage medium and its associated delivery point are inspected on a regular basis. 7. The personnel designated to receive deliveries of materials/fuel/ should receive practical training on how to prevent and respond to a spill 8. The designated personnel should also be aware of any potential areas in their vicinity that are at risk of contamination, such as fauna, flora, Ephemeral River Channels, or water supply borehole. 9. Clean up any site spillages and no spills shall be allowed to enter the environment / soak into the ground 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.20: Mitigation measures for waste (solid and liquid) management.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Promotion of effective waste (solid and liquid) management through the adoption of sound and hierarchical approach to waste management, which would include waste minimisation, re-use, recovery, recycling, treatment, and proper disposal.</p>	<ol style="list-style-type: none"> 1. Burial of waste on anywhere within the PEL area, campsites, layoff areas or survey lines is not allowed and all generated solid waste shall be disposed at the at an approved municipal waste disposal site in Rundu a ReconAfrica designated cell shall be created for easy auditing of all the waste transferred from the project to waste disposal site. 2. Toilet and ablution facilities shall be provided at the campsites and along the survey lines and should not be located close to Ephemeral Rivers or water supply borehole. 3. Provide site information on the difference between the two main types of waste with clearly marked containers for: <ul style="list-style-type: none"> • General Waste. and • Hazardous Waste. 4. Sealed containers, bins, drums, or bags for the different types of wastes shall be provided. Never dispose of hazardous waste in the bins or skips intended for general waste. 5. All solid and liquid wastes generated from the proposed project activities shall be reduced, reused, or recycled to the maximum extent practicable. 6. Trash may not be burned or buried, except at approved sites under controlled conditions in accordance with the national and municipal regulations. 7. Never overfill any waste container, drum, bin, or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins, or skips are nearly full. 8. Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping. 9. Littering is prohibited. 10. Latrines and French drains built >100m from watercourses or pans to avoid pollution of primary and secondary aquifers. 11. Chemical toilets or suitable waste water management system shall be provided on site and around the camp as may be required. 12. A waste management plan documenting the waste strategy, storage (including facilities and locations), handling procedures and means of disposal should be developed and should include a clear waste-tracking mechanism to track waste consignments from the originating location to the final waste treatment and disposal location in compliance with the national and municipal regulations. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.21: Rehabilitation plan.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<p>Contributions toward environmental preservation and sustainability through rehabilitation of disturbed areas such as campsites, layover sites and survey locations along the survey lines by removing all unwanted part of the fixtures and restore the sites to close an approximation of the pristine state as is technically, environmentally, financially and reasonably possible.</p>	<ol style="list-style-type: none"> 1. The following rehabilitation actions are practiced: <ul style="list-style-type: none"> • Rehabilitate all site scars. • Litter from the site has been taken to the appropriate disposal site. • Debris, scrap metal, etc is removed before moving to a new site or closure of the operations. • Water tanks are dismantled and removed if not need for after use. • Tracks on site and the access road are rehabilitated by smoothing the 'middle mannetjie' (middle ridge between the tracks) and raking the surface. 2. The following should be undertaken at all disturbed areas that require further rehabilitation <ul style="list-style-type: none"> • if applicable the stockpiled subsoil to be replaced (spread) and/or the site is neatly contoured to establish effective wind supported landscape patterns. • Replace the stored topsoil seed bank layer. • Five (5) years after rehabilitation the sites are not visible from 500 m away. 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ul style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

Table 3.22: Environmental performance monitoring and data collection.

OBJECTIVES	MITIGATION MEASURES	SCHEDULE	RESPONSIBILITY
<ol style="list-style-type: none"> 1. Collect data that will add value to environmental monitoring and reporting to the regulators 2. Collect data that will add to the general scientific and geographic knowledge of the environment in which the exploration process takes place. 3. Acknowledged that the required skills and knowledge to collect all the suggested data may not be available within the exploration team, however, as much data as is practical should be collected. 	<ol style="list-style-type: none"> 1. Environmental Monitoring Report compiled and submitted by the Environmental Coordinator to the regulators 2. The following types of information should be gathered: <ul style="list-style-type: none"> • Fauna. What tracks or signs of animal activity have been seen or affected onsite? (photographs and GPS recording) What animals, birds etc were identified? Alternatively provide a description and/ or photo if unidentified. • Unusual weather conditions, e.g. records of the prevailing wind direction and the direction from which storm events come. Was there rain or intense heat? Preferably have a thermometer and rain gauge on site. • Vegetation. Record trees, shrubs, grass, etc. that are affected. Some plants do only occur after rainfall and might not have been seen for decades. • Any archaeological, cultural or historical sites that may be found and reported the project archaeologist. GPS co-ordinates, photograph and plot the position on a 1: 50 000 map. • Other including surface water, large scale geological features etc 	<ol style="list-style-type: none"> 1. During planning and mobilisation (Pre-survey preparation) 2. During setup and operation of camp sites setups 3. During process of widening of tracks and creation of limited new access as may be applicable 4. During actual data acquisition along the individual profiles / survey lines 5. Demobilisation and Closure (Survey Completion) 6. During an accidental event that may be associated with the campsite and survey lines routine and physical presence operational activities 	<ol style="list-style-type: none"> (i) Proponent's Representative (PR) (ii) Project Manager (PM) (iii) Project HSE (iv) Contractor (v) Subcontractors

3.3 General Awareness and Training Guidance

3.3.1 Overview

The following is the summary of the general mitigation references and training guidance covering the proposed 2D seismic survey planning and mobilisation (Pre-survey preparation), setup and operation of campsites setups, the process of widening of tracks and creation of limited new access as may be applicable, actual data acquisition along the individual profiles / survey lines, demobilisation and closure (Survey Completion) and management of accidental event that may be associated with the campsite and survey lines routine and physical presence related operational activities:

1. General mitigation guidance.
2. Natural environmental management guidance.
3. Vehicle use and access guidance.
4. Control of dust guidance.
5. Health and safety guidance.
6. Preventing pollution and dangerous working conditions guidance.
7. Saving water guidance.
8. Disposal of waste guidance.
9. Religious, cultural, historical, and archaeological objects guidance.
10. Dealing with environmental complaints guidance.

3.3.2 General Mitigation Guidance

Based on the Environmental Assessment undertaken, the following is the summary of the general mitigation measures in terms of applicability of the EMP, disciplinary process, meaning of environment and procedures if one does not understand the provisions of the this EMP:

- (i) The Environmental Rules apply to everybody. This includes all permanent, contract, or temporary workers as well as any other person who visits the operations base. Any person who visits the operations base will be required to adhere to the company Environmental Code of Conduct.
- (ii) The Site Manager will issue warnings and will discipline any person who breaks anyone of the environmental rules and procedures. Repeated and continued breaking of the Rules and Procedures will result in a disciplinary hearing and which may result in that person being asked to leave the site permanently.
- (iii) The environment means the whole surroundings around us. The environment is made-up of the soil, water, air, plants, and animals. and those characteristics of the soil, water, air, plant, and animal life that influence human health and wellbeing.
- (iv) If any member of the work force does not understand, or does not know how to keep any of environmental rule or procedure, that person must seek advice from the Environmental Control Officer (ECO), Site Manager or Contractor. The person that does not understand must keep asking until she/he is able to keep to the all the Environmental Rules and Procedures.

3.3.3 Natural Environmental Management Guidance

1. Never feed, tease, or play with, hunt, kill, destroy, or set devices to trap any wild animal (including birds, reptiles, and mammals), livestock or pets. Do not bring any wild animal or pet to the area.
2. Do not pick any plant or take any animal out of the areas. You will be prosecuted and asked to leave the project area.
3. Never leave rubbish where it will attract animals, birds, or insects. Rubbish must be thrown into the correct rubbish bins or bags provided.
4. Protect the surface material by not driving over it unnecessarily.
5. Do not drive over sensitive habitats for plants and animals.
6. Do not cut down any part of living trees / bushes for firewood.
7. Do not destroy bird nest, dens, burrow pits, termite hills etc or any other natural objects in the area.

3.3.4 Vehicle Use and Access Guidance

1. Never drive any vehicle without a valid licence for that vehicle and do not drive any vehicle that appears not to be road-worthy.
2. Never drive any vehicle when under the influence of alcohol or drugs.
3. Do Not make any new routes or roads without permission. Stay within permitted routes.
4. Avoid U-Turns and large turning circles. 3-point turns are encouraged. Do not ever drive in communal fields / ephemeral rivers, stick to the existing roads.
5. Stay on the road, do not make a second set of tracks and do not cut corners.
6. Do Not Speed - keep to 30 km per hour along the survey lines and campsite.
7. No off-road driving is allowed.
8. Vehicles may only drive on demarcated roads.
9. Adhere to speed limits and drive with headlights switched at all times.

3.3.5 Control of Dust Guidance

1. Do not make new roads or clear any vegetation unless instructed to do so by your Contractor or the Environmental Control Officer / Site Manager.
2. Try to disturb the surface of the natural landscape as little as possible.

3.3.6 Health and Safety Guidance

1. Drink lots of water every day, but only from the fresh water supplies.
2. Take the necessary precautions to avoid contracting the HIV/AIDS virus or COVID-19.
3. Only enter or exit the operations area at the demarcated areas.

4. Always keep the access area as you found them.
5. Any damage to any existing infrastructure in the area must be report to the Environmental Control Officer / Project Manager who will then inform the owner of any damage with all the repairs done to the satisfaction of the owner or Environmental Control Officer.
6. Never enter any area that is out of bounds, or demarcated as dangerous or wander off without informing or permission of team leader.
7. Report to your Contractor or the Site Manager if you see a stranger or unauthorised person in the operations areas.
8. Do not remove any vehicle, machinery, equipment, or any other object from the operations areas /sites without permission of your Contractor or the Site Manager.
9. Wear protective clothing and equipment required and according to instructions from your Contractor or the Site Manager.
10. Never enter or work in the operations areas when under the influence of alcohol or drugs.

3.3.7 Preventing Pollution and Dangerous Working Conditions Guidance

1. Never throw any hazardous substance such as fuel, oil, solvents, etc. into streams or onto the ground.
2. Never allow any hazardous substance to soak into the soil.
3. Immediately tell your Contractor or Environmental Control Officer / Site Manager when you spill, or notice any hazardous substance being spilled anywhere in the operations areas.
4. Report to your Contractor or Environmental Control Officer / Site Manager when you notice any container, which may hold a hazardous substance, overflow, leak, or drip.
5. Immediately report to your Contractor or Environmental Control Officer / Site Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities.
6. Vehicles, equipment and machinery, containers and other surfaces shall be washed at areas designated by the Contractor or Environmental Control Officer/ Site Manager.
7. If you are not sure how to transport, use, store or dispose any hazardous substance - Ask your Contractor or Environmental Control Officer / Site Manager for advice.

3.3.8 Saving Water Guidance

1. Always use as little water as possible. Reduce, reuse and re-cycle water where possible.
2. Report any dripping or leaking taps and pipes to your Contractor or Environmental Control Officer or Site Manager.
3. Never leave taps running. Close taps after you have finished using them.

3.3.9 Waste Management (Solid and Liquid Waste)

1. All generated solid waste must be disposed at the local municipal waste disposal site.
2. Use toilets and ablution facilities provided on site.
3. Learn to know the difference between the two main types of waste, namely:

- General Waste. and
 - Hazardous Waste.
4. Learn how to identify the containers, bins, drums, or bags for the different types of wastes. Never dispose of hazardous waste in the bins or skips intended for general waste or rubble / contaminated soil.
 5. Never burn or bury any waste around the operations areas.
 6. Never overfill any waste container, drum, bin, or bag. Inform your Contractor or the Environmental Control Officer / Site Manager if the containers, drums, bins, or skips are nearly full.
 7. Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping.
 8. Littering is prohibited.

3.3.10 Religious, Cultural, Historical and Archaeological Objects Guidance

1. If you find any suspected religious, cultural, historical, or archeologically object or site around the operations areas, you must immediately notify your Contractor or Environmental Control Officer / Site Manager.
2. Never remove, destroy, interfere with, or disturb any religious, cultural, historical, or archaeological object or site around the operations areas.

3.3.11 Dealing with Environmental Complaints Guidance

1. If you have any complaint about dangerous working conditions or potential pollution to the environment, immediately report this to your Contractor or the Environmental Control Officer / Site Manager.
2. If any person complains to you about vibrations, dust, noise, lights, littering, pollution, or any other harmful or dangerous condition, immediately report this to your Contractor or the Environmental Control Officer / the Site Manager.

4. REHABILITATION AND MONITORING

4.1 Rehabilitation Commitment and Process

The following is the summary of key rehabilitation process to be implemented by the Proponent with respect to the campsite, layover sites and survey locations along each of the survey lines:

Step 1: Remove all campsite or layover structures:

- ❖ Remove all the site supporting infrastructure such as housing container / tents.
- ❖ Disassemble all the structures.
- ❖ Remove all materials from the sites and either:
 - Transporting to a new site if it is to be used or stored elsewhere. or
 - Disposing at a suitable site. or
 - Making them available to the farmer or local persons. or
 - Selling at an auction.
- ❖ Remove all machinery from the site and transport to a new site where it is to be used or stored or sell at an auction.
- ❖ Remove all fences that have been constructed and either make the material available to the local persons/farmer, dispose at a suitable site or sell at an auction.
- ❖ Remove the generators from the sites from site and either transport to a new site for storage or sell it to the farmer or an auction.
- ❖ Seal all petrol, diesel, oil and grease containers and remove from the site to a storage facility.
- ❖ Collect all scrap metal and dispose at a suitable site or sell at an auction.
- ❖ Break up all concrete slabs and structures on site and transport the fragments to a suitable municipal waste disposal or use a fill materials along the sandy / slippery / muddy access road.
- ❖ The concrete reservoirs if created, can probably remain intact provided that the local people wish to utilise them at some stage - this will need to be negotiated.
- ❖ The future use of the water borehole/s and water pipelines as well as any additional infrastructures that has been added to the borehole shall be handed over to the Regional Council who will work with the local community on usage and maintenance of the infrastructure, and.
- ❖ Any unused pipes shall be removed, disassemble, and transport the component parts to a storage site or sell at an auction.

Step 2: Remove all waste and unwanted materials:

- ❖ All campsite materials shall be removed and entire site rehabilitated.

- ❖ Clean the site, collect all the waste materials and transport to a suitable municipal waste disposal site, and.
- ❖ Manually remove all weedy species that are present at the site (the entire plant can easily be removed because the plants tend not to root deeply).

Step 3: Rehabilitate surrounding impacted areas

- ❖ Compaction of the substrate will result from utilisation of these areas or the pressure of overlying structures.
- ❖ Rip the surfaces to a depth of 40 cm to 50 cm using a multi-toothed ripper and tractor.
- ❖ Cover with a layer of topsoil to a depth of about 10 cm, and.
- ❖ Cap the topsoil containing the seedbank with a layer of gravel by manually spreading the fragments across the surface using a rake.

Step 4: Rehabilitate the roads

- ❖ All tracks impacted by the proposed 2D seismic survey operations shall be rehabilitated by smoothing the 'middle mannetjie' (middle ridge between the tracks) and raking the surface.

4.2 Environmental Performance Monitoring and Reporting

The monitoring of the environmental performances for the 2D seismic survey operations is divided into two (2) parts and these are:

- (i) Routine daily monitoring activities to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required, and.
- (ii) Preparation of the final Environmental Monitoring and Environmental Closure reports covering all activities related to the implementation of the Environmental Management Plan to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required.

The Proponent will be required to report regularly (twice in a year or as the case may be) to the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT), the environmental performances as part of the ongoing environmental monitoring programme. Environmental monitoring programme is part of the EMP performances assessments and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of undertaking appropriate monitoring as per specific topic (such as fauna and flora) and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Project HSE Officer (Tables 4.1- 4.9).

The second part of the monitoring of the EMP performance will require a report outlining all the activities related to effectiveness of the EMP at the end of the proposed 2D seismic survey to be undertaken by the Project HSE Officer with the support of the external specialist consultants as maybe required. The objective will be to ensure that corrective actions are reviewed and steps are taken to ensure compliance for future EIA and EMP implementation.

The report shall outline the status of the environment and any likely environmental liability after the completion of the proposed project activities. The report shall be submitted to the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism and will represent the final closure and fulfilment of the conditions of the Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT).

Table 4.1: Monitoring of environmental performance implementation / environmental awareness training.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the EMP on site?					
How effective is the awareness training? Do people understand the contents of the EMP? Where are the weaknesses? Ask 3 people at random various questions about the EMP.					

Table 4.2: Monitoring of environmental performance for the temporal and permanent structures.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are the temporal and permanent structures positioned to avoid sensitive potential sensitive sites?					
Has new infrastructure been created? If so, what, and how well planned / built with respect to environment?					
Have toilets been provided? Where are they situated?					
Do receptacles for waste have scavenging animal proof lids?					
What litter is there – who is littering?					
Are there facilities for the disposal of oils / etc and how often is it removed to an approved disposal site?					
Is there evidence of oil / diesel spills? Bunding or not?					
What fuel source is being provided for cooking?					
Housekeeping					

Table 4.3: Environmental data collection.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are records being kept?					
Birds' mortality records as result of collision with the powerline?					
Birds nesting activities around the operations area?					
Noise level?					
Air Quality?					
Vibrations?					
Have archaeological sites been found / disturbed / described?					
Other key environmental data sets?					

Table 4.4: Health and safety.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there First Aid Kit containing anti-histamines etc?					
Are dangerous areas clearly marked off?					
Do vehicles appear to maintain the recommended speed limits?					
Do vehicles always drive with headlights on?					

Table 4.5: Recruitment of labour.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
What labour source is used?					
How has the recruitment practice been done?					

Table 4.6: Management of the natural habitat and surficial materials management.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Has there been any development done on or very close sensitive areas?					
Has anyone been caught with plants or animals in their possession?					
Has there been wilful or malicious damage to the environment?					
Has topsoil / seed bank layer been removed from demarcated development areas and appropriately stored?					

Table 4.7: Tracks and off-road driving.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are existing tracks used and maintained?					
What new tracks have been developed and are they planned?					
What evidence is there of off-road driving? Who appears to be responsible?					
Are corners being cut, what type of turning circle are there? Three point turns vs. U turns?					
Have unnecessary tracks been rehabilitated and how well?					
Comments					
All tracks impacted by the proposed 2D seismic survey rehabilitated by smoothing the 'middle mannetjie' (middle ridge between the tracks) and raking the surface					

Table 4.8: Management of water resources.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
How is potable water supplied and how often?					
Is water being wasted?					
Is there any leakage from pipes or taps?					

Table 4.9: Public relations.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Have any complaints been made about the project activities by the different I&APs? If so, what, and how was the issue resolved?					

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

Mitigation measures for both positive and negative impacts have been proposed and management strategies are provided in this Environmental Management Plan (EMP Vol. 3 of 3) covering the proposed 2D seismic survey operations in the Petroleum Exploration License (PEL) No. 73 covering Degree Square Blocks 1719, 1720, 1721, 1819, 1820 and 1821 in Kavango Sedimentary Basin, Kavango West and East regions, northern Namibia.

The proposed mitigation measures covers the proposed survey planning and mobilisation (Pre-survey preparation), setup and operation of campsites setups, the process of widening of tracks and creation of limited new access as may be applicable, actual data acquisition along the individual profiles / survey lines, demobilisation and closure (Survey Completion) and management of accidental event that may be associated with the campsite and survey lines routine and physical presence related operational stages.

This Environmental Management Plan (EMP) Report Vol. 3 of 3 has been prepared for implementation by the Proponent / operator. Based on the findings of this EIA Report and the recommended mitigation measures detailed in the EMP Report, it is hereby recommended that the proposed 2D ground seismic survey over the key Areas of Interest (AOI) in PEL No. 73 shall be issued with an Environmental Clearance Certificate (ECC) with the following key conditions:

- 1) The Proponent must adhere to the provisions of all the national legislation, regulations, policies, procedures and permits / authorisation requirements.
- 2) The Proponent shall adhere to all the provisions of the EMP and mitigation measures shall be implemented and monitored.
- 3) The Proponent must implement precautionary measures / approach to environmental management.
- 4) Before the implementation of the proposed 2D ground seismic survey operations, the Proponent shall consult with the local community / owners of the communal fields that may be used or likely to be disturbed by the proposed project activities. All the consultations shall be undertaken through the Office of the Governor for Kavango West and West, local Councillors and / Traditional Authorities, and.
- 5) Written consent shall always be obtained from the land owners and local community through the traditional authorities, and regional council as may be applicable to avoid misunderstanding and unnecessary conflicts.

5.2 Recommendations

The following is the summary of the recommended actions to be implemented by the Proponent as part of the implementations of the EMP for campsites, layover sites, survey locations along the proposed survey lines:

- (i) Before detailed site-specific activities such as the campsite clearing or track widening or extensions activities, the Project HSE Officer with the support of the external specialist consultants as may be required, should consider the flora, fauna, and archaeological sensitivity of the area and if required commission a field survey in advance of any such site disturbances.
- (ii) The Project HSE Officer shall lead, implement, and promote environmental protection culture through awareness raising of the workforce, contractors and sub-contractors.

- (iii) The Proponent shall provide all the necessary support including human and financial resources, for the implementation of the mitigations, effective environmental management, and monitoring throughout the proposed project duration.
- (iv) Project HSE Officer with the support of the external specialist consultants shall develop simplified environmental induction and awareness materials for all the workforce, contractors, sub-contractors visitors.
- (v) Where contracted service providers are likely to cause environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities.
- (vi) Implement internal and external monitoring of the actions and management strategies developed during the proposed 2D seismic survey operations.
- (vii) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future EIA for as may be required, and.
- (viii) Final Environmental Monitoring Closure report shall be prepared by the Project HSE Officer with the support of the external specialist consultants as may be required to be submitted to the regulators and to mark the closure of the proposed 2D seismic survey operations.

END