

City of Windhoek

Final Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report to Support the Application for the Renewal of the Environmental Clearance Certificate (ECC) No. 10431 for the Proposed New and Rerouting of Existing City of Windhoek 66kV Overhead Powerlines Networks Linking Goreangab Load Centre (L/C) and Dam Wall L/C to the New Khomas Substation (Ss) around Goreangab Dam, **WINDHOEK, KHOMAS REGION**



January 2026

City of Windhoek, P.O. Box 59
Corner of Garden & 9 Independence Avenue
WINDHOEK, NAMIBIA

PROJECT SUMMARY INFORMATION

MEFT ECC RENEWAL APPLICATION REFERENCE No.

APP No. 006984 and ECC No. 10431

Granted on the 26th September 2022

Expired on the 26th September 2025

PROJECT DEVELOPER

City of Windhoek

PROPONENT

City of Windhoek

ADDRESS OF PROPONENT

City of Windhoek, P.O. Box 59
Corner of Garden & 9 Independence Avenue
WINDHOEK, NAMIBIA

LOCATION

Goreangab Dam, Katutura Windhoek, Khomas Region Namibia

PROJECT NAME

Proposed New and Rerouting of Existing City of Windhoek
66kV Overhead Powerlines Networks Linking
Goreangab Load Centre (L/C) and Dam Wall L/C
to the New Khomas Substation (Ss) around
Goreangab Dam, Windhoek, Khomas Region

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CITATION:

Risk-Based Solutions (RBS), 2026. Final Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report to Support the Application for the Renewal of the Environmental Clearance Certificate (ECC) No. 10431 granted on the 26th September 2022 and expired on the 26th September 2025 for the Proposed New and Rerouting of Existing City of Windhoek (Proponent) 66kV Overhead Powerlines Networks Linking Goreangab Load Centre (L/C) and Dam Wall L/C to the New Khomas Substation (Ss) around Goreangab Dam, Windhoek, Khomas Region.

**DR SINDILA MWIYA, TEAM LEADER / ENVIRONMENTAL ASSESSMENT PRACTITIONER
(EAP), PERMITTING / DE-RISKING ADVISORS / ENVIRONMENTAL
CONSULTANTS DECLARATION**

I, Dr Sindila Mwiya, working for Risk-Based Solutions (RBS) CC, the Permitting / De-Risking Advisors / Environmental Consultants and being the Environmental Assessment process Team Leader and EAP for the preparation of this Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report to support the Application for the Renewal of the Environmental Clearance Certificate (ECC) No. 10431 granted on the 26th September 2022 and expired on the 26th September 2025 for the proposed new and rerouting of existing City of Windhoek (Proponent) 66kV overhead powerlines networks linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss) around Goreangab Dam, Windhoek, Khomas Region, hereby declares that:

1. This this Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report has been prepared in accordance with the provisions of the Electricity Act 2007 (Act No. 4 of 2007) as amended, the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012, and Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007, and all other applicable national laws, and Regulations and Good International Industry Practice (GIIP).
2. I am highly qualified and experienced in environmental assessments and management, marine seismic survey operations, offshore oil and gas exploration and production operations and hold a PhD with research interests, academic training, and technical knowledge in Engineering Geology, Geotechnical, Geoenvironmental and Environmental Engineering, Artificial Intelligence and Knowledge-Based Systems with special focus on EIAs, EMPs, EMSs, SEAs, SEMP and ESG with respect to subsurface resources (minerals, petroleum, water) and energy in arid and semiarid environments.
3. I am an Engineering and Environmental Geologist with extensive technical knowledge and experience in conducting environmental assessments, management, and monitoring for offshore and onshore subsurface resources (petroleum, solid state minerals, water, geothermal), exploration and utilisation and have undertaken more than 200 projects since 2004, including more than seventy (70) 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 project in an objective manner, even if the outcomes will result in views or Records of Decision that may not be favourable to the Stakeholders or the Proponent, and.
5. I am an independent consultant not related to the Proponent, I co-own and operate an independent company (Risk-Based Solutions CC) which is not related to the Proponent. Except for the fees payable for professional consulting services rendered to the Proponent, 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 Government



.....
Dr Sindila MWIYA

Environmental Assessment Practitioner (EAP)\Team Leader
Permitting / De-Risking Advisors / Environmental Consultant
RISK-BASED SOLUTIONS (RBS) CC

Content List

NON-TECHNICAL SUMMARY	VIII
1. BACKGROUND TO THE PROJECT	- 1 -
1.1 OVERVIEW	- 1 -
1.2 SUMMARY OF THE PROPOSED OVERHEAD POWERLINE PROJECT	- 1 -
1.3 REGULATORY REQUIREMENTS	- 13 -
1.4 PROJECT MOTIVATION	- 13 -
1.5 SUMMARY OF THE TERMS OF REFERENCE (ToR)	- 13 -
1.6 ENVIRONMENTAL ASSESSMENT PROCESS AND STEPS	- 15 -
1.7 ENVIRONMENTAL MONITORING FOR THE PERIOD 26 SEP 2022 TO 26 SEP 2025	- 18 -
1.8 ASSUMPTIONS AND LIMITATIONS	- 18 -
1.9 STRUCTURE OF THE REPORT	- 18 -
2. PROPOSED PROJECT SUMMARY	- 19 -
2.1 OVERVIEW	- 19 -
2.2 ROUTE SELECTION	- 19 -
2.3 EQUIPMENT AND MANPOWER	- 19 -
2.4 PRECONSTRUCTION AND CONSTRUCTION	- 22 -
2.5 OPERATIONAL STAGE	- 22 -
2.6 MONITORING AND MAINTENANCE	- 22 -
2.7 CLOSURE OR UPGRADE	- 22 -
3. REGULATORY FRAMEWORK.....	- 23 -
3.1 INTRODUCTION	- 23 -
3.2 ENVIRONMENTAL REGULATIONS	- 23 -
3.2.1 <i>Environmental Assessment Requirements and Procedures</i>	- 23 -
3.2.2 <i>Regulator and Competent Authorities</i>	- 23 -
3.3 RECOMMENDATIONS ON REGULATORY REQUIREMENTS	- 25 -
4. RECEIVING ENVIRONMENT.....	- 27 -
4.1 CLIMATIC SETTINGS	- 27 -
4.2 FAUNA	- 27 -
4.2.1 <i>Reptiles</i>	- 27 -
4.2.2 <i>Amphibians</i>	- 27 -
4.2.3 <i>Mammals</i>	- 27 -
4.2.4 <i>Avian Diversity</i>	- 27 -
4.2.4.1 Overview	- 27 -
4.2.4.2 Factors influencing Collision Risk	- 28 -
4.2.4.3 Potential Key Sensitive Route Sections	- 28 -
4.2.5 <i>Fauna Conclusions</i>	- 29 -
4.3 FLORA.....	- 29 -
4.3.1 <i>Trees/shrubs and Grasses</i>	- 29 -
4.3.2 <i>Other Species</i>	- 30 -
4.3.3 <i>Flora Conclusions</i>	- 30 -
4.4 SUMMARY OF THE SOCIOECONOMIC SETTINGS.....	- 34 -
4.4.1 <i>Overview</i>	- 34 -
4.4.2 <i>Demographics and Society</i>	- 34 -
4.4.3 <i>Economic Structure</i>	- 34 -
4.4.4 <i>Socioeconomic Disparities and Challenges</i>	- 36 -
4.4.5 <i>Quality of Life and Development</i>	- 36 -
4.5 GROUND COMPONENTS	- 41 -
4.5.1 <i>Regional Geology</i>	- 41 -
4.5.2 <i>Local Geology</i>	- 41 -
4.5.2.1 Quartz Biotite / Biotite Quartz Schist.....	- 41 -
4.5.2.2 Mica Quartzites	- 45 -
4.5.2.3 Water Supply and Vulnerability	- 45 -
4.6 PUBLIC CONSULTATIONS.....	- 46 -
4.6.1 <i>Overview</i>	- 46 -

5.	ASSESSMENT OF LIKELY IMPACTS	- 49 -
5.1	ASSESSMENT PROCEDURE AND METHODOLOGY	- 49 -
5.2	ALTERNATIVES AND ECOSYSTEM ASSESSMENTS	- 49 -
5.3	LIKELY NEGATIVE IMPACTS CONSIDERED IN THE EIA PROCESS	- 50 -
5.3.1	<i>Likely Sources of Negative Impacts</i>	- 50 -
5.4	OVERALL IMPACT ASSESSMENT RESULTS	- 50 -
5.4.1	<i>Overview</i>	- 50 -
5.4.2	<i>Evaluation of Project Activities Impacts</i>	- 51 -
5.4.2.1	Summary Overview	- 51 -
5.4.2.2	Severity Criteria for Environmental Impacts	- 51 -
5.4.2.3	Likelihood (Probability) of Occurrence	- 52 -
5.4.3	<i>Project Activities Summary of Impacts Results</i>	- 53 -
5.4.4	<i>Assessment of the Overall Significant Impacts</i>	- 58 -
5.4.4.1	Overview	- 58 -
5.4.4.2	Summary of the Sources of Impacts	- 58 -
5.4.4.3	Determination of the Overall Likely Significant Impacts	- 58 -
6.	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	- 60 -
6.1	SUMMARY OBJECTIVES OF THIS EMP	- 60 -
6.2	MITIGATION MEASURES FOR KEY ISSUES	- 60 -
6.3	ROLES AND RESPONSIBILITIES	- 65 -
6.3.1	<i>Overview</i>	- 65 -
6.3.2	<i>Onsite Project Manager</i>	- 66 -
6.3.3	<i>Environmental Control Officer (ECO)</i>	- 66 -
6.3.4	<i>Contractor</i>	- 67 -
6.3.5	<i>Construction Supporting Teams</i>	- 68 -
6.4	ENVIRONMENTAL PERFORMANCE MONITORING	- 68 -
7.	EIA AND EMP CONCLUSIONS AND RECOMMENDATIONS	- 73 -
7.1	SUMMARY OF CONCLUSIONS	- 73 -
7.2	SUMMARY OF THE RECOMMENDATIONS	- 73 -
8.	REFERENCES	- 75 -
9.	ANNEXES	- 79 -
9.1	EAP CV AND BID	- 79 -
9.2	PROOF OF PREVIOUS PUBLIC AND STAKEHOLDER CONSULTATIONS	- 79 -

List of Figures

Figure 1.1:	Regional location of the proposed overhead powerline project situated near Goreangab Dam in Katutura Area, City of Windhoek depicted by the red square, Samora Machel and Khomasdal Constituencies, Khomas Region.	- 2 -
Figure 1.2:	Detailed location of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.....	- 3 -
Figure 1.3:	Detailed route layout of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.....	- 4 -
Figure 1.4:	Copy of the ECC No. 10431 granted by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) on the 26 th September 2022 and expired on the 26 th September 2025 and need to be renewed support the proposed overhead powerline project.	- 14 -
Figure 1.5:	RBS Schematic presentation of Namibia’s Environmental Assessment Procedure.....	- 17 -
Figure 3.1:	Letter of support and no objection by the Ministry of Industries, Mines and Energy (MIME), as the Component Authority (CA) with respect to the application for ECC for the proposed overhead powerline project by the City of Windhoek (Proponent).	- 26 -
Figure 4.1:	Vegetation zone of the project area.	- 32 -
Figure 4.2:	Khomas Region and the City of Windhoek constituencies. The Proposed powerline project falls within the Samora Machel and Khomasdal Contintuencies in the City of Windhoek.....	- 35 -
Figure 4.3:	Population of the Windhoek City constituencies of the Khomas Region based on the 2023 Census. The Proposed powerline project falls within the Samora Machel and Khomasdal Contintuencies.	- 36 -
Figure 4.4:	Local land use of the proposed project area.	- 42 -
Figure 4.5:	Geology of the proposed project area.	- 43 -
Figure 4.6:	Hydrological and hydrogeological settings of the local project area.....	- 44 -
Figure 4.7:	Copy of the 1 st public notification that was published in the New Era Newspaper dated Thursday, 9 th June 2022.....	- 47 -
Figure 4.8:	Copy of the 2 nd public notification that was published in the Confidante Newspaper dated 17 th – 23 rd June 2022.....	- 48 -

List of Tables

Table 1.1:	Summary of the proposed activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering EIA and EMP Report.....	- 15 -
Table 3.1:	Government agencies with responsibilities over the proposed project.	- 24 -
Table 3.2:	Likely permit requirements.....	- 25 -
Table 4.1:	Protected tree and shrub diversity known and/or expected to occur in the general are west of Windhoek central Namibia – area.	- 31 -
Table 5.1:	Outline of the proposed project developmental stages and the associated activities as sources of likely negative impacts.....	- 50 -
Table 5.2:	Scored on a scale from 0 to 5 for impact magnitude.....	- 52 -
Table 5.3:	Scored time period over which the impact is expected to last.	- 52 -
Table 5.4:	Scored geographical extent of the induced change.	- 52 -
Table 5.5:	Summary of the semi qualitative scale of probability categories (in increasing order of likelihood of occurrence).	- 53 -
Table 5.6:	Results of the impact assessment of the proposed powerline developmental stages and the associated activities on the receiving environment (natural, built, socioeconomic, flora, fauna, habitat, and ecosystem).	- 54 -
Table 5.7:	Results of the scored time over which the likely negative impacts of the proposed powerline developmental stages and the associated activities is expected to last.....	- 55 -

Table 5.8:	Results of the scored geographical extent of the induced change caused by the proposed powerline developmental stages and the associated activities.	- 56 -
Table 5.9:	Results of the qualitative scale of probability occurrence of likely negative impacts because of the proposed powerline developmental stages and the associated activities.	- 57 -
Table 5.10:	Significant impact assessment of the proposed powerline developmental stages and the associated activities on the receiving environment (natural, built, socioeconomic, flora, fauna, habitat and ecosystem).	- 59 -
Table 6.1:	Monitoring of environmental performance implementation / environmental awareness training.	- 69 -
Table 6.2:	Monitoring of environmental performance for the temporal and permanent structures.	- 69 -
Table 6.3:	Environmental data collection.	- 70 -
Table 6.4:	Health, Safety and Environment (HSE).	- 70 -
Table 6.5:	Recruitment of labour.	- 70 -
Table 6.6:	Management of the natural habitat and surficial materials management.	- 71 -
Table 6.7:	Tracks and off-road driving.	- 71 -
Table 6.8:	Management of water resources.	- 72 -
Table 6.9:	Public relations.	- 72 -

List of Plates

Plate 1.1:	Eveline Distribution Station (Goreangab) connection point of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.	- 5 -
Plate 1.2:	Dam Wall Load Centre connection point of the connection point of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.	- 6 -
Plate 1.3:	Drone view to the south showing the new rerouting area west of the Dam Wall to the Dam Wall Load Centre connection point.	- 7 -
Plate 1.4:	Drone view to the west showing the new rerouting area west of the Goreangab Waste Water Works to the Dam Wall Load Centre connection point.	- 8 -
Plate 1.5:	Drone image view to the west showing the existing City of Windhoek powerline networks on both sides of the existing NamPower powerline.	- 9 -
Plate 1.6:	Drone view to the east showing the general area where the proposed overhead powerline will be rerouted around the proposed Khomas Substation intake.	- 10 -
Plate 1.7:	Drone view to the east showing the existing City of Windhoek powerline networks on both sides of the existing NamPower powerline.	- 11 -
Plate 1.8:	Drone view to the west from Gammas Waste Water Works showing the existing powerline from the tie point connection linking to the Haloid Load centre and to the Goreangab Load Centre line to the dismantled.	- 12 -
Plate 2.1:	Single steel monopole illustration of proposed overhead powerline with three (3) wire strings.	- 20 -
Plate 2.2:	Single steel monopole illustrating of the corner / bend design option for proposed overhead powerline new and rerouted networks.	- 21 -
Plate 4.1:	Example of the high biodiversity of protected / endemic species such as the Aloe littoralis slope situated along the western section of the proposed route near the dam wall were avoided during the route selection process guided by the EIA process.	- 33 -
Plate 4.2:	Not pristine, example of the existing multiple large-scale development areas found around the proposed powerline project.	- 37 -
Plate 4.3:	Not pristine, example of the existing disturbed areas found around the proposed powerline project.	- 38 -
Plate 4.4:	Illegal dumping of waste along the access roads within the proposed powerline project area.	- 39 -
Plate 4.5:	Illegal dumping of waste in some of the Ephemeral Rivers Channels found within the proposed powerline project area.	- 40 -

Non-Technical Summary

The City of Windhoek (“**CoW**”), the “**Proponent**” is proposing to construct new and rerouted 66kV overhead powerlines networks linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss) around Goreangab Dam in Windhoek, Khomas Region, central Namibia.

The proposed new and reroute powerline corridor will have a separation distance between the existing NamPower powerline and the new lines of 25 m + 6 m = 31 m centre to centre. The design of the powerline comprises 12 m high single steel monopoles along a straight line and two poles at each turning point with a spacing of 120 m and each pole will be connected by three wires.

The construction and dismantling of the new and existing overhead powerlines infrastructure respectively, are listed in the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC).

An ECC No. 10431 was granted by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) on the 26th September 2022 and expired on the 26th September 2025. The ECC No. 10431 need to be renewed to support the construction of the proposed overhead powerlines network linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss).

This Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report has been prepared to support the application for the renewal of the current ECC No. 10431 that expired on the 26th September 2025.

No construction and environmental monitoring activities have been undertaken with respect to the proposed overhead powerline project for the period under review from the 26th September 2022 and expired on the 26th September 2025.

The design as well as the sensitivity of the receiving environment have all been considered in the assessment of most favourable alternatives for this proposed project. The following is the summary of the activities associated with the proposed route selection, preconstruction, construction, operational and upgrade / rehabilitation stages of the proposed overhead powerline project:

1. Planning and clients’ need assessment.
2. Geographical Information System (GIS) mapping of possible routes options.
3. Evaluation and field-based route assessment verifications and validations.
4. Field –based route and servitude survey.
5. Field –based route and servitude clearing.
6. Digging of the individual pole foundation.
7. Digging of the pole support.
8. Poles and support driving works.
9. Structure mounting.
10. Module clamping.
11. Cabling and electrical equipment installation.
12. Installation of Communication Monitoring.

13. Commissioning.
14. Operational (Supply of Electricity to the Cement Plant).
15. Monitoring and Maintenance.
16. Powerline Decommissioning, and.
17. Powerline Upgrade.

Key issues assessed during the environmental assessment process includes the following: Permitting requirements, vehicles, and tracks management, temporally storage construction areas, impacts on avifauna, impacts on mammals, impacts on water resources protection and general water usage, positive and negative impacts of socioeconomic setting, health, and safety impacts, visual, noise, dust, and waste (solid and liquid) management.

In managing the significant impacts identified during the environmental assessment process, the following mitigation measures have been provided under the Section 6 EMP of this report:

- (i) Regulatory mitigation measures with respect to the implementation of the proposed project activities.
- (ii) Mitigation measures for vehicles and tracks management.
- (iii) Mitigation measures around the distribution station(s) and camps sites.
- (iv) Mitigation measures for avifauna over the powerlines.
- (v) Mitigation measures for water resources protection and general water usage.
- (vi) Mitigation measures to enhance positive socioeconomic impacts include the following actions to be implemented by the proponent.
- (vii) Mitigation measures to minimise negative socioeconomic impacts.
- (viii) Mitigation measures to minimise health and safety impacts.
- (ix) Mitigation measures to minimise visual impacts, and.
- (x) Mitigation measures to minimise noise and dust impacts.

This EIA and EMP Report has determined the key elements of the proposed powerline project and correspondingly identified the likely environmental receptors that are likely to be affected. The proposed new powerline construction will not adversely affect any unique vertebrate fauna and flora, especially if the proposed recommendations (mitigation measures) are incorporated in the development process. However, introducing avifauna collision and “flashover” avoidance mechanisms are imperative along potential flight corridors identified around the western main dam wall section as well as at areas where the powerline cuts across the Otjiseru and Arebbusch major Ephemeral River channels / runs closer to the Goreangab dam area.

Based on the findings of this EIA and EMP Report, it is hereby recommended that the City of Windhoek be issued with a renewed Environmental Clearance Certificate (ECC) covering the preconstruction, construction and operational phases of the proposed new and rerouting powerline projects proposed surround Goreangab area, Katutura, Windhoek, Khomas Region.

1. BACKGROUND TO THE PROJECT

1.1 Overview

The City of Windhoek (“**CoW**”), the “**Proponent**” is proposing an overhead powerline project comprising the development of new lines and rerouting of the existing networks situated in the Goreangab area, Katutura, Windhoek. Khomas Region (Figs. 1.1-1.3).

The objective of the proposed overhead powerline project is to link the Goreangab Load Centre (L/C) and Dam Wall L/C to the new proposed NamPower Khomas Substation (Ss) around Goreangab Dam in order to provide a stable and reliable supply of electricity to the local areas (Figs. 1.2 and 1.3 and Plates 1.1-1.8).

1.2 Summary of the Proposed Overhead Powerline Project

The Proponent is proposing to undertake the following activities:

- (i) New overhead powerlines to be constructed covers (Figs. 1.2 and 1.3):
 - ❖ 66kV Haloid L/C line Tie-In point to Dam Wall L/C Tie-In point: 3.88 km.
 - ❖ 66kV Dam Wall L/C to Khomas SS: 1.75km, and.
 - ❖ 66kV Khomas to Goreangab L/C line Tie-In point: 0.62km
- (ii) Existing overhead powerline to be dismantled are (Figs. 1.2 and 1.3):
 - ❖ 66kV Goreangab L/C to Dam Wall L/C: 1.62km, and.
 - ❖ 66kV Goreangab L/C to Haloid L/C: 0.93km

The receiving environment around the proposed overhead powerlines routes around the Goreangab Dam is not pristine and include the following existing disturbances:

- (i) City of Windhoek infrastructure associated with the waste water management system dominating the eastern side of the powerline route.
- (ii) Existing 220 NamPower overhead powerline along the southern-eastern side of the proposed route.
- (iii) Existing 22 kV NamPower overhead powerline along the southern-eastern side of the proposed route.
- (iv) Existing 22 kV City of Windhoek overhead powerline along the western side of the proposed route.
- (v) Various off-road tracks, and.
- (vi) Illegal waste dumps located at various localities along the proposed route particularly towards the Dam Wall sections of the proposed powerline route.

Overall, the surrounding landscape is adulating with occasional steep to very steep slopes particularly around the Goreangab Dam Wall area towards the Dam Wall Load Centre connection point (Plates 1.1-1.8). The proposed rerouted corridor cuts across several Ephemeral Rivers including the Abberbusch and Otjseru major Ephemeral Rivers.

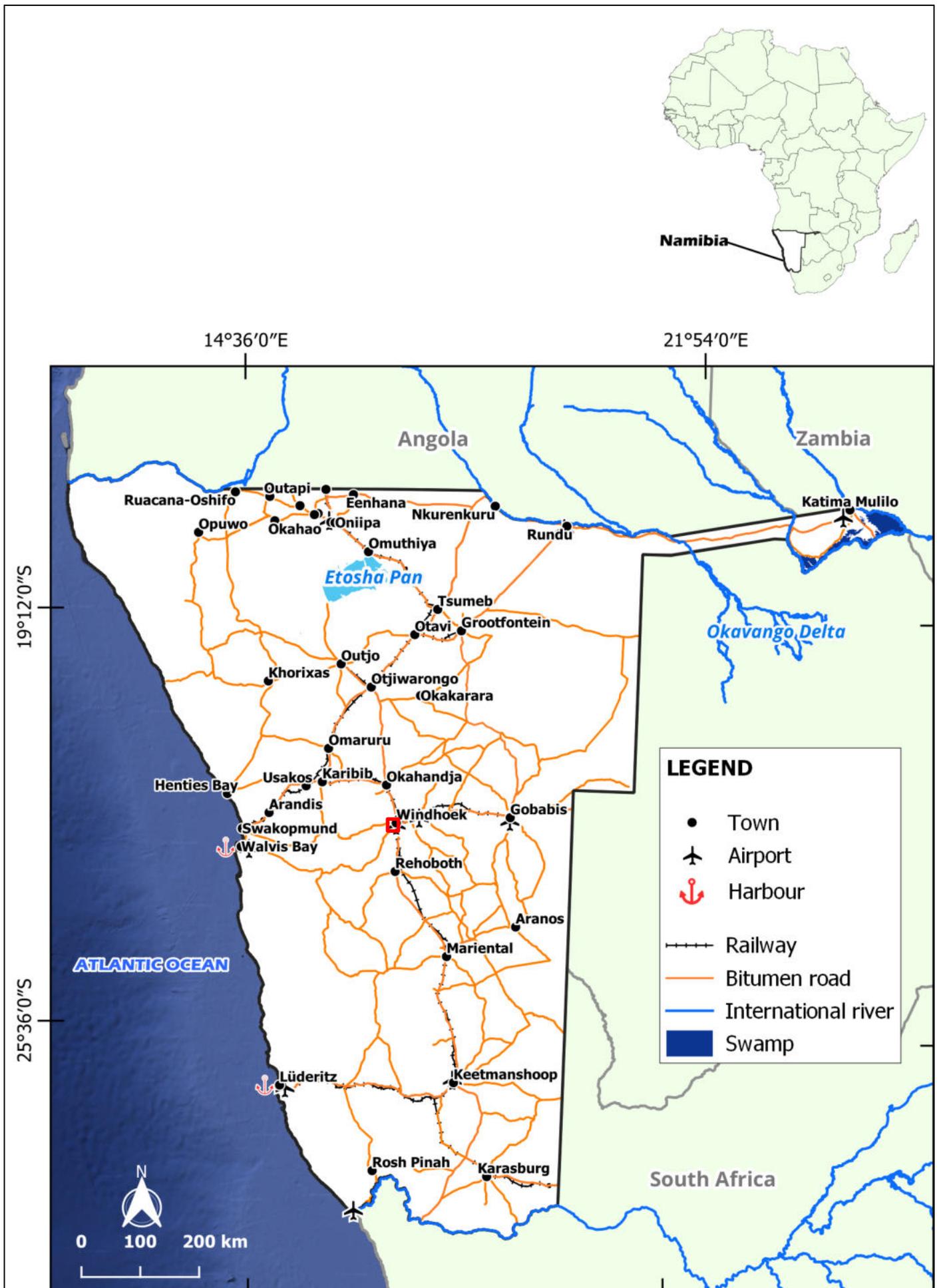


Figure 1.1: Regional location of the proposed overhead powerline project situated near Goreangab Dam in Katutura Area, City of Windhoek depicted by the red square, Samora Machel and Khomasdal Constituencies, Khomas Region.

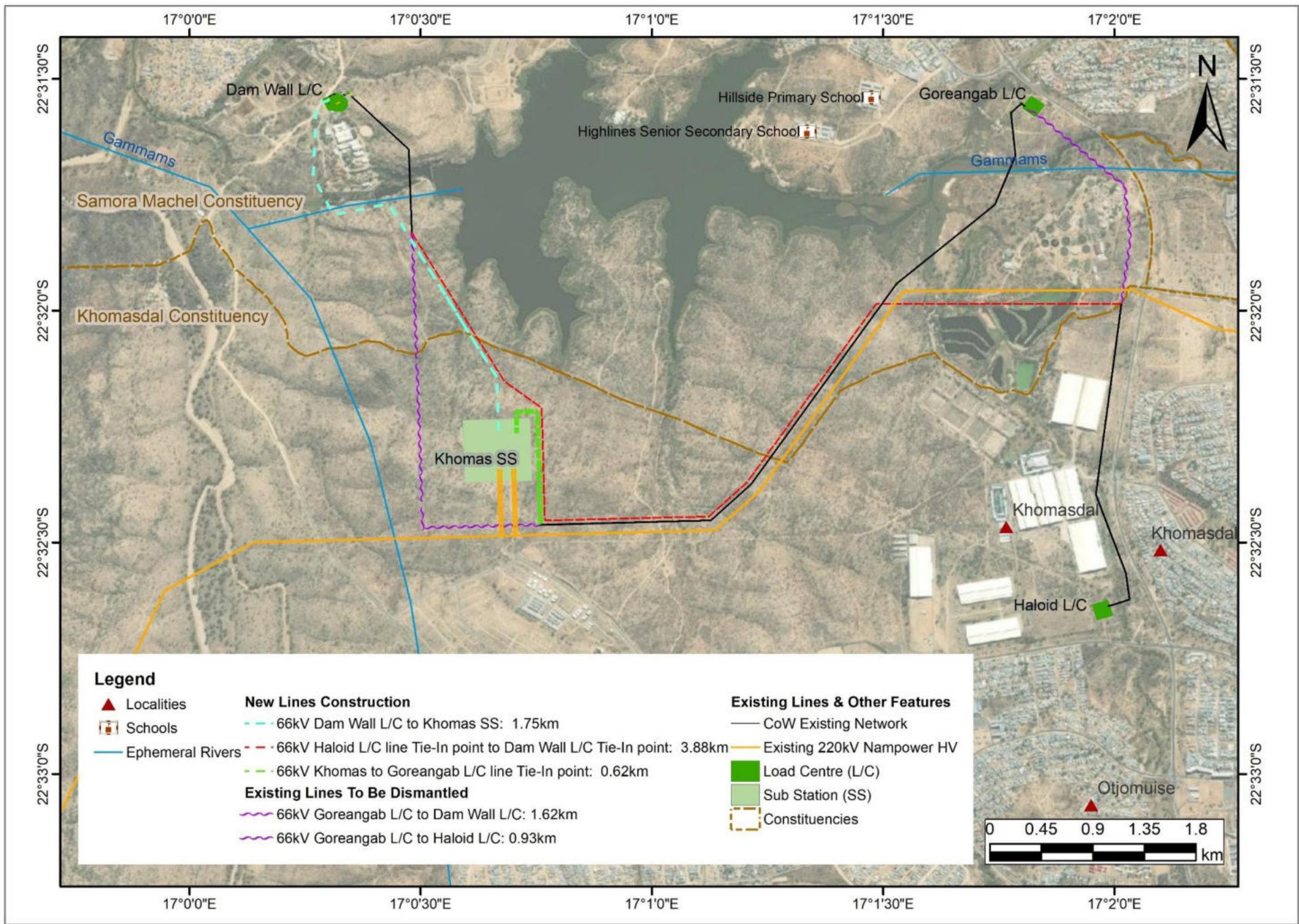


Figure 1.2: Detailed location of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.

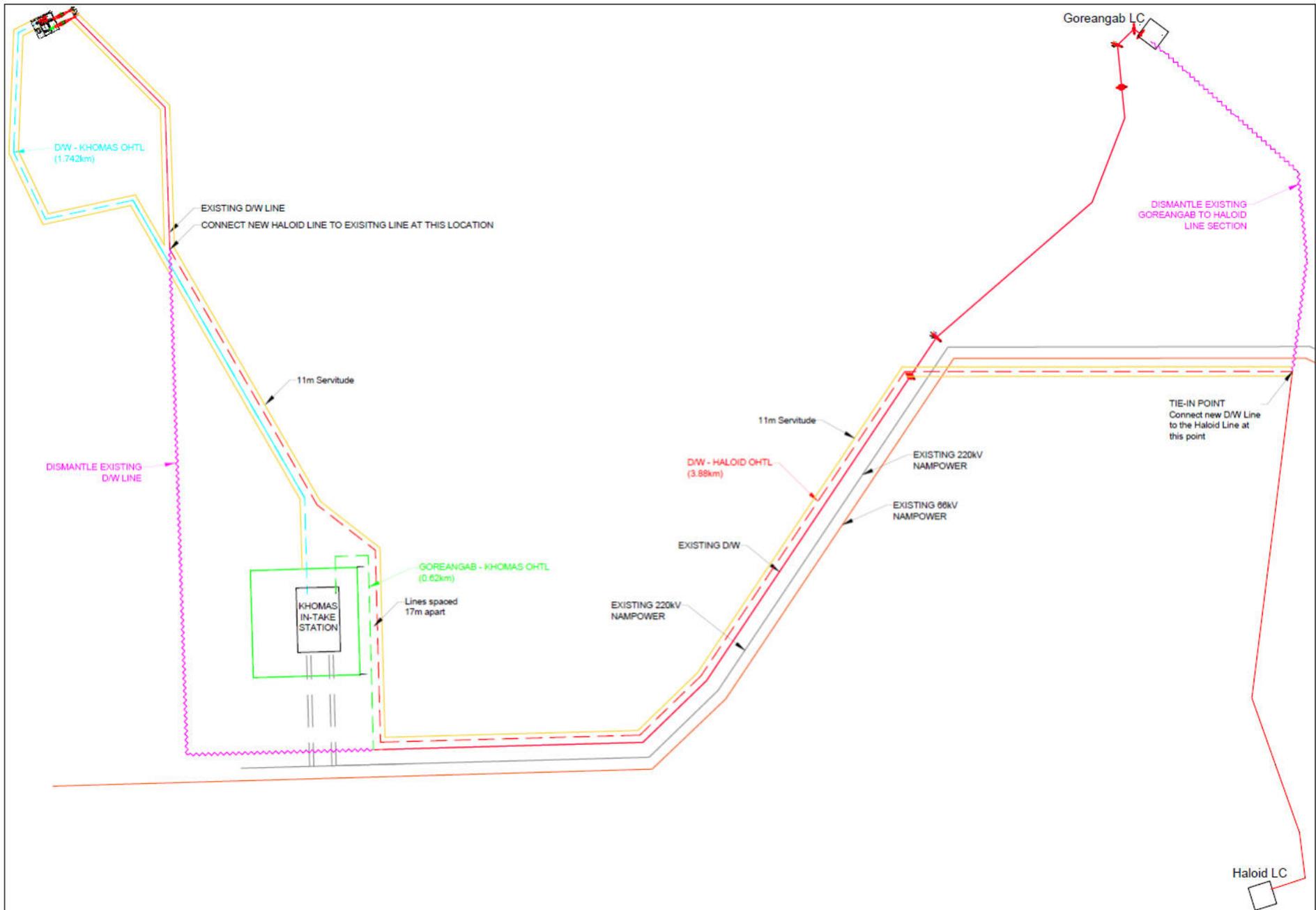


Figure 1.3: Detailed route layout of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek (Source: Riaan van Zyl, Transmission Consulting Services (TCS)).



Plate 1.1: Eveline Distribution Station (Goreangab) connection point of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.



Plate 1.2: Dam Wall Load Centre connection point of the connection point of the proposed new and rerouting of the existing overhead powerline situated within the vicinity of the Goreangab Dam in Katutura Area, City of Windhoek.



Plate 1.3: Drone view to the south showing the new rerouting area west of the Dam Wall to the Dam Wall Load Centre connection point.



Plate 1.4: Drone view to the west showing the new rerouting area west of the Goreangab Waste Water Works to the Dam Wall Load Centre connection point.



Plate 1.5: Drone image view to the west showing the existing City of Windhoek powerline networks on both sides of the existing NamPower powerline.



Plate 1.6: Drone view to the east showing the general area where the proposed overhead powerline will be rerouted around the proposed Khomas Substation intake.



Plate 1.7: Drone view to the east showing the existing City of Windhoek powerline networks on both sides of the existing NamPower powerline.



Plate 1.8: Drone view to the west from Gammas Waste Water Works showing the existing powerline from the tie point connection linking to the Haloid Load centre and to the Goreangab Load Centre line to the dismantled.

1.3 Regulatory Requirements

In accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007), the proposed overhead powerline project activities fall within the list of activities that cannot be undertaken without an Environmental Clearance Certificate (ECC).

The Proponent is required to have undertaken Environmental Assessment comprising the preparation of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Reports to support the development of the proposed overhead powerline project.

The current ECC No. 10431 was granted to Proponent by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) on the on the 26th September 2022 and expired on the 26th September 2025 and need to be renewed (Fig. 1.4).

In fulfilment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for the renewal of the current ECC No. 10431 (Fig. 1.4).

This EIA and EMP Report has been prepared by Risk-Based Solutions on behalf of the Proponent to support the application for the renewal of the current ECC No. 10432 which expired on the 26th September 2025 (Fig. 1.4).

1.4 Project Motivation

The development new and rerouting of the proposed overhead powerline is very important because it will allow for linkage of the Goreangab Load Centre (L/C) and Dam Wall L/C to the new proposed NamPower Khomas Substation (Ss) around Goreangab Dam (Figs. 1.2 and 1.3 and Plates 1.1 to 1.8). The availability of reliable electricity supply to the proposed are will promote development, investments, economic growth, and job opportunities for the city residents.

The expansion of the electricity network in the area will guarantee reliable energy supply to the envisioned development targets and energy operational requirements of the proposed developments such as the Waterfront Project around Goreangab Dam.

The realisation of the large-scale developments in the area such as the proposed Waterfront will uplift the infrastructure requirements and community needs around Goreangab Dam and Katutura area in general, expand the income base for the City of Windhoek in form of property taxes and services payable.

1.5 Summary of the Terms of Reference (ToR)

Risk-Based Solutions (RBS) was appointed by the Proponent to prepare Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report to support the application for the renewal of the Environmental Clearance Certificate (ECC) NO. 10431.

The assessment process was focused on reviewing the previous EIA and EMP Report that was pared in 2022 covering receiving environmental settings (physical, biological, socioeconomic and ecosystem services, function, use values and non-use) with respect to the preconstruction, construction, operational and closure of the proposed overhead powerline (Table 1.1).

The preparation of the EIA and EMP Report/s shall include the assessment of the likely impacts (positive and negative) on the receiving environment (Table 1.1).



REPUBLIC OF NAMIBIA
MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

ENVIRONMENTAL CLEARANCE CERTIFICATE

ISSUED

In accordance with Section 37(2) of the Environmental
Management Act (Act No. 7 of 2007)

TO

City of Windhoek
P. O. Box 59, Windhoek

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

Proposed New and Rerouting of Existing City of Windhoek 66kV
Overhead Powerlines Networks Linking Goreangab Load Centre (L/C) and
Dam Wall L/C to the New Khomas Substation (Ss) around Goreangab
Dam, Windhoek, Khomas Region.

Issued on the date: 2022-09-26
Expires on this date: 2025-09-26



(See conditions printed over leaf)

This certificate is printed without erasures or alterations



Figure 1.4: Copy of the ECC No. 10431 granted by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) on the 26th September 2022 and expired on the 26th September 2025 and need to be renewed support the proposed overhead powerline project.

Table 1.1: Summary of the proposed activities, alternatives and key issues considered during the Environmental Assessment (EA) process covering EIA and EMP Report.

PROJECT ACTIVITIES	ALTERNATIVES CONSIDERED	Key Issues Evaluated and Assessed with Environmental Management Plan (EMP) / Mitigation Measures Developed	
(i) Preconstruction (ii) Construction (iii) Operational (iv) Monitoring and Closure (v) Closure or Upgrade	(i) Location and proposed overhead powerline route and the alternative route around the proposed Khomas Substation and future NamPower Lines adjustment localities	Potential land use conflicts / opportunities for coexistence between proposed exploration and other existing land uses such as conservation, tourism, and agriculture	
	(ii) Other Alternative Land Uses: Game farming, tourism, and agriculture (iii) Ecosystem Function (What the Ecosystem Does. (iv) Ecosystem Services. (v) Use Values. (vi) Non-Use, or Passive Use. (vii) The No-Action Alternative (viii) Others to be identified during the public consultation process and preparation of the EIA and EMP Reports	PHYSICAL ENVIRONMENT	<ul style="list-style-type: none"> • Water Quality • Physical infrastructure and Resources • Air quality, • Noise and dust • Landscape and topography value • Soil quality • Climate Change Influences
	BIOLOGICAL ENVIRONMENT	<ul style="list-style-type: none"> • Habitat Protected Areas • Flora • Fauna • Ecosystem functions, services, use values and non-Use or passive use 	
	SOCIOECONOMIC, CULTURAL, AND ARCHAEOLOGICAL ENVIRONMENT	<ul style="list-style-type: none"> • Local, regional, and national socioeconomic settings • Urban Agriculture • Community Protected Areas • Tourism and Recreation • Cultural, Biological and Archaeological Resources 	

1.6 Environmental Assessment Process and Steps

The processes and steps that has been followed in the preparation of this EIA and EMP Report took into considerations the provisions of the Environmental Impact Assessment Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007) (Fig. 1.5). The detailed environmental assessment steps undertaken or still to be taken are summarised as follows (Fig. 1.5):

- 1) Project screening process was undertaken in May 2022.
- 2) Draft Background Information Document (BID) and Public Notice were prepared in May 2022.

- 3) Opened the Stakeholder register (Undertaken on the June 2022).
- 4) Public and stakeholder consultations process including publishing of notices once a week for two (2) consecutive weeks in at least two (2) newspapers circulated widely in Namibia. The inputs / comments period run for twenty-one (21) days. Undertaken in June 2022
- 5) First public notice was published in the New Era Newspaper on Thursday 9th June 2022.
- 6) Closing date for submission of comments/ inputs to the environmental assessment process was the 1st July 2022.
- 7) Preparation of the Draft EIA and EMP Report (Undertaken in June – July 2022).
- 8) Preparation of final EIA and EMP Report submitted to the Environmental Commissioner in MEFT through the MIME (Competent Authority) in fulfilment of all the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) for application of the Environmental Clearance Certificate (ECC) for the proposed project (submitted in July 2022).
- 9) Following the submission of the application for ECC to the Environmental Commissioner, the public and stakeholders who are interested and affected by the proposed project were given additional fourteen (14) days to submit comments / inputs about the proposed project activities directly to the Environmental Commissioner and the application made available for additional comments / inputs by the Environmental Commissioner on the MEFT digital Portal www.eia.meft.gov.na.
- 10) The current ECC No. 10431 was granted on the 26th September 2022 and expired on the 26th September 2025 and need to be renewed (Fig. 1.4).
- 11) Implemented the ECC No. 10431 renewal process in November 2025 starting with the project screening process by reviewing previous ECC application process and current regulatory requirements followed by the following steps:
 - (i) Prepared Updated Draft BID / Draft Scoping Report undertaken in November 2025.
 - (ii) Reviewed all the previous public and stakeholder consultations process undertaken including all the notices that were published undertaken in November 2025.
 - (iii) Reviewed the closing dates for submission of comments/ inputs to the environmental assessment process undertaken in November 2025.
 - (iv) Based on the outcomes of the previous public and stakeholder consultation activities undertaken in June and July 2022, no further public or stakeholder consultation process were undertaken for the current ECC No. 10431 renewal process due to lack of public and stakeholder interests.
 - (v) Reviewed the Final Updated EIA and EMP Report including the specialist assessments reports submitted to MEFT via MIME leading to the granting of the current expired ECC No. 10431 undertaken in November 2025.
 - (vi) Prepared the Draft Updated EIA and EMP Report to support the application for the renewal of the ECC No. 10431 as granted by the Environmental Commissioner in the MEFT on the 26th September 2022 (Fig. 1.4) and.
 - (vii) Prepared the Final Updated EIA and EMP Report to be submitted to the Environmental Commissioner in the MEFT via MIME (Competent Authority) to support the application for the renewal of the ECC No. 10431 granted on the 26th September 2022 and expired on the 26th September 2025 (Fig. 1.4), and.

- (viii) Following the submission of the application for the renewal of the ECC No. 10431 to the Environmental Commissioner, the public and stakeholders who are interested and affected by the proposed project will be given fourteen (14) days to submit comments / inputs on the proposed project activities directly to the Environmental Commissioner and the application will be made available for additional comments / inputs by the Environmental Commissioner on the MEFT digital Portal www.eia.meft.gov.na.

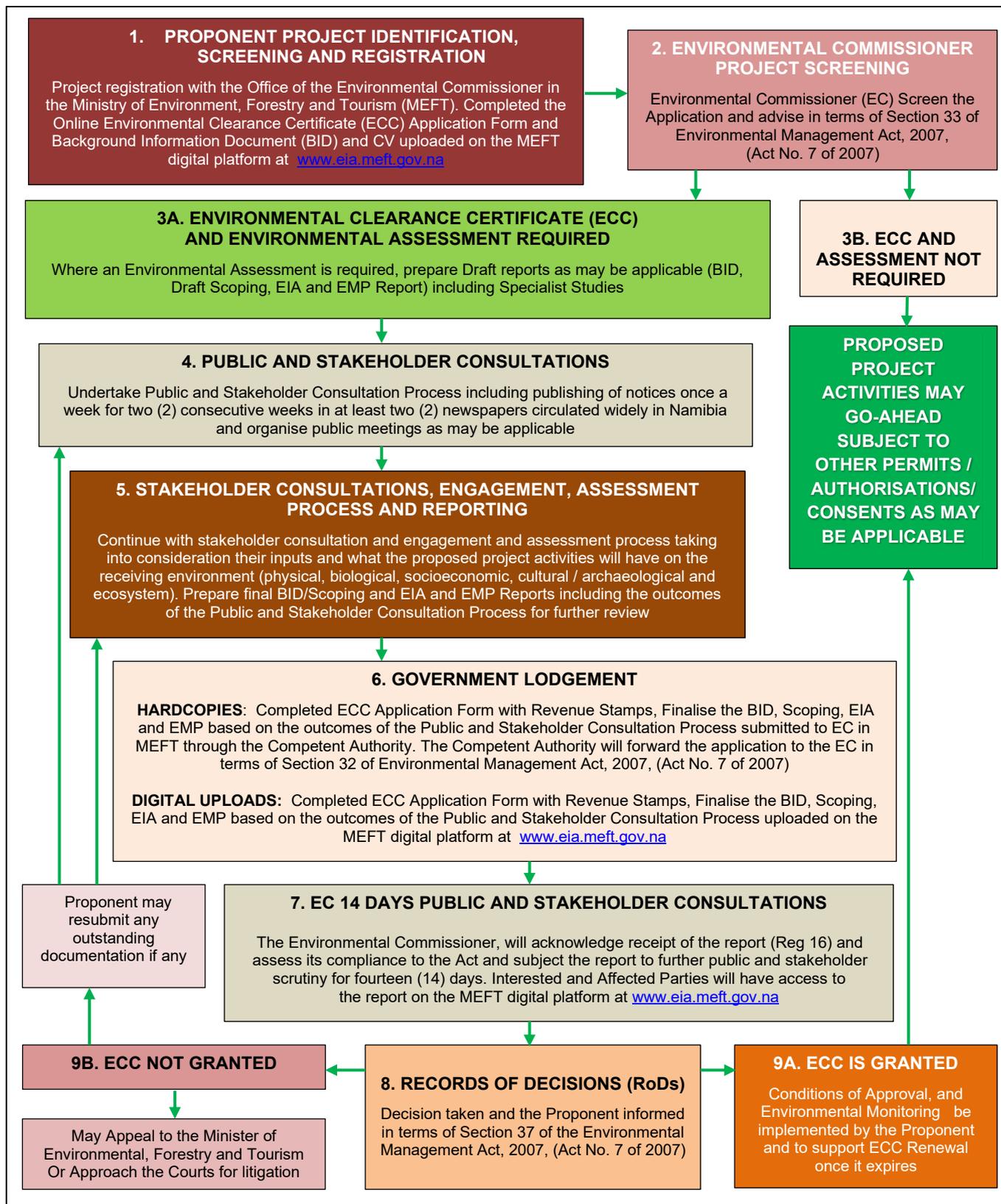


Figure 1:5: RBS Schematic presentation of Namibia's Environmental Assessment Procedure.

1.7 Environmental Monitoring for the Period 26 Sep 2022 to 26 Sep 2025

No construction activities and environmental monitoring have been undertaken with respect to the proposed overhead powerline project for the period under review from the 26th September 2022 and expired on the 26th September 2025.

1.8 Assumptions and Limitations

The following assumptions and limitations underpin the approach adopted, overall outcomes and recommendations for this EIA and EMP study:

- ❖ The activities of the proposed route and design of the proposed powerline as well as all the plans, maps and appropriate data sets received from the proponent, project partners, regulators, Competent Authorities, and specialist assessments are assumed to be current and valid at the time of conducting the studies and compilation of this environmental report.
- ❖ The impact assessment outcomes and recommendations provided in this report are valid for the entire duration of the proposed project covering preconstruction, construction, operational, closure and rehabilitation / upgrade stages.
- ❖ A precautionary approach has been adopted in instances where baseline information or data was insufficient or unavailable or site-specific locations of the proposed project activities were not yet fully confirmed, and.
- ❖ Mandatory timeframes as provided for in the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) have been observed throughout the environmental assessment process and will apply to the review and decision of the Competent Authority and the Environmental Commissioner.

1.9 Structure of the Report

The following is the summary structure outline of this EIA and EMP Report as provided for the Background Information Document (BID).

- ❖ **Section 1: Project Background** covering Introductions, regulatory requirements, project motivation, site description, Environmental Assessment (EA) process and steps and structure of report.
- ❖ **Section 2: Description of the Activities covering** route, design and preconstruction, construction, operational, closure and rehabilitation / upgrade stages.
- ❖ **Section 3: Regulatory Framework providing** a summary of the applicable legislations and permitting requirements.
- ❖ **Section 4: Receiving Environment** covering physical environment (climate, water, air quality, and geology), Biological environment (flora, fauna and ecosystem services and functions) and socioeconomic environment.
- ❖ **Section 5: Assessment of Likely Impacts** covering assessment procedure and methods used, results of the likely Impacts of the preconstruction, construction, operational, closure and rehabilitation / upgrade activities on the receiving environment described in Section 4.
- ❖ **Section 6: Environmental Management Plan** covering the mitigation measures for significant impacts with respect to the preconstruction, construction, operational, closure and rehabilitation / upgrade activities on the receiving environment, and.
- ❖ **Section 7: EIA and EMP Conclusions and Recommendations** covering the key issues identified and summarised recommendations.

2. PROPOSED PROJECT SUMMARY

2.1 Overview

The proposed new and rerouting overhead powerline project will have a separation distance between the existing NamPower lines and the new line of $25\text{ m} + 6\text{ m} = 31\text{ m}$ centre to centre. The design of the powerline comprises 12 m high single steel monopoles along a straight line and two poles at each turning point with a spacing of 120 m and each pole will be connected by three wires (Plates 2.1 and 2.2).

The proposed route has been developed using existing Geographic Information System (GIS) databases and then fine tuned through consultations with the client, expert inputs. The final powerline route passes through varying topographic settings ranging from very steep slopes to undulating profiles in some sections of the proposed route.

2.2 Route Selection

A potential route corridor from the point of connection was selected from the various route options identified by the City of Windhoek. Route selection preference was focused on utilising areas along already existing infrastructures such as powerlines, roads, and generally disturbed grounds within the general project area.

The overall objective has been to utilise as much of the already disturbed areas as possible. Financial considerations were restricted to the distance covered, the number of turns required, and slope classes. The design considerations were based on accessibility to the route from the current existing electricity infrastructure (distribution and connectivity), slope class and the local environment through which the proposed powerline will have to go through including the servitude requirements and land ownership.

Environmental considerations covered the current land uses, sensitivity to disturbance, visual, land use and overall environmental sensitivity in terms of habitats and likely avifauna negative impacts with respect to the Goreangab Dam.

Guided by the EIA process, areas of potential high visual aspect and high biodiversity of protected / endemic species such as the *Aloe littoralis* slope situated along the western section of the proposed route were avoided as much as possible.

2.3 Equipment and Manpower

The construction of the proposed powerline will be undertaken by a contractor appointed by the developer. The contractor to be appointed will provide the required manpower and equipment as per the tender, regulatory, municipal bylaws and work standard requirements. Steel monopoles will be erected using an excavator with rock auger and pole erection attachments. Pole holes will be dug in both soft and hard rock conditions, although hard rock conditions seem to dominate the proposed route.

Due to rock outcrops (Quartz Biotite Schist) found along the proposed route; pole holes may prove difficult to excavate in some places where fresh quartz dominated schists may outcrop. Stringing of the conductors will be completed using a truck mounted pulley system. Other equipment that may be utilised by the contractor onsite included a crane / Hiab truck, 4 X 4 vehicles, elevated work platforms and other hand supporting tools with safety and personnel protective equipment and clothing used at all times.



Plate 2.1: Single steel monopole illustration of proposed overhead powerline with three (3) wire strings.

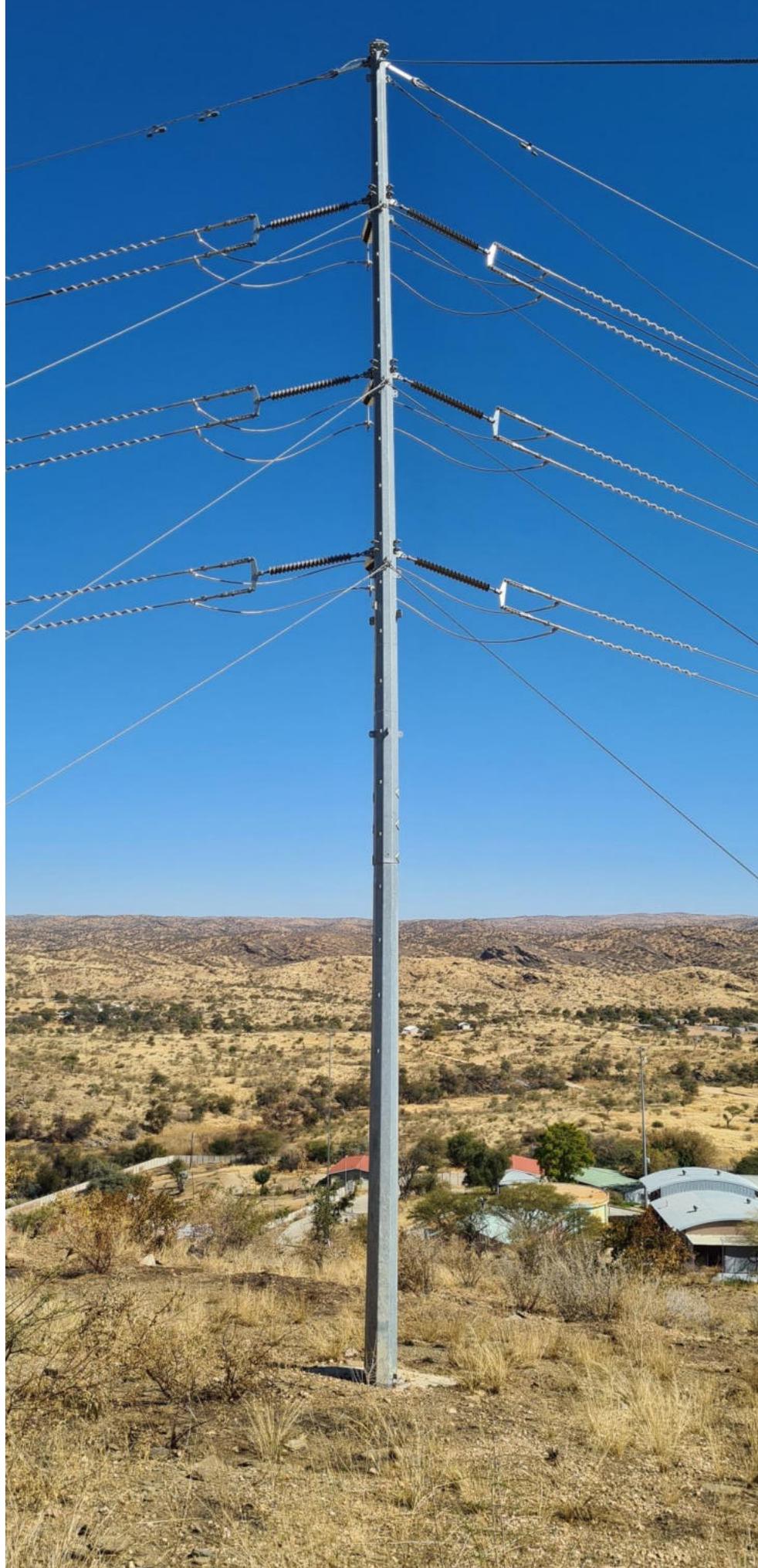


Plate 2.2: Single steel monopole illustrating of the corner / bend design option for proposed overhead powerline new and rerouted networks.

2.4 Preconstruction and Construction

The preconstruction and construction stages of the proposed project will begin once all the agreements have been signed and the relevant permits such as Environmental Clearance Certificate (ECC) have been obtained. It will take approximately six (6) months from the beginning of the preconstruction process to complete construction of the proposed overhead powerline. The following is the summary of the activities associated with the preconstruction and construction stages of the proposed powerline:

- ❖ Route and servitude surveying.
- ❖ Route and servitude minimum clearing for vehicle access.
- ❖ Digging of the individual pole foundations.
- ❖ Digging of the pole support.
- ❖ Poles and support driving works.
- ❖ Structure mounting.
- ❖ Module clamping.
- ❖ Cabling and electrical equipment installation, and.
- ❖ Installation of communication monitoring as maybe required.

2.5 Operational Stage

Once the construction and testing has been completed the powerline will be commissioned and formally transferred to City of Windhoek for operation and maintenance. The powerline will be self-sustaining and start to supply electricity to the proposed Waterfront Project during preconstruction, construction and operational stages.

2.6 Monitoring and Maintenance

The City of Windhoek will continuously undertake technical and security surveillance. The overall objectives will be to preserve and maintain the reliability of the infrastructure as well as improve its coexistence with the natural environment through ongoing maintenance and environmental monitoring. The maintenance plan activities will comprise the preventive and corrective maintenance operations. The preventative and corrective maintenance activities will be necessary during the whole envisaged lifespan of the facility to ensure the correct operation, enhance energy transfer, extend the life of all the components and continuously work towards minimising any likely negative impacts on the receiving environment and in particular, minimise any likely avifauna collision impacts.

2.7 Closure or Upgrade

The powerline will remain operational unless its removed or redirected elsewhere as it is or upgraded to a higher voltage and then directed to other areas that may require electricity supply in the general surrounding areas as City continue to expand.

3. REGULATORY FRAMEWORK

3.1 Introduction

The main key legislative instruments governing the proposed project are all those related to environmental management, transmission, distribution, use, import and export as they directly affect the implementation of the project. The following is the summary of the key legal framework related to this project:

- ❖ Electricity Act 2007 (Act No. 4 of 2007) as amended.
- ❖ Environmental Impact Assessment (EIA) Regulations No. 30 of 2012, and.
- ❖ Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

A Draft National Renewable Energy Policy for Namibia, 2016, is being finalised and four main scenarios have been developed: the Reference Scenario. a Pro-Wind/Solar Scenario with Kudu Gas Project. a Pro-Hydro Scenario without Kudu Gas Project. and a 70% Renewable Energy (RE) in 2030 Scenario. In addition to the policy developments, the 1998 White Paper on Energy Policy is still the binding expression of Government policy on energy matters in Namibia.

3.2 Environmental Regulations

3.2.1 Environmental Assessment Requirements and Procedures

Environmental Assessment (EA) process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). The proposed powerline project activities fall within the categories of listed activities that cannot be undertaken without an Environmental Clearance Certificate (ECC).

3.2.2 Regulator and Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed project including their role in regulating environmental protection are listed in Table 3.1 with the summary of the key required permits as listed in Table 3.2.

The Ministry of Industries, Mines and Energy (MIME) as the Component Authority (CA) expressed support for the proposed project by the Proponent and had no objection to the application for ECC as shown in Fig. 3.1.

Table 3.1: Government agencies with responsibilities over the proposed project.

AGENCY	RESPONSIBILITY
Office of the Environmental Commissioner (OEC), Ministry of Environment, Forestry and Tourism	Issue of Environmental Clearance Certificate (ECC) based on the review and approval of the Environmental Assessments (EA) reports comprising Environmental Scoping, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) prepared in accordance with the Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012
Ministry of Industries, Mines and Energy (MIME)	Competent Authority responsible for development and implementation of wider electricity industry legislation and institutional mechanism including – the overall exercise control over the electricity supply industry and to regulate the generation, transmission, distribution, use, import and export of electricity in accordance with prevailing Government policy to ensure order in the efficient supply of electricity.
Electricity Control Board (ECB)	Falling under the Ministry of Industries, Mines and Energy (MIME). The Electricity Control Board (ECB) is a statutory regulatory authority established in 2000 under the Electricity Act 2 of 2000. which has subsequently been repealed by the Electricity Act, 4 of 2007. the latter Act having expanded the ECB mandate and core responsibilities. The core mandate of the ECB is to exercise control over the electricity supply industry with the main responsibility of regulating electricity generation, transmission, distribution, supply, import and export in Namibia through setting tariffs and issuance of licenses. The ECB executes its statutory functions through the Technical Secretariat headed by the Chief Executive Officer.
City of Windhoek	Will develop and operator of the powerline once completed but also has municipal bylaws that must be adhered to during the preconstruction and construction stages of the proposed powerline project
NamPower	NamPower is a state-owned enterprise, registered and operating according to the Companies Act, NamPower's core business is the generation, transmission, and energy trading within the Southern African Power Pool (SAPP). NamPower supplies bulk electricity to mainly Regional Electricity Distributors (REDs), and to Local Authorities, Farms and Mines (where REDs are not operational) throughout Namibia
Regional Electricity Distributors (REDs) NamPower Regional Electricity Distributor	A RED is a regional electricity distributing company tasked with supplying electricity to the residents in a specific region. The proposed project falls within NamPower license area covering Otjozondjupa and Kunene Regions with a customer base of 40 000 and distributes electricity to various towns and settlement areas of central-northern Namibia over an area of approximately 120 000 square kilometres.
Ministry of Agriculture, Fisheries, Water and Land Reform	The Directorate of Resource Management within the Department of Water Affairs (DWA) at the MAWLR is currently the lead agency responsible for management of surface and groundwater utilisation through the issuing of abstraction permits and waste water disposal permits. DWA is also the Government agency responsible for water quality monitoring and reporting. The National Botanical Research Institute's (NBRI) mandate is to study the flora and vegetation of Namibia, in order to promote the understanding, conservation and sustainable use of Namibia's plants for the benefit of all. The Directorate of Forestry (DOF) is responsible for issuing of forestry permits with respect to harvest, transport, and export or market forest resources.

Table 3.2: Likely permit requirements.

ACTIVITY	APPLICABLE LEGISLATION	PERMITTING AUTHORITY	CURRENT STATUS
Environmental Clearance Certificate (ECC)	Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012	Office of the Environmental Commissioner (OEC), Ministry of Environment, Forestry and Tourism (MEFT)	Still to be Issued
Land rights covering the proposed project location including Servitudes requirements	Local Authorities Act, 1992, (Act 23 of 1992)	City of Windhoek (Land Owner) Aware of the Proposed Project	To be Concluded
Construction, alteration of waterworks with capacity to hold in excess of 20, 000 L.	Water Resources Management Act, 2004 (No. 284 of 2004).	Ministry of Agriculture, Fisheries, Water and Land Reform	Freshwater Abstraction and Waste Water Discharge Permits not required
Abstraction of water other than that provided by NamWater.			
Discharge of effluents or construction of effluent facility			
Removal, disturbances or destruction of bird eggs.	Nature Conservation Ordinance 4, 1975.	Ministry of Environment, Forestry and Tourism (MEFT)	No removals anticipated but if the need arises, appropriate permits will be obtained.
Removal, disturbance of protected plants.			
Removal, destruction of indigenous trees especially mature and protected species	Forestry Act, 12 of 2001.	Ministry of Environment, Forestry and Tourism (MEFT)	
Scheduled processes in controlled area.	Atmospheric Pollution Prevention Ordinance 11 of 1976	Ministry of Health and Social Services.	No Permits Required but to meet Provisions
Solid Waste Disposal Site	Environmental Management Act (2007) and the Environmental Impact Assessment Regulations, 2012 and Municipal Bylaws	Office of the Environmental Commissioner (OEC), Ministry of Environment, Forestry and Tourism (MEFT) and City of Windhoek	No permit required because the developer will utilise the already existing town council facility

3.3 Recommendations on Regulatory Requirements

The developer and proponent must meet all the applicable national legislative, regulatory and policies frameworks, standards, and protocol with respect to the activities of the proposed powerline project covering the route selection, preconstruction, construction, operational and closure / rehabilitation / upgrading stages.

It is hereby recommended that the developer must follow the provisions of all relevant national regulatory frameworks as described in this Chapter throughout the lifespan of the proposed project including monitoring of avifauna mortalities as maybe applicable.

The proponent must make sure that all relevant permits / matters such as ECC and servitude requirements are finalised before project implementation.



REPUBLIC OF NAMIBIA

MINISTRY OF MINES AND ENERGY

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1 Aviation Road
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Tel : +264612848206

27 July 2022

Dr. Sindila Mwiya
Risk-Based Solution cc
P. O. Box 1839
Windhoek,

Dear Dr. Mwiya

RE: Application for an ENVIRONMENTAL Clearance Certificate for Proposed New AND Rerouting of Existing City of Windhoek 66 kV Overhead Powerlines Network Linking Goreagab Load Centre and Dam wall to the new Khomas Substation around Goreagab Dam.

The Ministry of Mines and Energy took note of the proposed project and studied the project documentation. Therefore, from the Ministry's point of view as a competent authority, the project can go ahead provided that it meets all requirements as set under the Environment Management Act and Regulations.

Please, do not hesitate to contact Mr. Leonard Nekwaya (Tel: +264612848206) for further inquiries on details indicated above.

Yours Sincerely


2022-07-28
Simeon N. Negumbo
Executive Director
Private Bag 13297
Windhoek

All official correspondence must be addressed to the Permanent Secretary

Figure 3.1: Letter of support and no objection by the Ministry of Industries, Mines and Energy (MIME), as the Component Authority (CA) with respect to the application for ECC for the proposed overhead powerline project by the City of Windhoek (Proponent).

4. RECEIVING ENVIRONMENT

4.1 Climatic Settings

The proposed powerline project falls within the boundaries of the City of Windhoek. Windhoek has a hot semi-arid climate (BSh) according to Köppen climate classification as the annual average temperature is above 18 °C. The temperature throughout the year would be called mild, due to altitude influence. The annual average high and low temperature range is 13.6 °C. The coldest month is July, with an average temperature of 13.1 °C, while the hottest month is December, with average temperature 23.5 °C. Precipitation is abundant during the summer season, and minimal during the winter season. The average annual precipitation is 367 millimetres. Due to its location near the Kalahari Desert, the city receives 3,605 hours of sunshine.

4.2 Fauna

4.2.1 Reptiles

Endemic reptile species known and/or expected to occur in the general area west of Windhoek make up 35.9% of the reptiles from the general area and although not as high as endemism elsewhere – for example the far western escarpment areas of Namibia – still makes up a large portion of the reptiles.

Reptiles of greatest concern are probably the tortoises – *Stigmochelys pardalis* and *Psammobates oculiferus* which are often consumed by humans. *Python anchietae* and *P. natalensis* which are indiscriminately killed throughout their range and *Varanus albigularis* as well as the various *Pachydactylus* species geckos of which 80% are viewed as endemic.

Other important species would be the 3 Blind snakes (*Rhinotyphlops* species of which 2 species are endemic) and 2 Thread snakes (*Leptotyphlops* species of which 1 species is endemic) which could be associated with the sandier soils in the area.

4.2.2 Amphibians

Of the 9 species of amphibians expected to occur in the general area, west of Windhoek 33.3% (3 species) are of conservation value with 2 species being endemic (*Poyntonophrynus hoeschi* and *Phrynomantis annectens*) (Griffin 1998) and 1 species (*Pyxicephalus adspersus*) viewed as near threatened (Du Preez and Carruthers 2009).

The Goreangab Dam and the Arebbusch and Otjiseru Ephemeral Rivers and their tributaries are viewed as important amphibian habitat in the general area.

4.2.3 Mammals

Of the 83 species of mammals expected to occur in the general area, west of Windhoek, 7.2% are endemic and 36.1% are classified under international conservation legislation. The most important groups are viewed as mammals (25 species), bats (19 species) and carnivores (17 species).

The most important species from the general area are probably all those classified as near threatened and vulnerable under international legislation (IUCN 2012) and rare (Namibian Wing-gland Bat, Hedgehog and Black-footed Cat) under Namibian legislation.

4.2.4 Avian Diversity

4.2.4.1 Overview

The high proportion of endemics – 10 of the 14 endemics to Namibia (i.e. 71% of all endemics) – expected to occur in the general area, west of Windhoek underscore the importance of this area.

Furthermore, 21% are classified as southern African endemics (or 6% of all the birds expected) and 79% are classified as southern African near-endemics (or 23% of all the birds expected).

The most important species known/expected – although not exclusively associated with the general area – are viewed as Monteiro's and Damara Hornbills, Rüppell's Parrot, Rosy-faced Lovebird and Rockrunner, all of which breed in the general area, but not exclusively associated with the area. Birds expected to be negatively affected by the pylon developments include:

- (i) Birds flying at pylon height – e.g. bustards, swifts, sandgrouse, ravens, raptors and aquatic species.
- (ii) Birds with nocturnal transients – e.g. Palaearctic migrants and wetland birds.
- (iii) Birds following certain geological and/or landscape features (e.g. rivers, mountain ranges, etc.) whilst foraging and/or migrating – e.g. aquatic species and raptors, and.
- (iv) Birds attracted to the area during rainfall events – e.g. bustards – and temporary water sources in ephemeral rivers/drainage lines following into the Goreangab Dam – e.g. aquatic species.

4.2.4.2 Factors influencing Collision Risk

The following factors influence the collision risk for birds (van Rooyen 2003):

- ❖ Voltage levels – i.e. correlation between physical size of bird and collision risk.
- ❖ Body size and flight behaviour – i.e. birds with a heavy body size and small wing surface are more prone to collisions.
- ❖ Flight height and habitat use – i.e. short distance, low altitude, frequency of overhead structures.
- ❖ Age (i.e. young birds more prone to collisions).
- ❖ Resident versus migratory birds (i.e. movement into unfamiliar terrain increases collisions).
- ❖ Weather (i.e. inclement weather increases collisions).
- ❖ Time of day (i.e. nocturnal movement increases collisions).
- ❖ Land use (i.e. cultivated areas attract birds), and.
- ❖ Topography (i.e. mountains/rivers/shorelines act as corridors).

Although very little is known regarding bird flight paths in Namibia, especially species moving/migrating at night, most birds seem to follow the shortest routes between selected habitats – e.g., dams, estuaries, bays, etc. However, rainfall events may lure species into areas not normally frequented.

Due to lack of annual bird collision monitoring data in the local area, it is unknown if the proposed new and rerouting of certain section of the powerline network around the Goreangab Dam falls within an important bird flight path. Planning for all eventualities is therefore not always possible but precautional approaches shall always be implemented.

4.2.4.3 Potential Key Sensitive Route Sections

Potential key sensitive and likely high risk Avian collision route sections may include the routes sections along the potential movement corridors where the powerline route cuts across the Otjiseru and Arebbusch major Ephemeral Rivers as well as closer to the dam along the proposed route sections.

4.2.5 Fauna Conclusions

It is estimated that at least 78 reptile, 9 amphibian, 83 mammal and 209 bird species (breeding residents) are known to or expected to occur in the general/immediate proposed powerline project area, of which a large proportion are endemic species. Endemic species include at least 36% of the reptiles, 33% of the amphibians, 7% of the mammals and 71% (10 of the 14 Namibian endemics) of all the breeding and/or resident birds known and/or expected to occur in the general powerline project area.

Although these endemic species are known to occur from the general area, it is currently not clear if any of these are associated with the proposed powerline project area or how exactly they will be affected by future development(s).

The very high percentage of unique and/or endemic species (36%) underscores the importance of the general area for reptiles. *Stigmochelys pardalis*, *Psammobates oculiferus* and *Python anchietae* are probably the most important reptiles expected in the immediate area. Most species – e.g. the burrowing *Rhinotyphlops* and *Leptotyphlops* species – are understudied and their importance to the general ecology not well understood. However, none of the reptile species are exclusively associated with the proposed powerline project area.

Amphibians of unique conservation value are the 2 endemics of which very little is currently known except that they occur in the general area and only viewed after localised rains. However, none of the amphibian species are exclusively associated with the proposed powerline project area.

Mammals, especially small mammals (rodents and bats) and carnivores are well represented in the area. The little-known bats are probably underrepresented in the area due to a lack of surveying form the area. Carnivores are often also indiscriminately killed with the Black-footed Cat probably one of the most threatened carnivore species from the area. However, none of the mammal species are exclusively associated with the proposed powerline project area.

Endemic birds are well represented in the general area (71% of all Namibian endemics) which also includes a high proportion of southern African endemics (6%) and near-endemics (23%). The most problematic species are probably Monteiro's and Damara Hornbills, Rüppell's Parrot, Rosy-faced Lovebird and Rockrunner, especially species which breed along the major Ephemeral Rivers and its tributaries and adjacent rocky areas. The Rockrunner is viewed as the most important species in the immediate area although usually associated with rocky terrain. However, none of the bird species are exclusively associated with the proposed powerline project area.

Species most likely to be adversely affected by this proposed powerline project would be the variety of reptiles and birds specifically associated with the proposed development area as well as the potential effect such development may have on carnivores. As all development have potential negative environmental consequences, identifying the most important faunal species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development.

4.3 Flora

4.3.1 Trees/shrubs and Grasses

It is estimated that at least 79-111 species of larger trees and shrubs (>1m) – Coats Palgrave 1983 [81 sp.], Curtis and Mannheimer 2005 [79 sp.], Mannheimer and Curtis 2009 [110 sp.], Van Wyk and Van Wyk 1997 [60 sp.] – occur in the general area west of Windhoek.

The proposed project area falls within the Thornbush Savannah – of which area forms part of – is underrepresented in the protected area network in Namibia covering 37% of the land area, but only 7.5% of the biome (Table 4.1, Fig. 4.1, Plate 4.1, and Barnard 1998). The closest Government protected areas is the vicinity of the proposed project area are the Daan Viljoen Game Park, Gross Barmen Hot Springs and the Von Bach Recreation Resort area.

The trees and shrubs known, and/or expected to occur in the general area (derived from Curtis & Mannheimer 2005 and Mannheimer & Curtis 2009) is presented in Table 4.1. Species indicated are known from the quarter-degree square distribution principle used and don't necessarily occur throughout the entire area. Some species indicated to possibly occur in the area according to Coats Palgrave (1983) and Van Wyk and Van Wyk (1997) have been excluded.

The most important tree/shrub species occurring in the general area west of Windhoek are probably *Cyphostemma bainesii* (endemic, NC), *Cyphostemma currorii* (NC), *Cyphostemma juttae* (endemic, NC), *Erythrina decora* (Forestry*, endemic), *Heteromorpha papillosa* (endemic) and *Manuleopsis dinteri* (endemic) and the most important grass expected in the area is the endemic *Setaria finite* associated with ephemeral drainage lines.

4.3.2 Other Species

Aloes are protected throughout Namibia and *Aloe littoralis* are found on a slope situated near the western section of the proposed powerline route closer to the dam wall (Plate 2.3). Other species which potentially occur in the general area, and also viewed as important are *Aloe hereroensis* and *A. zebrina* (Rothmann 2004).

Many endemic *Commiphora* species are found throughout Namibia with Steyn (2003) indicating that *Commiphora crenato-serrata* potentially also occurring in the general area.

Other species with commercial potential that could occur in the general area include *Harpagophytum procumbens* (Devil's claw) – harvested for medicinal purposes and often over-exploited – and *Citrullus lanatus* (*Tsamma melon*) which potentially has a huge economic benefit (Mendelsohn et al. 2002).

Lichens are expected to occur in the general area – especially rocky outcrops – but what and how many species is currently unknown.

Although the focus during this literature survey was on the more visible trees, shrubs, grasses and more important other species potentially occurring in the general area, many more species – e.g., herbs – occur throughout the area and are viewed as important.

4.3.3 Flora Conclusions

It is estimated that at least 79-111 species of larger trees and shrubs (>1m) (Coats Palgrave 1983, Curtis and Mannheimer 2005, Mannheimer and Curtis 2009 and Van Wyk and Van Wyk 1997) and at least 73-88 (approximately 111 species) grasses (Müller 1984, Müller 2007, Van Oudshoorn 1999) occur in the general proposed powerline project area (Table 4.1). If herbs and "lower" plants (e.g., algae, lichens, etc.) were to be included, this would undoubtedly increase the floral composition of the area tremendously – e.g. more than 100 lichen species are known from coastal Namibia. Although, the focus for this desktop study was limited to the bigger and thus more obvious species of trees, shrubs and grasses, the importance of other species such as lichens is also acknowledged.

At least 64 species of ferns, of which 13 species being endemic, occur throughout Namibia. Ferns in the general Windhoek area include at least 2 endemic (*Cheilanthes hirta* var. *brevipilosa* & *Marselia burchellii*) and 18 indigenous species (*Actiniopteris radiata*, *Adiantum capillus-veneris*, *Asplenium cordatum*, *Cheilanthes dinteri*, *C. eckloniana*, *C. marlothii*, *C. multifida*, *C. involuta*, *C. parviloba*, *Marselia aegyptiaca*, *M. coromandelina*, *M. ehippiocarpa*, *M. farinosa*, *M. macrocarpa*, *M. unicornis*, *M. vera*, *Ophioglossum polyphyllum* & *Pellaea calomelanos*) (Crouch et al. 2011). The general area is undercollected with more species probably occurring in the general area than presented above. The 2 endemic species (*Cheilanthes hirta* var. *brevipilosa* & *Marselia burchellii*) are viewed as the most important ferns expected to occur in central Namibia.

The most important tree/shrub species occurring in the general area are viewed as *Cyphostemma bainesii*, *Cyphostemma currorii*, *Cyphostemma juttae*, *Erythrina decora*, *Heteromorpha papillosa* and *Manuleopsis dinteri* and the most important grass expected in the area is the endemic *Setaria finite*

associated with ephemeral drainage lines (Table 4.1, Fig. 4.1 and Plate 4.1). Other important species expected to occur in the area are the 2 endemic ferns, Aloes, Devil's Claw, Tsamma Melon and various Lichens.

The western portion of proposed powerline project area is viewed as the more important habitat for flora (Plate 4.1). All development has potential negative environmental consequences, but identifying the most important flora species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development.

Table 4.1: Protected tree and shrub diversity known and/or expected to occur in the general area west of Windhoek central Namibia – area.

Species: Scientific name	Expected: Curtis and Mannheimer (2005)	Expected: Mannheimer and Curtis (2009)	Status
<i>Acacia erioloba</i>	√	√	Protected (F#)
<i>Acacia haematoxylon</i>		√	Protected (F*)
<i>Albizia anthelmintica</i>	√	√	Protected (F*)
<i>Aloe litoralis</i>	√	√	NC. C2
<i>Boscia albitrunca</i>	√	√	Protected (F#)
<i>Comretum imberbe</i>	√	√	Protected (F#)
<i>Commiphora glaucescens</i>		√	Near-endemic
<i>Cyphostemma bainesii</i>		√	Endemic. NC
<i>Cyphostemma currorii</i>		√	NC
<i>Cyphostemma juttae</i>		√	Endemic. NC
<i>Erythrina decora</i>	√	√	Protected (F*). Endemic
<i>Euclea pseudebenus</i>	√	√	Protected (F#)
<i>Euphorbia avasmontana</i>	√	√	C2
<i>Euphorbia guerichiana</i>		√	C2
<i>Euphorbia virosa</i>		√	C2
<i>Faidherbia albida</i>	√	√	Protected (F#)
<i>Ficus cordata</i>	√	√	Protected (F*)
<i>Ficus sycomorus</i>	√	√	Protected (F*)
<i>Heteromorpha papillosa</i>		√	Endemic
<i>Maerua schinzii</i>	√	√	Protected (F*)
<i>Manuleopsis dinteri</i>	√	√	Endemic
<i>Moringa ovalifolia</i>	√	√	Protected (F*). NC. Near-endemic
<i>Obetia carruthersiana</i>	√	√	Near-endemic
<i>Olea europaea</i>	√	√	Protected (F#)
<i>Ozoroa crassinervia</i>	√	√	Near-endemic. Protected (F*)
<i>Parkinsonia africana</i>		√	Protected (F*)
<i>Philenoptera nelsii</i>	√	√	Protected (F#)
<i>Sclerocarya birrea</i>	√	√	Protected (F#)
<i>Searsia lancea</i>	√	√	Protected (F#)
<i>Sterculia africana</i>	√	√	Protected (F*)
<i>Tamarix usneoides</i>		√	Protected (F#)
<i>Ziziphus mucronata</i>	√	√	Protected (F*)

NOTE:

Endemic and Near-endemic – (Craven 1999, Curtis and Mannheimer 2005, Mannheimer and Curtis 2009)

F# – Forestry Ordinance No. 37 of 1952

F* – Curtis and Mannheimer (2005) + Mannheimer and Curtis (2009)

NC – Nature Conservation Ordinance No. 4 of 1975

C1, C2 – CITES Appendix 1 or 2 (Curtis and Mannheimer 2005)

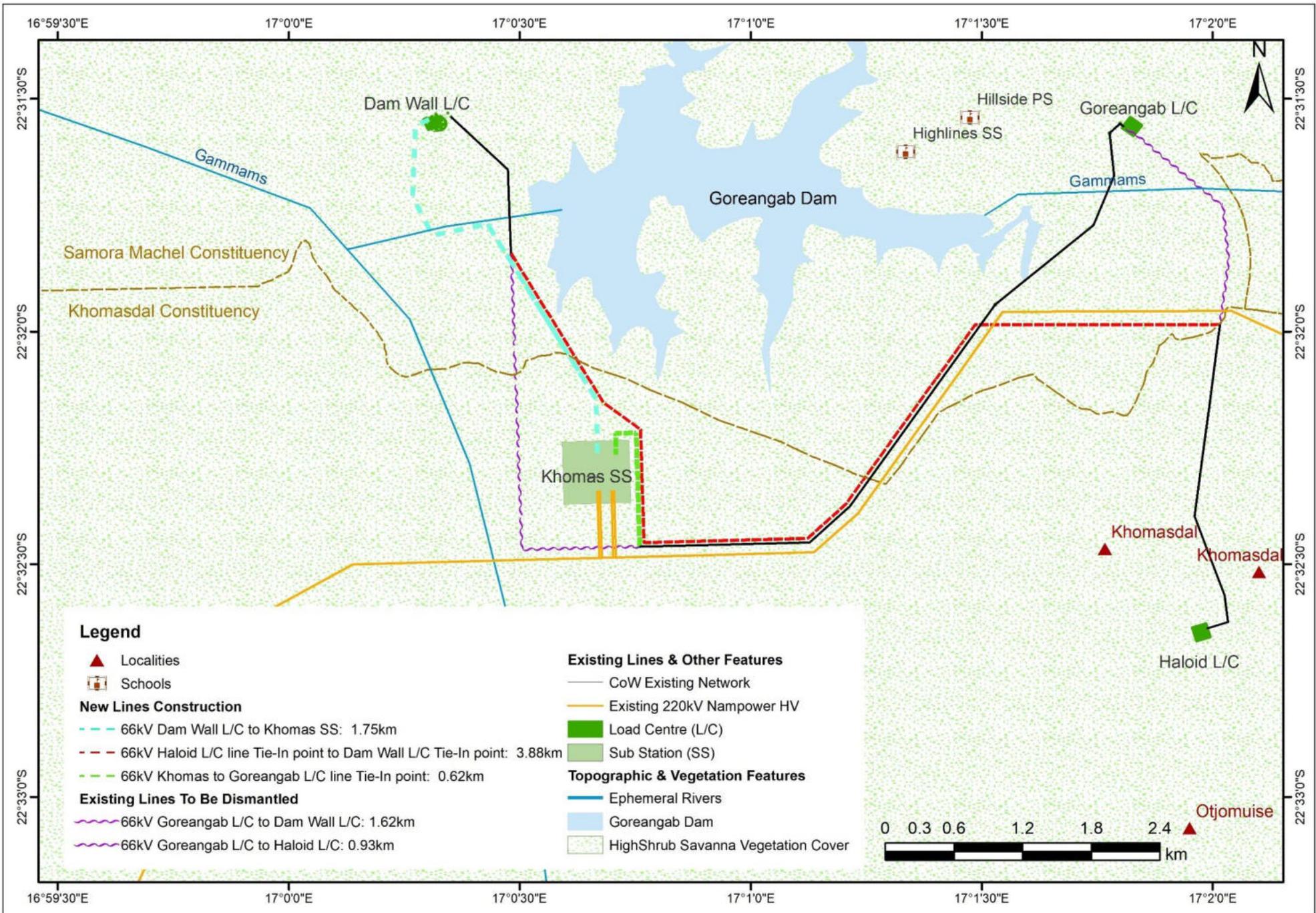


Figure 4.1: Vegetation zone of the project area.



Plate 4.1: Example of the high biodiversity of protected / endemic species such as the *Aloe littoralis* slope situated along the western section of the proposed route near the dam wall were avoided during the route selection process guided by the EIA process.

4.4 Summary of the Socioeconomic Settings

4.4.1 Overview

The Khomas Region in central Namibia has a total surface area of approximately 37,007 square kilometres (Fig. 4.2). The region has ten (10) constituencies and the proposed power line project falls in Samora Machel and Khomasdal Constituencies (Fig. 4.2).

Windhoek, the capital and largest city of Namibia, acts as the country's central administrative, commercial, and industrial hub, with an ever-increasing population due rural urban migration. Windhoek is characterised by a stark contrast between modern, developed areas and rapidly growing informal settlements, reflecting deep-seated socioeconomic inequalities. The city acts as a magnet for rural-to-urban migration, which has placed significant strain on infrastructure and housing.

4.4.2 Demographics and Society

According to the 2023 Census, the Khomas Region has a total population of 494,605, making it the most populous region in Namibia (Figs. 4.2 and 4.3). It comprises 253,520 females and 241,085 males, with an urbanisation rate of 98.3%. The following is the summary of the key demographic indicators:

- ❖ Population Growth: Increased by 152,464 people, growing at an annual rate of 3.1%.
- ❖ Demographics: 10.6% under 5 years old, 67.8% between 15–59 years, and 4.2% aged 60+.
- ❖ Households: 144,630, with an average size of 3.3 persons.
- ❖ Density: 13.4 persons per km², and.
- ❖ Capital: Windhoek is the capital city and the economic hub of the region.
- ❖ Diversity: The city is a "melting pot" of various ethnic groups, including the Ovambo, Herero, and Damara, reflecting Namibia's diverse society.
- ❖ Cultural Legacy: The city has a strong German colonial legacy, seen in its architecture, with a blend of modern, high-rise buildings and 19th-century colonial structures, and.
- ❖ Social Challenges: High rates of rural-to-urban migration have resulted in around a third of the population living in informal settlements in areas like Katutura, which often lack basic sanitation and water services.

4.4.3 Economic Structure

The following is the summary of the economic structure of the Khomas Region centered on the City of Windhoek:

- ❖ Hub of Activity: Windhoek serves as the economic, social, and cultural centre of Namibia, providing over half of the country's non-agricultural employment.
- ❖ Key Sectors: The economy is driven by finance, trade, manufacturing (including food, beverages, and textiles), tourism, and government services.
- ❖ Diamond Industry: Diamond cutting and polishing play a key role in the local economy.
- ❖ Informal Sector: A significant number of residents, particularly in low-income areas, rely on the informal economy for their livelihoods.

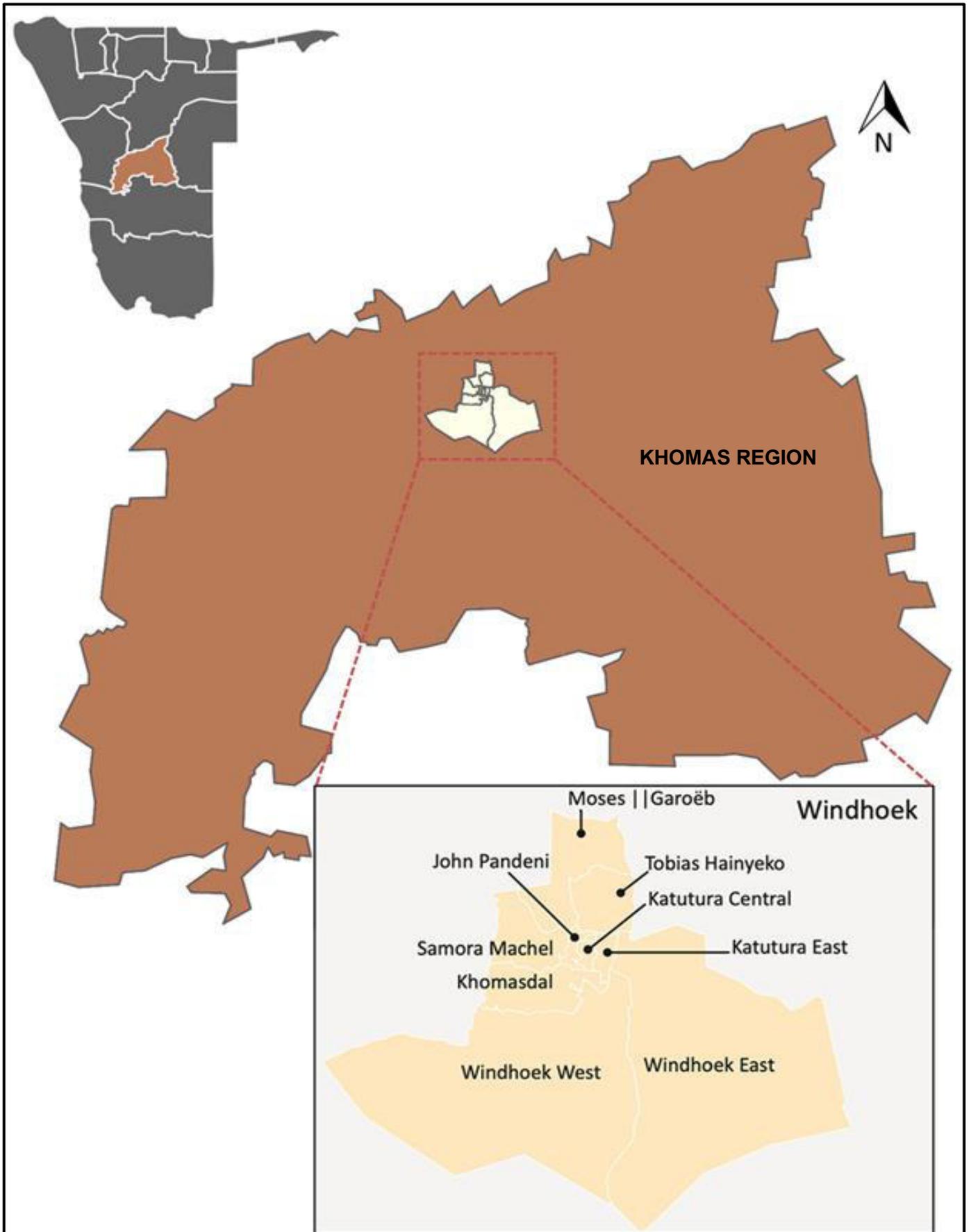


Figure 4.2: Khomas Region and the City of Windhoek constituencies. The Proposed powerline project falls within the Samora Machel and Khomasdal Contintuencies in the City of Windhoek.

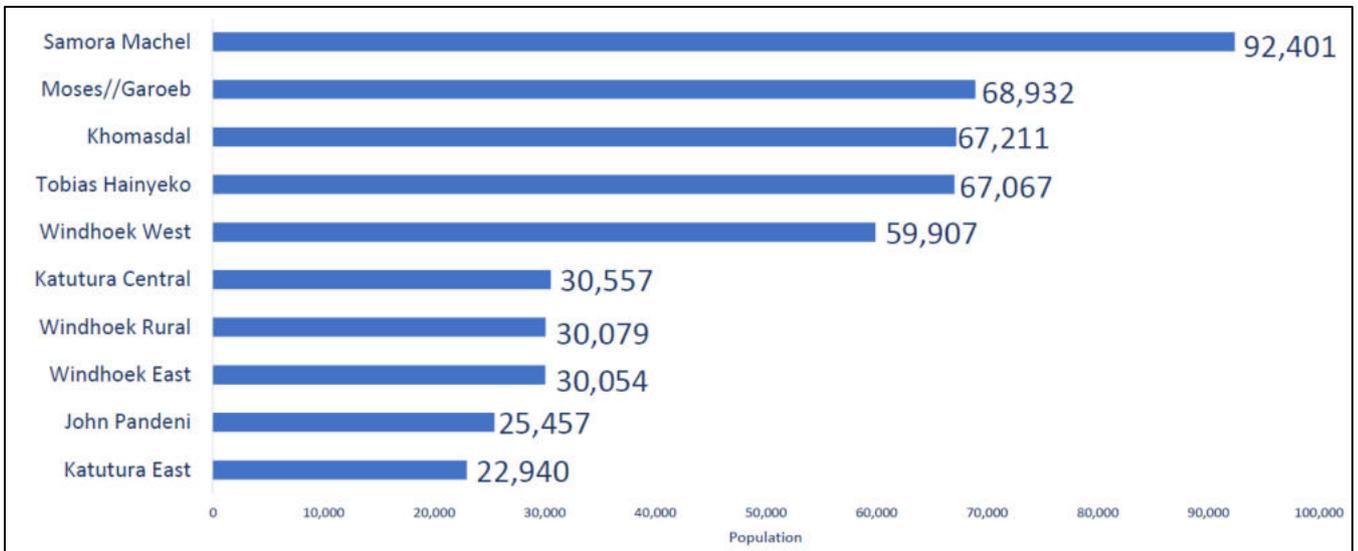


Figure 4.3: Population of the Windhoek City constituencies of the Khomas Region based on the 2023 Census. The Proposed powerline project falls within the Samora Machel and Khomasdal Constituencies (Source: NSA, 2023).

4.4.4 Socioeconomic Disparities and Challenges

The following is the summary of socioeconomic disparities and challenges of the Khomas Region centered on the City of Windhoek:

- ❖ **Inequality:** Windhoek, and Namibia generally, is characterized by high levels of inequality, with significant disparities in income, access to services, and housing.
- ❖ **Housing Backlog:** As of 2021, over 150,000 people were living in informal settlements, with a rising housing backlog.
- ❖ **Infrastructure Strain:** Rapid urbanization has led to severe pressure on infrastructure, including water supply (which is often threatened by drought) and sewage disposal.
- ❖ **Health and Education:** There is a clear division between public and private healthcare, with the former often unable to meet the demands of the poor, and.
- ❖ **Land Degradation, Disturbed areas and Dumping of Waste:** The proposed project area falls within the City of Windhoek developed areas with existing multiple large-scale development and disturbed areas (Plates 4.2 and 4.3). Illegal dumping of waste within and litter are very common especially along the access roads and in Ephemeral Rivers Channels (Plates 4.4 and 4.5).

4.4.5 Quality of Life and Development

The socioeconomic setting of the City of Windhoek is defined by its role as a developing capital, navigating the challenges of rapid, post-apartheid urbanisation while trying to foster inclusive economic growth. Although the proposed powerline project will not create major positive socioeconomic impacts, the main Waterfront Project development to be supported by the proposed powerline is going to change the socioeconomic landscape of the unemployed masses in Katutura and significantly improve serviced land delivery and supporting infrastructure and services such roads, sewage and solid waste management services around the Goreangab Dam and Katutura in general.

Despite being an economic hub, the cost of living in the Khomas Region centered on the City of Windhoek is high, and many residents in the informal sector face severe poverty. Neighbourhood safety is a challenge, particularly in low-income, high-density areas. However, the city is working on development strategies, such as the Windhoek Strategic Plan (2022–2027), aiming to improve service delivery and upgrade informal settlements.



Plate 4.2: Not pristine, example of the existing multiple large-scale development areas found around the proposed powerline project.



Plate 4.3: Not pristine, example of the existing disturbed areas found around the proposed powerline project.



Plate 4.4: Illegal dumping of waste along the access roads within the proposed powerline project area.



Plate 4.5: Illegal dumping of waste in some of the Ephemeral Rivers Channels found within the proposed powerline project area.

4.5 Ground Components

4.5.1 Regional Geology

Windhoek's geology is dominated by Precambrian rocks of the Damara Supergroup, featuring a complex mix of schist, quartzite, and amphibolite within the southern margin of the Khomas Trough covered by gravels, sands and calcretes in topographically low-lying areas (Figs. 4.4-4.6). The area is characterised by folded and fractured metamorphic rocks, notably the Auas Mountains' quartzites to the south, which serve as crucial, high-permeability aquifers for the city (Figs. 4.4-4.6).

Rocks of the Damara Sequence underlies most of Namibia. These rocks were deposited during successive phases of rifting, spreading, subduction and continental collision (Miller, 2008 and 1992). Much of the basal succession (Nosib Group), laid down in or marginal to intracontinental rifts, consists of quartzite, arkose, conglomerate, phyllite, calc-silicate and subordinate limestone and evaporitic rocks (Miller, 2008, 1992, 1983a and 1983b).

The rocks were metamorphosed during the Damara Orogeny approximately 550 million years ago, forming schist, quartzite, and marble. The region is also associated with a north-south trending rift (Windhoek Graben) of Late Cretaceous to Early Cenozoic origin. Local alkaline ignimbrite with associated subvolcanic intrusions ranges from 840 to 720 million years in age (Miller, 1992). The following is the summary of the Key Geological Features and Units:

- ❖ Damara Supergroup: The bedrock is primarily composed of Proterozoic rocks.
- ❖ Kuiseb Formation: Monotonous biotite-schists dominate, which are generally poor aquifers but, when fractured, store water.
- ❖ Auas Formation: Comprises brittle, fractured quartzite that acts as the primary, high-yield aquifer for Windhoek.
- ❖ Kleine Kuppe Formation: Impure, micaceous quartzites, also important for water storage.
- ❖ Structural Geology: The area is intensely faulted and folded, enhancing secondary porosity in the rocks.
- ❖ Hohewarte Metamorphic Complex: Palaeoproterozoic granitic gneisses form the basement, and.
- ❖ Geomorphology: Windhoek sits at approximately 1,800 m above sea level in a valley surrounded by the Auas Mountains.

4.5.2 Local Geology

4.5.2.1 Quartz Biotite / Biotite Quartz Schist

Quartz biotite / biotite quartz schist was found to occur throughout the project area covered by gravels, sands and calcrete in topographically low-lying areas (Figs. 4.4 and 4.5). The schist is often gradational to biotite quartzite / greywacke, and may be intimately associated with the sulphide mineralisation. In general, the schist is fine to medium grained, massive sections do occur throughout the stratigraphic section but in general the schist is typically moderately to well bedded. Bedding and the primary schistosity are, in general, defined by the alignment of fine to coarse-grained biotite. Bedding is commonly on the scale of 1 to 10 cm. Quartz and biotite are the most common constituents and are typically hosted within a fine-grained, biotite, chlorite, and minor sericite matrix. Minor pink garnets are locally developed. Garnet was noted within massive sections of schist and in garnet – biotite rich selvages developed in some places. The schist is one of two primary sedimentary hosts to sulphide mineralisation. Proximal to sulphide mineralization biotite, chlorite or sericite may be present as alteration products. These assemblages do not appear to be extensively developed, on a macroscopic scale.

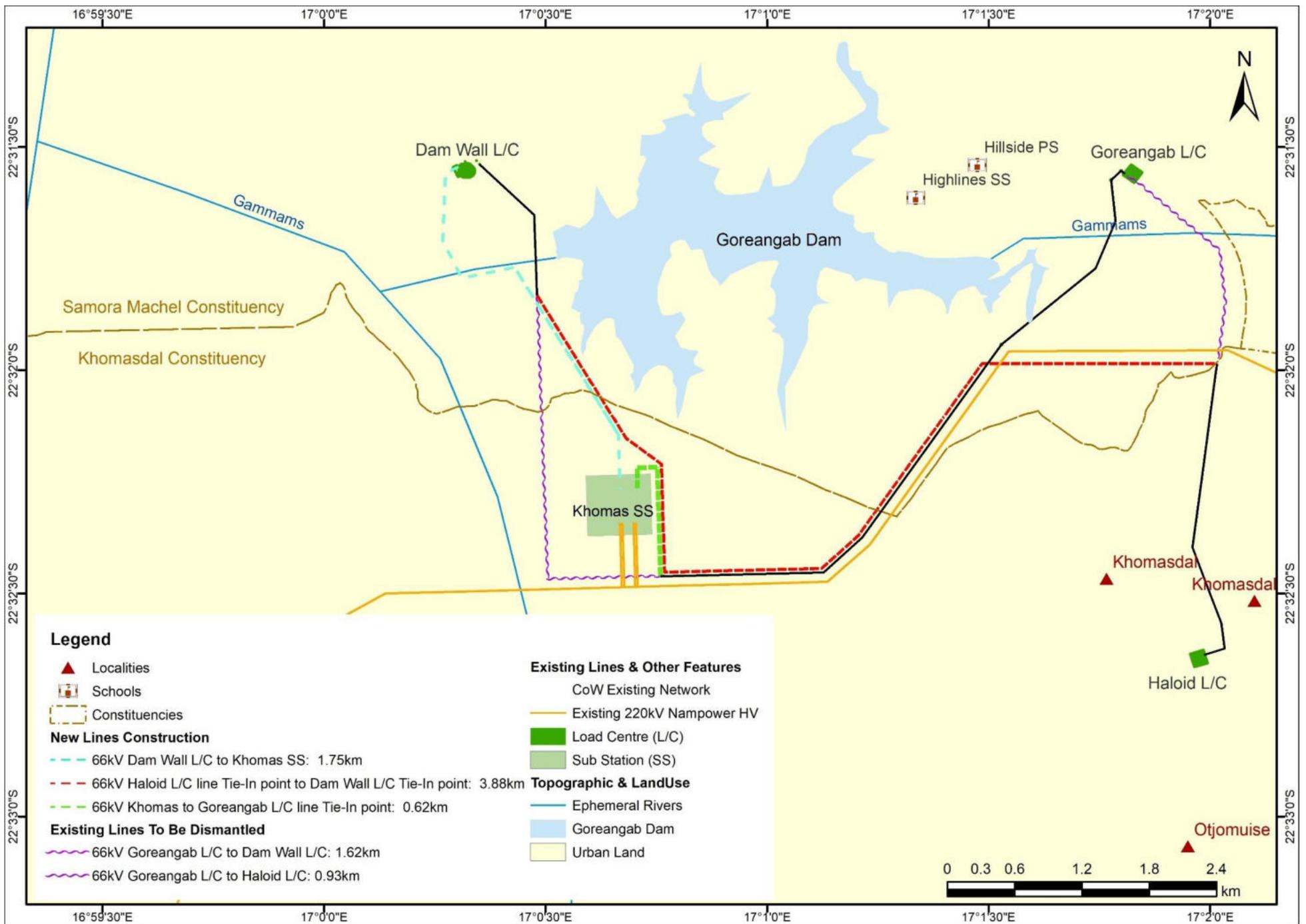


Figure 4.4: Local land use of the proposed project area.

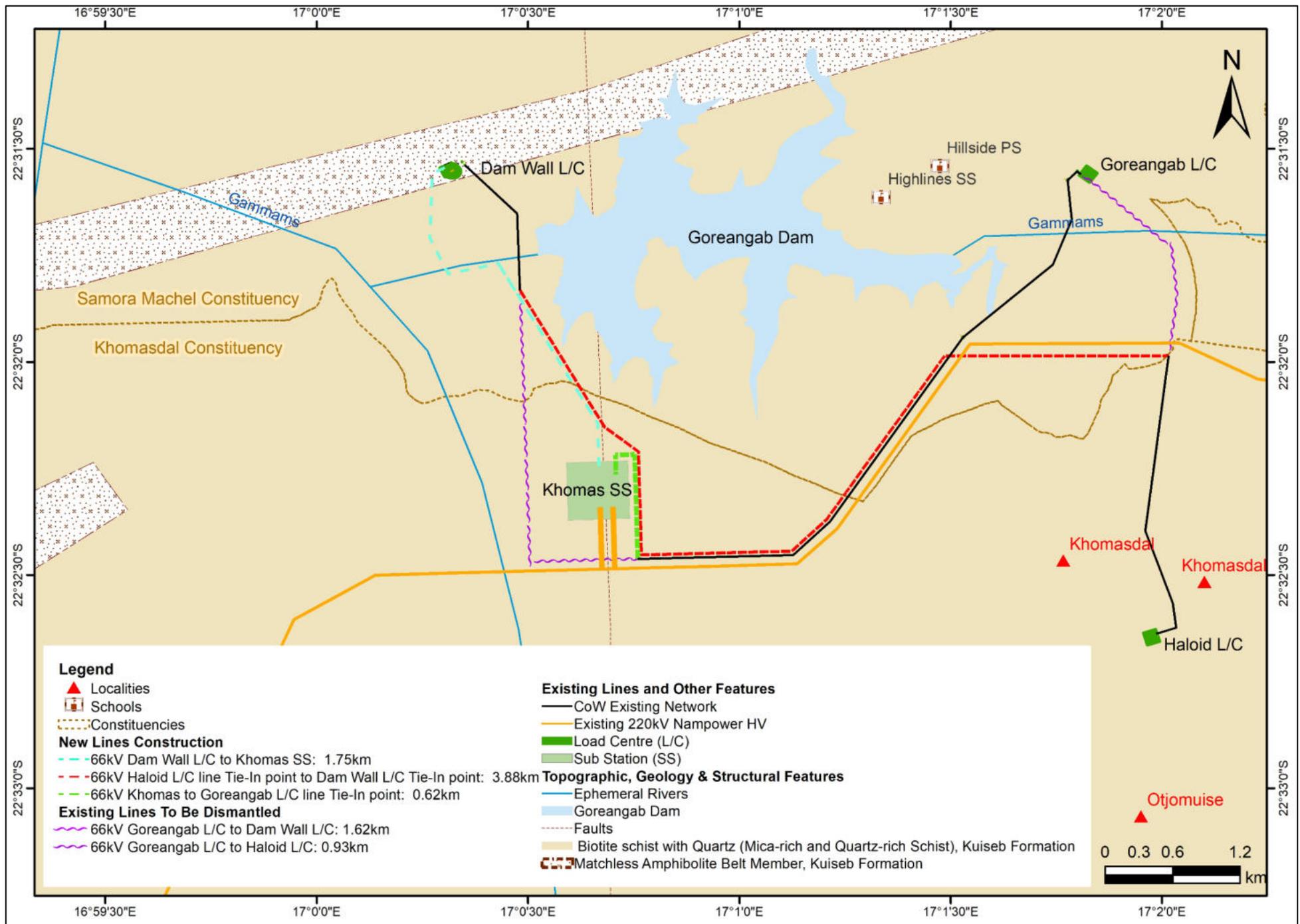


Figure 4.5: Geology of the proposed project area.

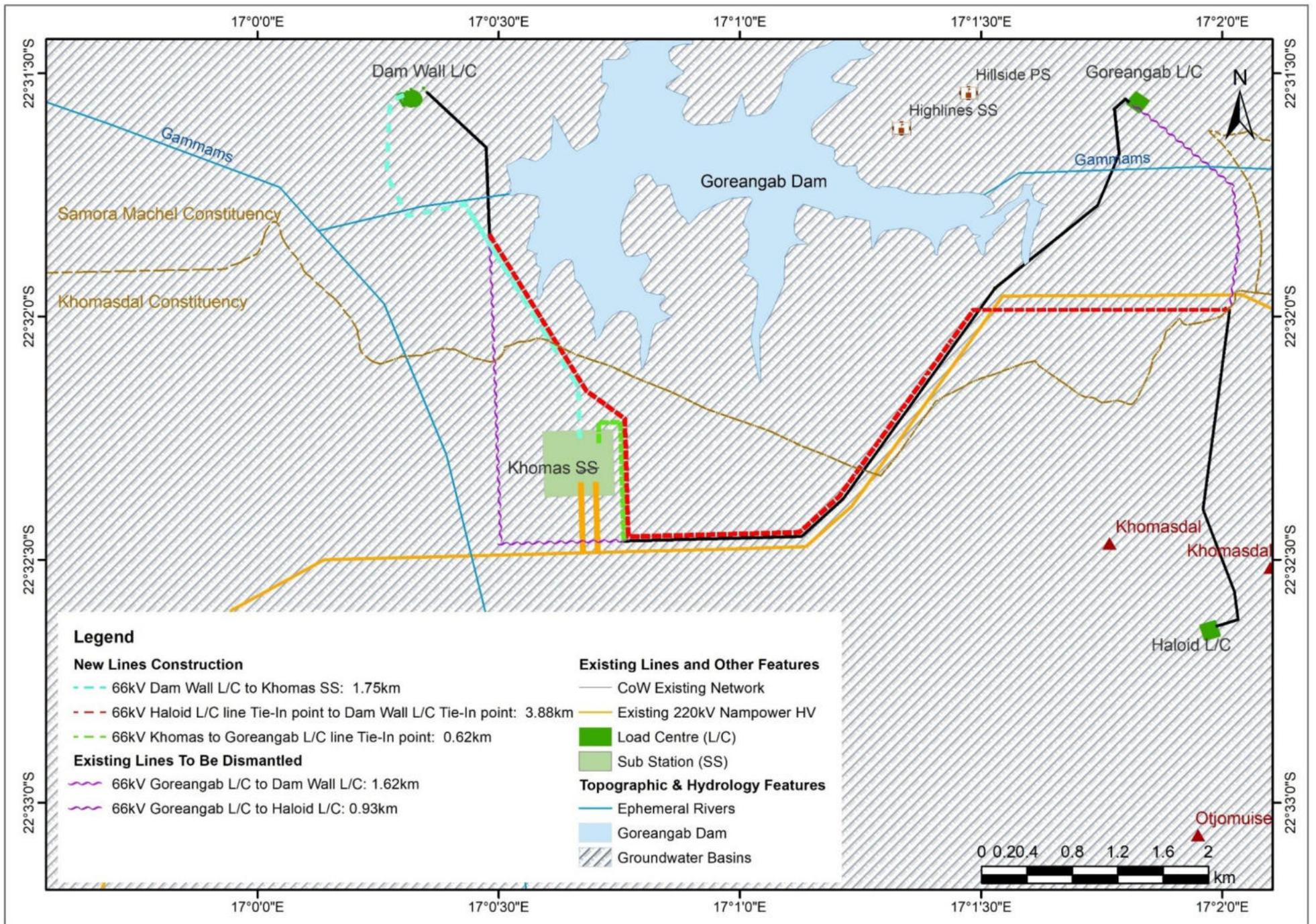


Figure 4.6: Hydrological and hydrogeological settings of the local project area.

4.5.2.2 Mica Quartzites

Mica Quartzites are very minor component of the stratigraphic sequence in the project area. Intervals varying between 0.1 and 1.8 m were observed along the Ephemeral River channels but very common in the general area. Typically, the lithology is white to tan in colour, medium grained with conspicuous quartz grains, massive with a carbonate component to the matrix of the micas.

4.5.2.3 Water Supply and Vulnerability

The water supply of Windhoek and indeed the proposed project area are from local dams feed by Ephemeral River flows and pipe from the central part of the country as well as groundwater resources through boreholes drilled within the Aus Quartzites situated south of Windhoek (Figs. 4.4-4.6).

The following is the summary of the local hydrogeology and resources (Figs. 4.4-4.6):

- ❖ **Aquifers:** The Windhoek Aquifer relies on fractured quartzite and faulted, fissile schist.
- ❖ **Flow Direction:** Groundwater flows northwards from the southern mountainous region towards the city centre, and.
- ❖ **Environmental Vulnerability:** Due to thin soil cover and fractured bedrock, the aquifer is susceptible to contamination from anthropogenic sources in industrial areas.

The Auas Formation quartzite constitutes the most important part of the Windhoek Aquifer. The Quartzites outcrops to the south of the City of Windhoek and absent around the project area.

The quartzites outcrops forms the unconfined part of the Windhoek aquifer system and this is where natural direct recharge is taking place during the rainy season in addition to the artificial recharge being conducted by the city of Windhoek (Tredoux, et al., 2009).

The Aus quartzites are characterised by extensive discontinuities creating high secondary porosities and permeability combines with high storativity potentials.

The quartzite rocks hosting the aquifer dips from the Auas Mountains northwards at an angle between 28 - 30°. Around the project area, the key Windhoek aquifer is confined by quartz, biotite with minor muscovite / garnet schists with poorly developed secondary porosities, permeability and storativity potentials.

Locally, however, the quartz, biotite with minor muscovite / garnet schists holds localised perched aquifers particularly around major discontinuities linked to local ephemeral river channels flowing into the Goreangab Dam.

The proposed project activities will not affect the key Windhoek Aquifer because around the proposed project area, the aquifer is confined and deep (more than 300 m) covered by quartz, biotite with minor muscovite / garnet schists with poor hydraulic properties (Fig. 4.6).

The proposed activities however will disturb the surficial local rocks and soils and thereby accelerate erosion that can mobilise natural metals such sulphates and iron known to be associated with the local quartz, biotite with minor muscovite / garnet schists (Tredoux, *et al.*, 2009). However, the level of influence will be localised.

Effective rehabilitation of excavated areas to avoid direct exposure of disturbed quartz, biotite with minor muscovite / garnet schist to precipitation and cleaning of any spilled chemicals / fuels around the route will greatly minimise any likely localise negative impacts that the proposed powerline construction is likely to pose to the water resources.

The nearby Goreangab Dam will not be affected by the proposed project.

4.6 Public Consultations

4.6.1 Overview

Public consultation and engagement process has been part of the environmental assessment process for this project.

Through the newspaper advertisements as shown in Figs. 4.7 and 4.8 and Annex 2, the public and stakeholders were invited to submit written comments / inputs / objections with respect to the proposed new and rerouting of the powerline network around Goreangab dam by the City of Windhoek.

A stakeholder register was opened on the 9th June 2022, the day when the 1st advert was published in the New Era Newspaper (Fig. 4.7 and Annex 2).

The 2nd public notice was published in the Confidante Newspaper dated 17th– 23rd June 2022.

No issues were raised by the public and stakeholder during the consultation process undertaken during the month June 2022.

Based on the outcomes of the previous public and stakeholder consultation activities undertaken in June and July 2022, no further public or stakeholder consultation process were undertaken for the current ECC No. 10431 renewal process due to lack of public and stakeholder interests.



Ethano: BBC

Oongeleka moKenya ohadhi gongele iimaliwa oomiliona miinyangadhalwa yandho.

Ompangu moKenya ya tindi ongeleka opo yi gandje iihohela kepangelo

OMPANGULILO yopombanda moKenya oya yi epangelo moshipala opo li hulithe po oku kala tali pula alipula oongeleka dhi fute iihohela kimaliwa nbyoka hayi gongelwa koongeleka oku tilila moongalo, miitumulongo noshowo nomagano.

Ehangano lyoku gongela iihohela moKenya yedhina Kenya Revenue Authority (KRA) bla kala tali pula opo ongeleka yedhina Road Baptist Church opo yi fute iihohela rooshilinga oomiliona 5.5 (N\$752 000).

Oongeleka moKenya odha pewa uuthemba ku kala itaadhi futu iihohela ashike KRA ota

ti ina shi pumbiwa ya pewe uuthemba mboka. "Onda mono kutya iyemo yongeleka ndjika oye yi mono oku zilila mongalo nomoshitumulongo, ita ya vulu oku futa otax. Ishewe ina shi pumbiwa ongeleka yi ninge eindilo lyopambelewa opo yi pewe uuthemba mboka," omupanguli Justice David Majanja ta ti ngaaka.

Omvula yazi ko epangelo oiyali lya seyitha kutya otali tameke oku ya komapandja gaakwashigwana kosocial media opo li tale kutya oye na oonkalamwenyo dhafa peni yo ya tokolelwe kutya otaya kala taya gandja iifendela yokongulu yithike peni. -BBC

UN a pula pa ningwe sha molwa ondjala yamemememe moSomalia

Ehangano lyitwana hangano (UN) olya kunkilile kutya Somalia okwa taalela oshikukuta nondjala inayai monika mo nale moshilongo methimbo lyuule woomvula dhi vulithe po40.

Mongashingeyi etata lyaantu moshilongo olya taalela nale onkalo yanakidhi, sho ikulya ya tameke oku nyangwanyangwa moshilongo.

Adam Abdelmoula gwo UN, okwagalikana kutya uyuni nawu tameke ngashi ngeyi oku tala kuSomalia nokuwathela no ngele hasho aantu oyendji otaya kasa thilu thilu.

Ta ti oku na owala okashona onkalo

moshilongo shoka yi pindjale, nongele ina pu ningwa sha nakaidhi otayi ka faalela oomwenyo dhaantu omayovi omathele.

Oshilongo shika osha ningi uule woomvula ne dha ilandula inaashi mona omvula noun otayi tengenike kutya aantu oomiliona heyal oyi nale moshikele shondjala, omanga yeli 800 000 ya tauka mo momagumbo gwawo oku ka konga omahupili komahala galwe.

Ishewe, oondandho dhiikulya otadhi ende tadi londo esiku nesiku, sho oshi dhigu oku gandja omakwatho kaantu yeli mumpumbwe moshilongo shoka oshoka omu na ita.

Imuna yili oomiliona ndatu oya sa nale nokuli kondjala omolwa onkalo yoshikukuta moshilongo.

Ashike Abdelmoula okwa ti hewa omakwatho gazi kondje sigo oompaka otaga etitha onkondo, omanga oUN ya kwathele owala noopelesenda 18 dhaashoka sha pumbiwa moshikumungu mauka.

Mo2011, ondjala yamemaakukwe oya dhipagele aantu oyendji omolwa onkalo yoshikukuta. -BBC

Onkalo moAfrica lyokuuzilo yandilopala noonkondo

Ombaanga yopayuni yoWorld Bank oya tete etengeneko lyekoko lyeliko lyopayuni, tayi ti ita yooUkraine naRussia oshowo ombuto yocoronavirus oya etela uyuni noonkondo.

Ombaanga tayi ti uuzilo waAfrica oshowo ititopolwa yimwe moEurope oyo unene ya taalela keshongo ndika.

linima mboka oya eta oshiponga oshinene -oya eta ewo pevi lyoshimaliwa noshowo ekoko lyeliko tali ende kashona. Uyuni otawu vulu oku ki iyadha mongalo yoluhopo ndjoka yali ko moomvula dho70, noshi etithi oshinene otashi ka kala elondo lyondando

yomahooli noyikulya.

Sho a popi noBBC David Malpass ngoka eli omutse gwombaanga ndjoka okwa ti petameko okwali oshidhigu oku mona ethano lya tyela lyoshizemo shiita noshowo oshimvu.

Ta ti ilongo mbyoka opo tayi putuka oya taalela oongunga odhindji, nomapangelo itaga ka vula oku landa iinima noku kwatha aakwashigwana.

Ekoko lyeliko lyuyuni ngashingeyi olya tengenekelwa owala po2.9% ndhoka tadhi yelekwa nowo pevi lyeliko ndjoka lyali lyi ihulwa oomvula 80 dha piti. -BBC

OMUTHIYA TOWN COUNCIL

INVITATION TO BID

Omuthiya Town Council hereby invites qualified, competent and registered companies to submit their bid for the under-mentioned:

BID NUMBER	BID DESCRIPTION
1. SC/RP/OMU-08/2022-2025	PROVISION OF CONSULTANCY SERVICES: DESIGN, DOCUMENTATION, CONSTRUCTION SUPERVISION FOR THE PROVISION OF MUNICIPAL SERVICES (ELECTRICITY, WATER, SEWER, ROADS AND STORM WATER) IN OMUTHIYA TOWN, FOR A DURATION OF 36 MONTHS
2. SC/RP/OMU-09/2022-2025	PROVISION OF ARCHITECTURAL CONSULTANCY SERVICES FOR THE DESIGN, DOCUMENTATION, CONSTRUCTION SUPERVISION AND CONTRACT ADMINISTRATION OF THE CONSTRUCTION OF ARCHITECTURAL SERVICES IN OMUTHIYA FOR A PERIOD OF 36 MONTHS
3. SC/RP/OMU-10/2022-2025	PROVISION OF CONSULTANCY SERVICE FOR LEGAL SERVICES OMUTHIYA TOWN COUNCIL FOR A PERIOD OF 36 MONTHS

Closing date: Friday, 07 July 2022 at 12H00 pm.
 Bid Clarification will end on Friday 24th June 2022 at 17H00.
 Document LEVY (non-refundable): N\$100.00 (cash payment to be paid at the Council's Cashier) or bank deposit or EFT into the Council bank account:
 BANK DETAILS:
 Bank name: First National Bank
 Account name: Omuthiya Town Council
 Bank account: 62231578610
 Branch: Omuthiya (280072).
 Details of submission:
 Proposals should be submitted in a sealed envelopes clearly marked the appropriate bid reference number and description and should be addressed to: The Procurement Management UNIT
 Omuthiya Town Council
 P.O Box 19262
 Omuthiya
Bid Enquiries:
 Titus T Andjamba and Piet I Andreki (Administration)
 Simon P Nghulondo (Technical)
 Tel: 065-244700
 Fax: 065-244730
 Email: ttandjamba@omuthiyatc.org.na and spnghulondo@omuthiyatc.org.na

ELECTRONIC BIDDING WILL NOT BE PERMITTED. LATE BIDS WILL BE REJECTED. BIDS WILL BE OPENED IN THE PRESENCE OF THE BIDDERS AT COUNCIL OFFICES

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) FOR PROPOSED NEW AND REROUTING OF EXISTING 66kV OVERHEAD POWERLINES NETWORKS BY LINKING THE GOREANGAB LOAD CENTRE (L/C) AND DAM WALL L/C TO THE NEW KHOMAS SUBSTATION (SS) AROUND GOREANGAB DAM, WINDHOEK, KHOMAS REGION

The City of Windhoek (CoW), (the Proponent) is proposing to develop new and reroute existing 66kV overhead powerlines around the southern-eastern, southern, and western edges of the Goreangab Dam by linking the various powerline segments Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (SS). The following is the summary of the proposed new and existing overhead powerlines to be created and dismantled, respectively:

- CoW New Overhead Powerline Networks / Routes to be Developed:**
 - Red broken line: 66kV Haloid L/C line Tie-In point to Dam Wall L/C Tie-In point: 3.88km
 - Cyan broken line: 66kV Dam Wall L/C to Khomas SS: 1.75km
 - Green broken line: 66kV Khomas to Goreangab L/C line Tie-In point: 0.62km
- Existing CoW Overhead Powerline Networks to be Dismantled Due to New Developments:**
 - Purple broken line: 66kV Goreangab L/C to Dam Wall L/C: 1.62km.
 - Blue broken line: 66kV Goreangab L/C to Haloid L/C: 0.93km

The proposed powerlines rerouting project activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC) in fulfillment of the environmental requirements, the developer has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the EIA and Environmental Management Plan (EMP) Reports to support the application for an ECC. Interested and Affected Parties (I&APs) are hereby invited to register and submit written comments / objections with respect to the proposed overhead powerlines project.

REGISTER BY EMAIL: frontdesk@rbs.com.na
DEADLINE FOR SUBMISSION OF WRITTEN INPUTS/OBJECTIONS TO BE CONSIDERED IN THE ENVIRONMENTAL ASSESSMENT PROCESS IS: FRIDAY 1st JULY 2022

New Lines Construction	Existing Lines & Other Features
66kV Dam Wall L/C to Khomas SS: 1.75km	CoW Existing Network
66kV Haloid L/C line Tie-In point to Dam Wall L/C Tie-In point: 3.88km	Existing 220kV Nampower HV
66kV Khomas to Goreangab L/C line Tie-In point: 0.62km	Load Centre (L/C)
Existing Lines To Be Dismantled	Sub Station (SS)
66kV Goreangab L/C to Dam Wall L/C: 1.62km	
66kV Goreangab L/C to Haloid L/C: 0.93km	

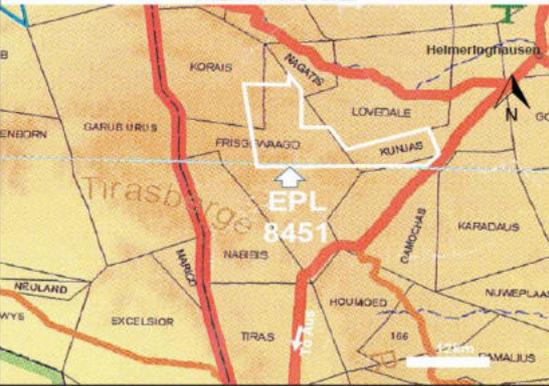
Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Permitting & De-Risking Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) and Environmental Assessments (SEA, EIA, EMP, EMS & ESG)

Figure 4.7: Copy of the 1st public notification that was published in the New Era Newspaper dated Thursday, 9th June 2022.

PUBLIC NOTICE
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY FARPOINT INVESTMENTS (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE 8451, BERSEBA DISTRICT, //KARAS REGION

Farpoint Investments (Pty) Ltd (the "PROponent") has the preparedness to grant mineral rights under the Exclusive Prospecting Licenses (EPL) 8451 with respect to Dimension Stone and Non-Nuclear Fuels. The physical license of the EPL will only be granted by the Mining Commissioner once the Proponent has obtained Environmental Clearance Certificate (ECC) from the Environmental Commissioner. The EPL 8451 has a total area of 8631.1588 Ha and falls within commercial farmlands as indicated on the map. Once the ECC is granted, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). In fulfillment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 1st JULY 2022

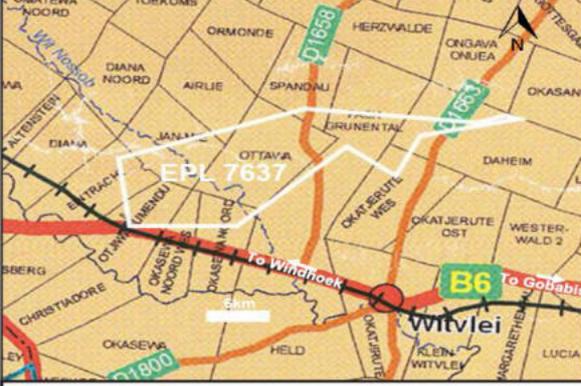


Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Permitting & De-Risking Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) & Environmental Assessments (SEA, EIA, EMP, EMS & ESG)

PUBLIC NOTICE
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY AED CONSORTIUM (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) No. 7637, GOBABIS DISTRICT, OMAHEKE REGION

AED Consortium (Pty) Ltd (the "PROponent") has applied for the transfer of the EPL No. 7637 from Ayes Tjiteere. The EPL 7637 was granted on the 30/10/2019 and will expire on 29/10/2022. The EPL 7637 has a total area of 18904.7886 Ha and covers commercial farmlands as indicated on the map. The license is granted for base and rare and precious metals. Once the ECC and EPL transfer are granted by the Government, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). In fulfillment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 1st JULY 2022



Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
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The City of Windhoek (CoW) (the "PROponent") is proposing to develop new and reroute existing 66kV overhead powerlines around the southern-eastern, southern, and western edges of the Goreangab Dam by linking the various powerline segments Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (SS). The following is the summary of the proposed new and existing overhead powerlines to be created and dismantled, respectively:

- CoW New Overhead Powerline Networks / Routes to be Developed:**
 - Red broken line: 66kV Haloid L/C line Tie-In point to Dam Wall L/C Tie-In point: 3.88km
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 - Green broken line: 66kV Khomas to Goreangab L/C line Tie-In point: 0.62km
- Existing CoW Overhead Powerline Networks to be Dismantled Due to New Developments:**
 - Purple broken line: 66kV Goreangab L/C to Dam Wall L/C: 1.62km
 - Blue broken line: 66kV Goreangab L/C to Haloid L/C: 0.93km

The proposed powerlines rerouting project activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). In fulfillment of the environmental requirements, the developer has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the EIA and Environmental Management Plan (EMP) Reports to support the application for an ECC. Interested and Affected Parties (I&APs) are hereby invited to register and submit written comments / objections with respect to the proposed overhead powerlines project.

REGISTER BY EMAIL: frontdesk@rbs.com.na
Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
DEADLINE FOR SUBMISSION OF WRITTEN INPUTS/OBJECTIONS TO BE CONSIDERED IN THE ENVIRONMENTAL ASSESSMENT PROCESS IS: FRIDAY 1st JULY 2022



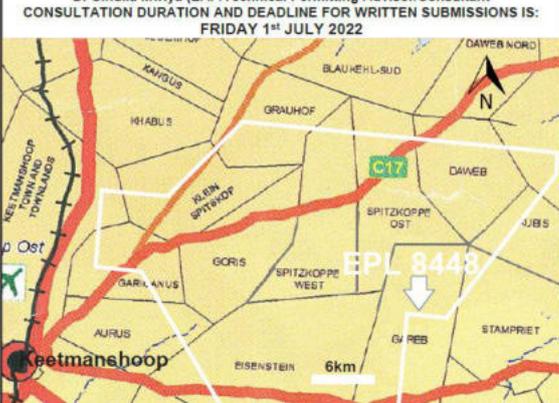
New Lines Construction	Existing Lines & Other Features
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66kV Goreangab L/C to Dam Wall L/C: 1.62km	Sub Station (SS)
66kV Goreangab L/C to Haloid L/C: 0.93km	

Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Permitting & De-Risking Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) & Environmental Assessments (SEA, EIA, EMP, EMS & ESG)

PUBLIC NOTICE
APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) BY BLUESTATE (Pty) Ltd FOR PROPOSED MINERALS PROSPECTING ACTIVITIES IN THE EXCLUSIVE PROSPECTING LICENSE (EPL) 8448, KEETMANSHOOP DISTRICT, //KARAS REGION

Bluestate Investments (Pty) Ltd (the "PROponent") has the preparedness to grant mineral rights under the Exclusive Prospecting Licenses (EPL) 8448 with respect to Base and Rare Metals, Dimension Stone, Industrial Minerals, Precious Metals, and Precious Stones. The physical license of the EPL will only be granted by the Mining Commissioner once the Proponent has obtained Environmental Clearance Certificate (ECC) from the Environmental Commissioner. The EPL 8448 has a total area of 97345 Ha and falls within commercial farmlands as indicated on the map. Once the ECC is granted, the Proponent intends to conduct exploration / prospecting activities starting with desktop studies including the processing and interpretation of the existing geophysical and other historical data sets, followed by regional field-based reconnaissance activities and if the results are positive, implement detailed site-specific field-based activities using techniques such as geological mapping, geophysical surveys, trenching, drilling, and sampling for laboratory tests. The proposed prospecting activities are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the EIA Regulations 30 of 2012 and cannot be undertaken without an Environmental Clearance Certificate (ECC). In fulfillment of these environmental requirements, the Proponent has appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant, led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the Environmental Reports to support the application for ECC. Interested and Affected Parties (I&AP) are hereby invited to register and submit written comments / objections / inputs with respect to the proposed prospecting activities. A Background Information Document (BID) is available on request upon registration.

REGISTER BY EMAIL: smwiya@rbs.com.na
Dr Sindila Mwiya (EAP/Technical Permitting Advisor/Consultant)
CONSULTATION DURATION AND DEADLINE FOR WRITTEN SUBMISSIONS IS: FRIDAY 1st JULY 2022



Risk-Based Solutions (RBS) CC (URL: www.rbs.com.na)
 Your Permitting & De-Risking Specialist Consultants (Oil, Gas, Minerals & Energy Exploration, Production & Mining) & Environmental Assessments (SEA, EIA, EMP, EMS & ESG)

Figure 4.8: Copy of the 2nd public notification that was published in the Confidante Newspaper dated 17th – 23rd June 2022.

5. ASSESSMENT OF LIKELY IMPACTS

5.1 Assessment Procedure and Methodology

The assessment of positive and negative impacts focused on the complete proposed project lifecycle covering route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline. The overall environmental assessment procedure adopted for the proposed powerline project is in conformity with the provisions of the Environmental Impact Assessment Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007). The detailed outline of all the activities associated with each of the above project developmental stages as sources of potential environmental impacts are outlined in Table 5.1.

5.2 Alternatives and Ecosystem Assessments

The following alternatives were identified and evaluated based on the technical, environmental, economics and socioeconomic characterisation process with respect to the route selection, preconstruction, construction, operation, and closure / upgrade of the proposed powerline:

- ❖ **Powerline design including underground cabling and overhead options:** An alternative assessment process based on the most favourable design was undertaken. Considerations for the use of either a single pole or two poles system as well as the number of cables for the proposed powerline design have been evaluated in addition to option of building an underground cable system compared to the overhead powerline. Overall, the technical, environmental, economics and socioeconomic considerations favoured an overhead powerline design with a single pole and three (3) cables. All other options were too expensive to implement.
- ❖ **Route selection options:** Various routes were considered with respect to the existing electricity infrastructure (distribution and connectivity) within the surrounding area. The selected route proved to be the shortest and cost-effective options compared to other points of distribution and connectivity.
- ❖ **Other Alternative Land Uses:** The proposed powerline route inclusive of the servitude cuts across municipal townlands. Due to the limited coverage of the proposed powerline route, it's likely that the powerline will coexist with the current and potential future land uses in the areas.
- ❖ **Ecosystem Function (What the Ecosystem Does):** Wildlife habitat, carbon cycling or the trapping of nutrients and characterised by the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of an ecosystem in this area. The proposed powerline activities will not affect the ecosystem function due to the limited scope of the proposed activities covering the route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline.
- ❖ **Ecosystem Services:** Food chain, harvesting of animals or plants, and the provision of clean water or scenic views. The proposed powerline activities will not affect the ecosystem services due to the limited scope and area of coverage of the route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline.
- ❖ **Use Values:** Direct use for other land uses includes watching a television show about the area and its wildlife, food chain linkages that sustains the complex life within this area and bequest value for future generations to enjoy. The proposed powerline activities will not destroy the current use values due to the limited scope of the proposed activities as well as the adherence to the provisions of the EMP as detailed in this report.
- ❖ **Non-Use, or Passive Use:** Preserve what exists (Existence Value) with no consideration for direct use / benefits. The proposed powerline activities will not affect ecosystem due to the limited scope of the proposed activities covering the route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline, and.

- ❖ **The No-Action Alternative:** A comparative assessment of the environmental impacts of the ‘no-action’ alternative (a future in which the proposed powerline and Waterfront Development projects do not take place) has been undertaken. An assessment of the environmental impacts of a future, in which the proposed powerline and Waterfront Development to be supported do not take place, is important to understanding what benefits might be lost if the powerline project does not move forward. Key losses that may never be realised if the proposed powerline and the key developments such as the Waterfront Development to be supported do not go-ahead include loss of potential property and taxes and services, direct and indirect contracts and employment opportunities and foreign direct investments. The environmental benefits include no impact on the receiving environment and although land degradation may still happen in the absence of the proposed project due to drought, poor land management practices including the land grabbing, erosion, and pollution.

5.3 Likely Negative Impacts Considered in the EIA Process

5.3.1 Likely Sources of Negative Impacts

Table 5.1 summarises the proposed powerline project activities covering route selection, preconstruction, construction, operation and closure / upgrade which are likely to be sources of negative impacts.

Table 5.1: Outline of the proposed project developmental stages and the associated activities as sources of likely negative impacts.

PROJECT DEVELOPMENT STAGES	PROPOSED PROJECT ACTIVITIES THAT ARE LIKELY TO BE SOURCES OF IMPACTS
ROUTE SELECTION	1. Planning and clients’ needs assessment
	2. Geographical Information System (GIS) mapping of possible routes options
	3. Evaluation and field-based route assessment verifications and validations
PRECONSTRUCTION	4. Field –based route and servitude survey
	5. Field –based route and servitude clearing
CONSTRUCTION	6. Digging of the individual pole foundation
	7. Digging of the pole support
	8. Poles and support driving works
	9. Structure mounting
	10. Module clamping
	11. Cabling and electrical equipment installation
OPERATION AND MONITORING	12. Installation of Communication Monitoring
	13. Commissioning
	14. Operational (Supply of Electricity to the Cement Plant)
CLOSURE OR UPGRADING	15. Monitoring and Maintenance
	16. Powerline Decommissioning
	17. Powerline Upgrade

5.4 Overall Impact Assessment Results

5.4.1 Overview

The overall impact assessment methodology adapted for this EIA and EMP Report is in line with the ToR as well as the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). The overall matrix framework has adopted the Leopold matrix which is one of the internationally best-known matrix methodology available for predicting the impact of a project on the environment.

The Leopold matrix is a two-dimensional matrix cross-referencing the following:

- ❖ The activities linked to the project that are supposed to have an impact on man and the environment, and.
- ❖ The existing environmental and socioeconomic conditions that could possibly be affected by the project.

The activities linked to the route selection, preconstruction, construction, operation, and closure / upgrade of the proposed powerline are listed on one axis, while the environmental and socioeconomic conditions are listed on the other axis, and divided in following three (3) major groups:

- ❖ Physical conditions: receiving environment, air, etc.
- ❖ Biological conditions: fauna, flora, ecosystems etc., and.
- ❖ Social and cultural conditions: Socioeconomic setting, historical and cultural issues, populations, economy...

The activities of the route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline project have the potential to affect the environment in many different ways. The first step in the impact identification has been to identify the various types of activities associated with each of the developmental stages covering route selection, preconstruction, construction, operation and closure / upgrade of the proposed powerline project, together with their associated emissions and land discharges where appropriate. At a high level, the main sources of impact of the proposed powerline project are:

- ❖ Physical disturbance to the local environment during the preconstruction and construction stages.
- ❖ Emissions, discharges and wastes during the preconstruction and construction stages, and.
- ❖ Accidental events associated with avifauna collision at areas along the powerline where it cuts potential flight corridors. The collision events are associated with the operational stage of the proposed project.

5.4.2 Evaluation of Project Activities Impacts

5.4.2.1 Summary Overview

In evaluating the degree of potential negative impacts, the following factors have been taken into consideration:

- (i) Impact Severity: The severity of an impact is a function of a range of considerations, and.
- (ii) Likelihood of Occurrence (Probability): How likely is the impact to occur?

5.4.2.2 Severity Criteria for Environmental Impacts

In evaluating the severity of potential negative environmental impacts, the following factors have been taken into consideration:

- ❖ Receptor/ Resource Characteristics: The nature, importance and sensitivity to change of the receptors / target or resources that could be affected.

- ❖ Impact Magnitude: The magnitude of the change that is induced.
- ❖ Impact Duration: The time period over which the impact is expected to last.
- ❖ Impact Extent: The geographical extent of the induced change, and.
- ❖ Regulations, Standards and Guidelines: The status of the impact in relation to regulations (e.g., discharge limits), standards (e.g., environmental quality criteria) and guidelines.

The overall impact severity has been categorised using a semi quantitative approach as shown in Table 5.2 for magnitude, Table 5.3 for duration and Table 5.4 for extent.

Table 5.2: Scored on a scale from 0 to 5 for impact magnitude.

SCALE		DESCRIPTION
0		no observable effect
1		low effect
2		tolerable effect
3		medium high effect
4		high effect
5		very high effect (devastation)

Table 5.3: Scored time period over which the impact is expected to last.

SCALE		DESCRIPTION
T		Temporary
P		Permanent

Table 5.4: Scored geographical extent of the induced change.

SCALE		DESCRIPTION
L		limited impact on location
O		impact of importance for municipality.
R		impact of regional character
N		impact of national character
M		impact of cross-border character

5.4.2.3 Likelihood (Probability) of Occurrence

The likelihood (probability) of the pre-identified events occurring has been ascribed using a qualitative scale of probability categories (in increasing order of likelihood) as shown in Table 5.5. Likelihood is estimated based on experience and/ or evidence that such an outcome has previously occurred. Impacts resulting from routine/planned events (i.e., normal operations) are classified under category (E).

Table 5.5: Summary of the semi qualitative scale of probability categories (in increasing order of likelihood of occurrence).

SCALE	DESCRIPTION
A	Extremely unlikely (e.g., never heard of in the industry)
B	Unlikely (e.g., heard of in the industry but considered unlikely)
C	Low likelihood (egg such incidents/impacts have occurred but are uncommon)
D	Medium likelihood (e.g., such incidents/impacts occur several times per year within the industry)
E	High likelihood (e.g., such incidents/impacts occur several times per year at each location where such works are undertaken)

5.4.3 Project Activities Summary of Impacts Results

Assessment results of the magnitude, duration, extent, and probability of the potential negative impacts of the proposed project activities interacting with the receiving environment are presented in form of a matrixes as shown in Tables 5.6 – 5.9.

The overall severity of potential environmental impacts of the proposed project activities will have low magnitude (Table 5.6), temporally and permanent duration for some activities (Table 5.7), localised extent (Table 5.8) and low probability of occurrence (Table 5.9).

It is important to note that impacts have been considered without the implementation of mitigation measures. The need for and appropriate mitigation measures as presented in the Section 6 of this report have been determined based on the impact assessment presented in this report.

Table 5.6: Results of the impact assessment of the proposed powerline developmental stages and the associated activities on the receiving environment (natural, built, socioeconomic, flora, fauna, habitat, and ecosystem).

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SCALE	DESCRIPTION		Natural Environment – Air, Noise, Water, Green Space	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic and Cultural – Characteristics of the local societies and communities	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use Values and Non Use]
0	no observable effect								
1	low effect								
2	tolerable effect								
3	medium high effect								
4	high effect								
5	very high effect (devastation)								
SOURCES OF POTENTIAL IMPACT	DEVELOPMENT STAGES	ACTIVITIES							
	ROUTE SELECTION	1. Planning and clients' needs assessment	0	0	0	0	0	0	0
		2. Geographical Information System (GIS) mapping of possible routes options	0	0	0	0	0	0	0
		3. Evaluation and field-based route assessment verifications and validations	0	0	0	0	0	0	0
	PRECONSTRUCTION	4. Field –based route and servitude survey	0	0	0	0	0	0	0
		5. Field –based route and servitude clearing	2	0	0	3	3	3	3
	CONSTRUCTION	6. Digging of the individual pole foundation	2	0	0	1	1	1	1
		7. Digging of the pole support	2	0	0	1	1	1	1
		8. Poles and support driving works	2	0	0	1	1	1	1
		9. Structure mounting	2	0	0	1	1	1	1
		10. Module clamping	2	0	0	1	1	1	1
		11. Cabling and electrical equipment installation	2	0	0	1	1	1	1
		12. Installation of Communication Monitoring	2	0	0	1	1	1	1
	OPERATION AND MONITORING	13. Commissioning	0	0	0	1	3	3	1
		14. Operational (Supply of Electricity to the Cement Plant)	0	0	0	1	3	3	1
		15. Monitoring and Maintenance	0	0	0	1	3	3	1
	CLOSURE OR UPGRADE	16. Powerline Decommissioning	2	2	0	1	1	1	1
17. Powerline Upgrade		2	2	0	3	3	3	3	

Table 5.7: Results of the scored time over which the likely negative impacts of the proposed powerline developmental stages and the associated activities is expected to last.

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)							
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT				
SCALE		DESCRIPTION	Natural Environment – Air, Noise, Water, Green Space	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic and Cultural – Characteristics of the local societies and communities	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use Values and Non Use]	
T		Temporary								
P		Permanent								
SOURCES OF POTENTIAL IMPACT	DEVELOPMENT STAGES	ACTIVITIES								
	ROUTE SELECTION	1. Planning and clients' needs assessment	T	T	T	T	T	T	T	T
		2. Geographical Information System (GIS) mapping of possible routes options	T	T	T	T	T	T	T	T
		3. Evaluation and field-based route assessment verifications and validations	T	T	T	T	T	T	T	T
	PRECONSTRUCTION	4. Field –based route and servitude survey	T	T	T	T	T	T	T	T
		5. Field –based route and servitude clearing	P	T	T	P	P	P	P	P
	CONSTRUCTION	6. Digging of the individual pole foundation	P	T	T	P	P	P	P	P
		7. Digging of the pole support	P	T	T	P	P	P	P	P
		8. Poles and support driving works	P	T	T	P	P	P	P	P
		9. Structure mounting	P	T	T	P	P	P	P	P
		10. Module clamping	P	T	T	P	P	P	P	P
		11. Cabling and electrical equipment installation	P	T	T	P	P	P	P	P
	OPERATION AND MONITORING	12. Installation of Communication Monitoring	P	T	T	P	P	P	P	P
		13. Commissioning	T	T	T	P	P	P	P	P
		14. Operational (Supply of Electricity to the Cement Plant)	T	T	T	P	P	P	P	P
	CLOSURE OR UPGRADE	15. Monitoring and Maintenance	T	T	T	P	P	P	P	P
		16. Powerline Decommissioning	T	T	T	T	T	T	T	T
17. Powerline Upgrade		T	T	T	P	P	P	P	P	

Table 5.8: Results of the scored geographical extent of the induced change caused by the proposed powerline developmental stages and the associated activities.

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SCALE		DESCRIPTION	Natural Environment – Air, Noise, Water, Green Space	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic and Cultural – Characteristics of the local societies and communities	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use Values and Non Use]
L		limited impact on location							
O		impact of importance for municipality							
R		impact of regional character							
N		impact of national character							
M		impact of cross-border character							
SOURCES OF POTENTIAL IMPACT	DEVELOPMENT STAGES	ACTIVITIES							
	ROUTE SELECTION	1. Planning and clients' needs assessment	L	L	L	L	L	L	L
		2. Geographical Information System (GIS) mapping of possible routes options	L	L	L	L	L	L	L
		3. Evaluation and field-based route assessment verifications and validations	L	L	L	L	L	L	L
	PRECONSTRUCTION	4. Field –based route and servitude survey	L	L	L	L	L	L	L
		5. Field –based route and servitude clearing	L	L	L	L	L	L	L
	CONSTRUCTION	6. Digging of the individual pole foundation	L	L	L	L	L	L	L
		7. Digging of the pole support	L	L	L	L	L	L	L
		8. Poles and support driving works	L	L	L	L	L	L	L
		9. Structure mounting	L	L	L	L	L	L	L
		10. Module clamping	L	L	L	L	L	L	L
		11. Cabling and electrical equipment installation	L	L	L	L	L	L	L
	OPERATION AND MONITORING	12. Installation of Communication Monitoring	L	L	L	L	L	L	L
		13. Commissioning	L	L	L	L	L	L	L
		14. Operational (Supply of Electricity to the Cement Plant)	L	L	L	L	L	L	L
	CLOSURE OR UPGRADE	15. Monitoring and Maintenance	L	L	L	L	L	L	L
		16. Powerline Decommissioning	L	L	L	L	L	L	L
17. Powerline Upgrade		L	L	L	L	L	L	L	

Table 5.9: Results of the qualitative scale of probability occurrence of likely negative impacts because of the proposed powerline developmental stages and the associated activities.

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)						
			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SCALE	DESCRIPTION		Natural Environment – Air, Noise, Water, Green Space	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic and Cultural – Characteristics of the local societies and communities	Flora	Fauna	Habitat	Ecosystem [Services, Function, Use Values and Non Use]
A	Extremely unlikely (e.g. never heard of in the industry)								
B	Unlikely (e.g. heard of in the industry but considered unlikely)								
C	Low likelihood (egg such incidents/impacts have occurred but are uncommon)								
D	Medium likelihood (e.g. such incidents/impacts occur several times per year within the industry)								
E	High likelihood (e.g. such incidents/impacts occurs several times per year at each location where such works are undertaken)								
SOURCES OF POTENTIAL IMPACT	DEVELOPMENT STAGES	ACTIVITIES							
	ROUTE SELECTION	1. Planning and clients' needs assessment	A	A	A	A	A	A	A
		2. Geographical Information System (GIS) mapping of possible routes options	A	A	A	A	A	A	A
		3. Evaluation and field-based route assessment verifications and validations	A	A	A	A	A	A	A
	PRECONSTRUCTION	4. Field –based route and servitude survey	A	A	A	A	A	A	A
		5. Field –based route and servitude clearing	B	B	B	D	D	D	D
	CONSTRUCTION	6. Digging of the individual pole foundation	B	B	B	B	B	B	B
		7. Digging of the pole support	B	B	B	B	B	B	B
		8. Poles and support driving works	B	B	B	B	B	B	B
		9. Structure mounting	B	B	B	B	B	B	B
		10. Module clamping	B	B	B	B	B	B	B
		11. Cabling and electrical equipment installation	B	B	B	B	B	B	B
	OPERATION AND MONITORING	12. Installation of Communication Monitoring	B	B	B	B	B	B	B
		13. Commissioning	B	B	B	B	D	D	B
		14. Operational (Supply of Electricity to the Cement Plant)	B	B	B	B	D	D	B
	CLOSURE OR UPGRADE	15. Monitoring and Maintenance	B	B	B	B	D	D	B
		16. Powerline Decommissioning	B	B	B	B	B	B	B
17. Powerline Upgrade		B	B	B	D	D	D	D	

5.4.4 Assessment of the Overall Significant Impacts

5.4.4.1 Overview

The determination of the significance of the negative impacts of the sources was undertaken based on the environmental baseline results and the intensity of the likely negative impact. The assessment was dependent upon the degree to which the proposed project activities are likely to result in unwanted consequences on the receptor covering the natural environment such as the physical and biological environments. Overall, the assessment of significant impacts was focused on the ecosystem-based approach that considers potential impacts to the ecosystem as part of the receiving environment.

5.4.4.2 Summary of the Sources of Impacts

The main key sources of impacts that have been used to determine significant impact posed by the proposed project activities comprised all the activities associated with the operation and decommissioning stages. Each of the main sources of impacts have been evaluated against the receiving environment (receptor / pathways).

5.4.4.3 Determination of the Overall Likely Significant Impacts

In order to determine the overall significant impact of individual sources associated with the proposed project activities, an impact identification and assessment process was undertaken as part of the EIA. The results of the overall impacts and key issues associated with the proposed project activities as sources of potential impacts with respect to the receiving environment that could potentially be affected, resulting in key issues are presented in Table 5.10.

The EIA impact identification and assessment processes focused on the environment interaction approach with respect to the proposed project activities, the pathways and the likely targets or receptor. In this process, components of the project activities that are likely to impact the natural environment (physical, biological and social) were broken down into individual development stages and activities. The results of the overall significant impacts assessment associated with the proposed project activities / sources of potential impacts with respect to the receiving environment that could potentially be affected, resulting in key issues are presented in Tables 5.10.

Key issues of significant impacts that have been identified from the impacts assessment process includes the following (Table 5.10): Regulatory issues, vehicles and tracks management, siting of distribution station(s) and camps sites, impacts on avifauna, impacts on mammals, impacts on water resources protection and general water usage, positive and negative impacts of socioeconomic setting, health and safety impacts, visual, noise, dust and waste (solid and liquid) management.

Table 5.10: Significant impact assessment of the proposed powerline developmental stages and the associated activities on the receiving environment (natural, built, socioeconomic, flora, fauna, habitat and ecosystem).

ENVIRONMENTAL IMPACT KEY			RECEPTORS / TARGETS THAT MAY BE IMPACTED (RESOURCES)																
			IMPACT LIKELIHOOD			PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT										
IMPACT SEVERITY	Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]	NATURAL ENVIRONMENT – Air, Noise, Water Green Space,	BUILT ENVIRONMENT – Houses, Roads, Transport Systems, Buildings, Infrastructure	SOCIOECONOMIC AND CULTURAL – Characteristics of the local societies and communities	FLORA (Protected Species)	FAUNA (Avifauna and Mammals)	HABITAT (Carbonate Terrain and Ephemeral River Channels)	ECOSYSTEM (Services, Function, Use Values and Non Use)							
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]														
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]														
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]														
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]														
SOURCES OF POTENTIAL IMPACT	DEVELOPMENT STAGES	ACTIVITIES																	
	ROUTE SELECTION	1. Planning and clients' needs assessment											[A0]						
		2. Geographical Information System (GIS) mapping of possible routes options											[A0]						
		3. Evaluation and field-based route assessment verifications and validations											[A0]						
	PRECONSTRUCTION	4. Field –based route and servitude survey											[A0]						
		5. Field –based route and servitude clearing											[A2]	[A0]	[A0]	[C3]	[C3]	[C3]	[C3]
	CONSTRUCTION	6. Digging of the individual pole foundation											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		7. Digging of the pole support											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		8. Poles and support driving works											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		9. Structure mounting											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		10. Module clamping											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		11. Cabling and electrical equipment installation											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
	OPERATION AND MONITORING	12. Installation of Communication Monitoring											[A2]	[A0]	[A0]	[A1]	[A1]	[A1]	[A1]
		13. Commissioning											[A0]	[A0]	[A0]	[A1]	[C3]	[C3]	[A1]
		14. Operational (Supply of Electricity to the Cement Plant)											[A0]	[A0]	[A0]	[A1]	[C3]	[C3]	[A1]
	CLOSURE OR UPGRADE	15. Monitoring and Maintenance											[A0]	[A0]	[A0]	[A1]	[C3]	[C3]	[A1]
		16. Powerline Decommissioning											[A2]	[A2]	[A0]	[A1]	[A1]	[A1]	[A1]
17. Powerline Upgrade											[A2]	[A2]	[A0]	[C3]	[C3]	[C3]	[C3]		

6. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

6.1 Summary Objectives of this EMP

The Environmental Management Plan (EMP) provides a detailed plan of actions required in the implementation of the mitigation measures for minimising and maximising the identified significant negative and positive impacts respectively. The EMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities throughout the proposed project developmental stages. Regular monitoring, assessments and evaluation of the environmental liabilities 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.

6.2 Mitigation Measures for Key Issues

Key issues that have been identified with respect to the proposed project are: Regulatory issues, vehicles and tracks management, siting of distribution station(s) and camps sites, impacts on avifauna, impacts on mammals, impacts on water resources protection and general water usage, positive and negative impacts of socioeconomic setting, health, and safety impacts, visual, noise, dust and waste (solid and liquid) management. Based on the findings of the impact assessment as detailed in Chapter 5 of this report, the following are the key mitigations measures for the identified key issues which are associated with the route section, preconstruction, construction, operational, closure and or upgrade of the proposed powerline to be operated at 66kV:

1) Regulatory mitigation measures with respect to the implementation of the proposed project activities:

- ❖ All preconstruction permits must be obtained before the implementation of the proposed project and the permits includes: Agreements with the City of Windhoek, Environmental Clearance Certificate (ECC), Land ownership / Lease Agreement and all other licenses permits as may be required.
- ❖ Adhere to tall national regulatory requirements, standards and all other applicable Competent Authorities / Organs of State with jurisdiction over the proposed powerline.
- ❖ Adhere to all regulatory environmental performance monitoring requirements as may be stipulated in the Environmental Clearance Certificate (ECC).
- ❖ Adhere to all provisions of the Environmental Clearance Certificate, Agreement. Land ownership / Lease Agreement, and all other licenses permits limits, standards and guideline as may be required, and.
- ❖ Employ an independent environmental officer to ensure environmental compliance during the preconstruction, construction and operational stages.

2) Mitigation measures for vehicles and tracks management:

- ❖ Avoid unnecessary affecting areas viewed as important habitat – i.e. ephemeral rivers. rocky features (hills/outcrops/mountains). clumps of protected tree species.
- ❖ Make use of existing tracks/roads as much as possible throughout the area.
- ❖ Do not drive randomly throughout the area (could cause mortalities to vertebrate fauna and unique flora. accidental fires. erosion related problems).
- ❖ Avoid off-road driving at night as these increases mortalities of nocturnal species.

- ❖ Implement and maintain off-road track discipline with maximum speed limits (e.g. 30km/h) as this would result in fewer faunal mortalities and limit dust pollution.
- ❖ Where new tracks have to be made 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).
- ❖ Rehabilitate all new tracks created, and.
- ❖ Implement erosion control measures where applicable – e.g. cross drains on slopes.

3) Mitigation measures around the construction site and other temporary layover:

- ❖ Select temporary construction site and other temporary layover sites with care and must avoid any important habitats such ephemeral rivers valleys.
- ❖ In the absence of municipal sewer line at the beginning of the construction, use portable toilets to avoid faecal pollution around the construction site.
- ❖ Initiate a suitable and appropriate refuse removal policy as littering could result in certain animals becoming accustomed to humans and associated activity and resulting typical problem animal scenarios – e.g. baboon, black-backed jackal.
- ❖ Prevent the killing of species viewed as dangerous – e.g. various snakes – when onsite.
- ❖ 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. various *Aloe*) or any form of illegal hunting activities.
- ❖ Avoid introducing dogs and cats as pets to camp sites as these can cause significant mortalities to local fauna (cats) and even stock losses (dogs).
- ❖ Remove and relocate slow moving vertebrate fauna (e.g. tortoises, chameleon, snakes) to suitable habitat elsewhere on property.
- ❖ Avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. various *Aloe* species.
- ❖ Avoid introducing ornamental plants, especially potential invasive alien species, as part of the landscaping of the substation/camp sites, etc., but rather use localised indigenous species, should landscaping be attempted, which would also require less maintenance (e.g. water).
- ❖ Remove all invasive alien species on site – e.g. *Prosopis* sp. This would not only indicate environmental commitment, but actively contribute to a better landscape.
- ❖ Prevent and discourage the collecting of firewood as dead wood has an important ecological role – especially during the development 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 *Acacia erioloba* which is a good quality wood.
- ❖ Attempt to avoid the removal of bigger trees during the development phase(s) – especially with the development of access routes – as these serve as habitat for a

myriad of fauna. Avoid the destruction of larger trees associated with the ephemeral drainage lines.

- ❖ Prevent and discourage fires – especially during the development phase(s) – as this could easily cause runaway veld fires causing problems (e.g. loss of grazing & domestic stock mortalities, etc.) for the neighbouring farmers.
- ❖ Inform contractors/workers regarding the above-mentioned issues prior to construction activities and monitor for compliance thereof throughout.
- ❖ Rehabilitate all areas disturbed by the construction activities – i.e. camp sites, and.
- ❖ Employ an environmental officer to ensure compliance, especially of the rehabilitation of all the affected areas.

4) Mitigation measures for avifauna over the powerlines:

- ❖ Introduce bird avoidance mechanisms – e.g. bird flight diverters, flappers, coils, lights, anti-perching devices, alternative perching sites, etc. – along movement corridors where the powerline route cuts across the Otjiseru and Arebbusch major Ephemeral Rivers as well as closer to the dam along the proposed alternative Rev-5 route section aimed at by-passing the proposed Khomas Substation and future NamPower lines adjustment localities.
- ❖ Pole design such as the vertical configured designs poses an electrocution risk for vultures. Investigate alternative design.
- ❖ Initiate a bird collision monitoring programme after construction to determine “high collision” areas to mitigate these areas as well once identified, and.
- ❖ Along the western side of the proposed route, remove the temporary 22kV line once the 132 / 66kV line is operational as this would then be one less pylon related hazard in the area.

5) Mitigation measures for mammals over the powerlines:

- ❖ Maintain the minimum clearance for giraffe of 6.3 m line, and.
- ❖ Pole transformers pose an electrocution risk for genet, baboon, etc. Cover jumper cables on transformer with LDPE (Low Density Polyethelene) pipes if required.

6) Mitigation measures for water resources protection and general water usage are:

- ❖ Always use as little water as possible. Reduce, reuse and re-cycle water where possible.
- ❖ All leaking pipes / taps around the camp site must be repaired immediately they are noticed.
- ❖ Measure, monitored, and account for water usage throughout the operations.
- ❖ Always maintain all water related infrastructure.
- ❖ Never leave taps running. Close taps after you have finished using them.
- ❖ Never allow any hazardous substance to soak into the soil, and.
- ❖ No washing of vehicles, equipment and machinery, containers and other surfaces.

7) Mitigation measures to enhance positive socioeconomic impacts include the following actions to be implemented by the proponent:

- ❖ Stipulate a preference for local contractors in the tender policy. Preference to local contractors should still be based on competitive business principles and salaries and payment to local service providers should still be competitive.
- ❖ Develop a database of local businesses that qualify as potential service providers and invite them to the tender process.
- ❖ Scrutinise tender proposals to ensure that minimum wages were included in the costing.
- ❖ Tender documents must stipulate that local resident should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in the local economy.
- ❖ Must ensure that potential employees are from the local area, if required, proof of having lived in the area for a minimum of 5 years must be produced.
- ❖ 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, and.
- ❖ Encouraged to cater for the needs of employees to increase the spending of wages locally.

8) Mitigation measures to minimise negative socioeconomic impacts are:

- ❖ The employment of residents and local companies should be a priority.
- ❖ Address unrealistic expectations about large numbers of jobs being created by holding public local meeting to brief the community through the City of Windhoek local Councillor and by not advertising for job recruitment extensively at national level but rather use local and regional advertisement means such as local radio stations or local authority newsletters / local community outreach channels).
- ❖ Temporary construction site if required should be established in close consultation with the land owners.
- ❖ Tender documents could stipulate that contractors have HIV/Aids workplace policies and programmes in place and proof of implementation should be submitted with invoicing.
- ❖ 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 project area. Disciplinary actions should be in accordance with Namibian legislation.
- ❖ Contract companies could implement a no-tolerance policy regarding the use of alcohol at workplace.
- ❖ Request that the Roads Authority erect warning signs of heavy-duty vehicles on affected public roads.
- ❖ Ensure that drivers adhere to speed limits and that speed limits are strictly enforced particularly around the site, and.

- ❖ Ensure that vehicles are road worthy and drivers are qualified.

9) Mitigation measures to minimise health and safety impacts are:

- ❖ Physical hazards: Follow national regulatory and guidelines provisions, use of correct Personal Protective Equipment (PPE) at all times, training programme and monitoring, as well as the implementation of a fall protection program in accordance with the Labour Act.
- ❖ Some of the public access management measures that may be considered in an event of vandalism occurring are:
 - Control access to the site through using gates on the access road(s), and.
 - Notice or information boards relating to public safety hazards and emergency contact details to be put up at the gate(s) to the powerline or on strategic powerline poles.

10) Mitigation measures to minimise visual impacts are:

- ❖ When choosing the powerline route, consider the landscape character and the visual impacts of the powerline from all relevant viewing angles, particularly from public roads.
- ❖ Use topography and vegetation screening where applicable for screening.
- ❖ Minimise access / servitude roads and no off-road that could result in land scarring is allowed.
- ❖ Minimise the presence of secondary structures: remove inoperative and redundant support structures, and.
- ❖ Remove all infrastructure and reclaim, or rehabilitate the project powerline route in an event of closure.

11) Mitigation measures to minimise noise and dust impacts are:

- ❖ Limit vehicle movements and adhere to the speed of 30 km/h around the powerline route and the official speed limits on all public roads.
- ❖ Vehicles and all equipment must be properly serviced to minimise noise pollution.
- ❖ Use the appropriate Personal Protective Equipment (PPE) as may be required in order to minimise Occupational Health Safety impacts due to noise and dusty pollution along the powerline route, and.
- ❖ National or international acoustic design standards must be followed.

12) Mitigation measures for waste (solid and liquid) management are:

- ❖ Burial of waste on anywhere other than an approved waste disposal site is prohibited and all generated solid waste must be disposed at an approved municipal solid disposal site.
- ❖ Toilet facilities must be provided on site and should not be located close to ephemeral rivers or sensitive habitat.
- ❖ Provide site information on the difference between the following three (3) main types

of waste, namely: Building rubbles, general waste and hazardous Waste.

- ❖ Sealed containers, bins, drums or bags for the different types of wastes must be provided.
- ❖ Never dispose of hazardous waste in the bins or skips intended for general waste or construction rubble.
- ❖ All solid and liquid wastes generated from the proposed project activities shall be reduced, reused, or recycled to the maximum extent practicable.
- ❖ Trash may not be burned around the site, except at an approved municipal site and under controlled conditions in accordance with the regulations.
- ❖ Never overfill any waste container, drum, bin or bag because it can be a source of litter around the site.
- ❖ Never litter or throwaway any waste on the site, along any road.
- ❖ No illegal dumping is prohibited, and.
- ❖ Littering is prohibited.

6.3 Roles and Responsibilities

6.3.1 Overview

This section contains the roles and responsibilities with respect to the implementation and monitoring of the Environmental Management Plan (EMP) covering the route section, preconstruction, construction and operational stages of the proposed powerline. A generic organisation structure for the proposed project with respect to the roles and responsibilities for implementation of this EMP is shown in Fig. 6.1.

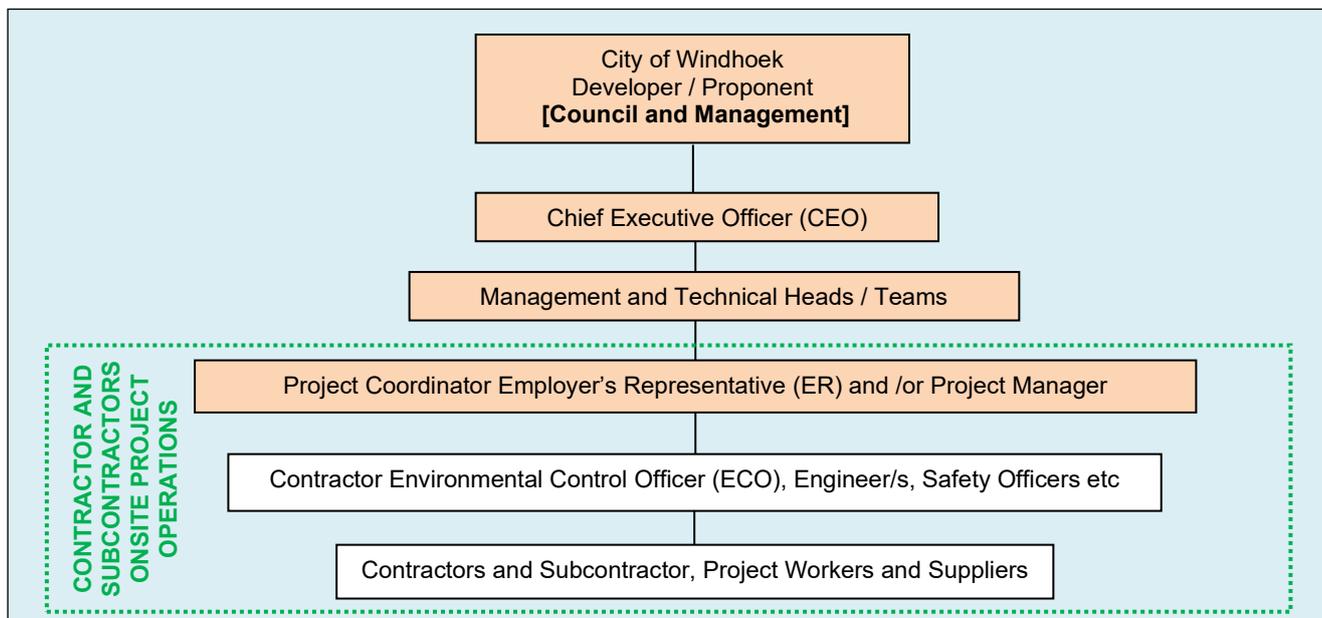


Figure 6.1: Organisational structure for EMP implementation with respect to the proposed powerline.

6.3.2 Onsite Project Manager

The proponent is to appoint an onsite project manager with the following responsibilities:

- ❖ Act as the on-site project manager and EMP implementing agent.
- ❖ Appoint the Environmental Control Officer (ECO).
- ❖ Ensure that the responsibilities of the proponent are executed in compliance with the relevant legislation and this EMP.
- ❖ Ensure that all the necessary environmental authorisations and permits have been obtained before project implementation.
- ❖ Assist the Contractor in finding environmentally responsible solutions to challenges that may arise (with input from the ECO).
- ❖ Should the onsite project manager be of the opinion that a serious threat to or impact on the environment may be caused by the construction operations, he/she may stop work. the proponent must be informed of the reasons for the stoppage as soon as possible.
- ❖ The on-site project manager has the authority to issue fines for transgressions of basic conduct rules and/or contravention of this EMP.
- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the on-site project manager can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.
- ❖ Report to the proponent on the implementation of this EMP on site (with input from the ECO and/or independent environmental auditor).
- ❖ Maintain open and direct lines of communication between the proponent, ECO, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters, and.
- ❖ Attend all site meetings and inspections.

6.3.3 Environmental Control Officer (ECO)

The **Environmental Control Officer (ECO)** has the following responsibilities:

- ❖ Assist the on-site project manager in ensuring that the necessary environmental authorisations and permits have been obtained.
- ❖ Assist the on-site project manager and Contractor in finding environmentally responsible solutions to challenges that may arise.
- ❖ Conduct environmental monitoring as per this EMP and other regulatory requirements.
- ❖ Recommend on the issuing of fines for transgressions of basic conduct rules and/or contraventions of the EMP to the on-site project manager.
- ❖ Advise the on-site project manager on the removal of person(s) and/or equipment not complying with the specifications of this EMP.
- ❖ Carry out regular site inspections (on average once per week) of all construction / operational areas with regards to compliances to this EMP. report any non-compliance(s) to the on-site project manager as soon as possible.

- ❖ Organise for an independent internal audit on the implementation of and compliance to this EMP to be carried out half way through the construction period and one per year during the operational stage and the audit must be reports to be submitted to the on-site project manager who in turn must submit it to the management.
- ❖ Organise for an independent post-construction environmental audit to be carried out.
- ❖ Continuously review this 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 record of the construction / operational and environmental control and a register of all major incidents. and
- ❖ Attend regular site meetings.

6.3.4 Contractor

The responsibilities of the **Contractor** include:

- ❖ Comply with the relevant legislation and municipal by-laws.
- ❖ Preparation and submission to proponent of the following Management Plans:
 - Environmental awareness training and inductions.
 - Emergency preparedness and response.
 - Waste management, and.
 - Health, Safety and Environment (HSE).
- ❖ Ensure adequate environmental awareness training for all site personnel.
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the ECO 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 relevant Namibian, international and best practice legislation.
 - 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 this EMP.
 - Health, Safety Environment (HSE) requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and.
- ❖ Attend regular site meetings and environmental inspection.

6.3.5 Construction Supporting Teams

The construction of the proposed powerline will require an array of specialist teams working very closely with their suppliers and core onsite operations team. The following is a summary of some of the specialists that will be required during the route selection, preconstruction and construction phase as part of the team of contractors:

- ❖ All surveyor, environmental team, mechanical engineer and crane contractors and electrical contractors each with their respective subcontractors and suppliers, would report directly to the onsite project manager.

6.4 Environmental Performance Monitoring

The monitoring process of this EMP performances for the proposed powerline is divided into two (2) parts and these are:

- (i) Monitoring activities and effects to be undertaken by the Environmental Control Officer (ECO), and.
- (ii) Preparation of an Environmental Performance Monitoring reports covering all activities related to the Environmental Management Plan throughout the proposed project lifecycle to be undertaken by the Environmental Control Officer (ECO).

The proponent will be required to report to the Ministry of Environment, Forestry and Tourism, the environmental performances monitoring as may be required / provided for in the conditions of the Environmental Clearance Certificate (ECC).

The reporting process will form part of the ongoing environmental monitoring programme. Environmental monitoring programme is part of this EMP performances assessments and will need to be compiled and submitted as determined by the regulators (the Environmental Commissioner).

The process of undertaking appropriate monitoring as per specific topic and tracking environmental performances targets against the monitoring objectives / targets will be part of internal and external auditing to be coordinated by the Environmental Control Officer (ECO) / External Consultant / Suitable qualified in-house resource person.

The second part of the monitoring of this EMP performance will require an ongoing reporting process outlining all the activities related to the effectiveness of this EMP to be undertaken by the Environmental Control Officer (ECO). The types of the data sets to be collected as part of the environmental compliance monitoring process are outlined in Tables 6.1 - 6.9.

The objective will be to ensure that corrective actions are reviewed and steps are taken to ensure compliance with this EMP implementation as well as all regulatory requirements, standards and guidelines.

Table 6.1: Monitoring of environmental performance implementation / environmental awareness training.

Monitoring Compliance	Mitigation	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 6.2: Monitoring of environmental performance for the temporal and permanent structures.

Monitoring Compliance	Mitigation	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?					
Housekeeping					

Table 6.3: Environmental data collection.

Monitoring Compliance	Mitigation	Follow-up Action Required	By Whom	By When	Completed
Are records being kept?					
Birds' mortality records?					
Noise level?					
Air Quality?					
Dust being generated?					
Have archaeological sites been found / disturbed / described?					
Other key environmental data sets?					

Table 6.4: Health, Safety and Environment (HSE).

Monitoring Compliance	Mitigation	Follow-up Action Required	By Whom	By When	Completed
All HSE provisions are being implemented including the correct use of protective clothing?					
Is there a First Aid Kit on site?					
Are dangerous areas clearly marked off?					
Do vehicles appear to maintain the recommended speed limits?					
Do vehicles drive with headlights on at all times?					

Table 6.5: Recruitment of labour.

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

Table 6.6: Management of the natural habitat and surficial materials management.

Monitoring Compliance	Mitigation	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 6.7: Tracks and off-road driving.

Monitoring Compliance	Mitigation	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					

Table 6.8: Management of water resources.

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

Table 6.9: Public relations.

Monitoring Compliance	Mitigation	Follow-up Action Required	By Whom	By When	Completed
Have any complaints been made about the construction and or operational activities by the public If so, what, and how was the issue resolved?					

7. EIA AND EMP CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary of Conclusions

The City of Windhoek (“CoW”), the “Proponent” is proposing to construct new and rerouted 66kV overhead powerlines networks linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss) around Goreangab Dam in Windhoek, Khomas Region, central Namibia.

The proposed overhead powerline project activities are listed in the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) and cannot be undertaken without an Environmental Clearance Certificate (ECC). An ECC No. 10431 was granted by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) on the 26th September 2022 and expired on the 26th September 2025. The ECC No. 10431 need to be renewed to support the construction of the proposed overhead powerlines network linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss).

No construction and environmental monitoring activities have been undertaken with respect to the proposed overhead powerline project for the period under review from the 26th September 2022 and expired on the 26th September 2025.

The preparation of the EIA and EMP Report to support the application for the renewal of the ECC No. 10431 has been undertaken in accordance with the Terms of Reference (ToR), provisions of the Environmental Impact Assessment Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007). All key specialist recommendations with respect to the proposed powerline have been incorporated and presented in this EIA and EMP Report.

The proposed 66kV new and rerouted powerline construction will not adversely affect any unique vertebrate fauna and flora, especially if the proposed recommendations (mitigation measures) are incorporated (Chapter 6). However, introducing avifauna collision and “flashover” avoidance mechanisms are imperative along potential flight corridors such as the area where the powerline will cross the Otjiseru and Arebbusch major Ephemeral Rivers as well as along the Goreangab dam.

7.2 Summary of the Recommendations

Based on the findings of this EIA and EMP Report, it is hereby recommended that the City of Windhoek (the Proponent) be issued with a renewed Environmental Clearance Certificate (ECC) No. 10431 and to be valid for a period of three (3) years with respect to the proposed overhead powerline networks linking Goreangab Load Centre (L/C) and Dam Wall L/C to the new Khomas Substation (Ss) around Goreangab Dam in Windhoek, Khomas Region, central Namibia.

Mitigation measures for both positive and negative impacts have been proposed and management strategies are provided in this report for the following development stages:

- 1) Route selection.
- 2) Preconstruction.
- 3) Construction.
- 4) Operation and monitoring, and.
- 5) Closure or upgrading.

The EMP provisions incorporates all the constraints, relevant mitigation measures with respect to likely positive and negative impacts and recommendations have been prepared for implementation by the proponent.

The following are the recommended actions to be implemented by as a part of the management of the impacts through implementations of the EMP covering the entire lifecycle of the proposed project activities:

- (i) The proponent must obtain all other necessary permits, licenses and land concerts / ownership as may be applicable before implementation of the project.
- (ii) The proponent must implement and adopt precautionary approach by developing and implementing measures aimed at protection of the physical, biological and socioeconomic receiving environments.
- (iii) The proponent must contract an Environmental Control Officer/ Consultant / suitable in-house resources person to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and subcontractors.
- (iv) The proponent / Environmental Control Officer/ Consultant / suitable in-house resources person MUST work with the local experts in making sure that mitigation measures to minimise the impacts on receiving environment (physical, biological, and socioeconomic environments) are fully implemented and monitoring measures are put place.
- (v) Before undertaking detailed site-specific activities (implementing the actual physical disturbance of the land surface) such as creating internal access routes / servitude, the proponent /Environmental Control Officer/ Consultant / suitable in-house resources person should consider the sensitivity of the local area in terms of the habitat, local flora and fauna or relocation process and may work with or get advice from the fauna and flora specialist consultant / local experts as may be required.
- (vi) The proponent must provide human and financial resources, for the implementation of the proposed mitigations measures and effective environmental management and monitoring thereof throughout the lifecycle of the proposed project activities.
- (vii) The proponent must develop a simplified environmental induction and awareness programme for all the workforce, contractors and subcontractors and where contracted service providers are likely to cause negative environmental impacts, these will need to be identified and contract agreements need to be developed with costing provisions for environmental liabilities.
- (viii) The proponent must develop and implement a monitoring programme that will fit into the overall company's Environmental Policy and Management Systems (EMS), and.
- (ix) The proponent must /Environmental Coordinator / Consultant / Suitable in-house resource person must regularly (as may be required by the regulators) prepare and submitted to the regulators environmental monitoring reports as maybe required by law.

All the responsibilities to ensure that the EMP recommendations are executed accordingly, rest with the City of Windhoek. The developer / contractor/ subcontractor must provide all appropriate resource required for the effective implementation of mitigation measures as provided in the EMP Chapter 6 of this Report.

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 objectives.

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2. SPECIFIC FAUNA AND FLORA

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9. ANNEXES

9.1 EAP CV and BID

9.2 Proof of Previous Public and Stakeholder Consultations