PLANTS, ANIMALS & TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED ADDITION OF TWO SYNCHRONOUS CONDENSERS TO THE EXISTING GROMIS SUBSTATION AND ITS ASSOCIATED INFRASTRUCTURES WITHIN JURISDICTION OF NAMA KHOI LOCAL MUNICIPALITY OF NAMAKWA DISTRICT MUNICIPALITY IN NORTHERN CAPE PROVINCE.



prepared in accordance with the "Protocol for the Specialist Assessment and minimum report content requirements for environmental impacts on Plant Species, Animal Species, and Terrestrial Biodiversity"

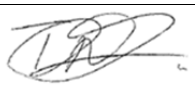
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October 2026

DOCUMENT CONTROL RECORD

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DOCUMENT CONTROL	
Document Title	**PLANTS, ANIMALS & TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED ADDITION OF TWO SYNCHRONOUS CONDENSERS TO THE EXISTING GROMIS SUBSTATION AND ITS ASSOCIATED INFRASTRUCTURES WITHIN JURISDICTION OF NAMA KHOI LOCAL MUNICIPALITY OF NAMAKWA DISTRICT MUNICIPALITY IN NORTHERN CAPE PROVINCE**
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Date		**Date**	

REVISION DETAILS					
Rev	**Date**	**Revision Description**	**Prepared by**	**Checked by**	**Approved By**
0.0	12 May 2026	Draft Plants, Animals & Terrestrial Biodiversity Assessment	T Maluleke		
0.1	9 September 2026	Draft Plants, Animals & Terrestrial Biodiversity Assessment	T Maluleke		
Version		01			

CONDITIONS RELATING TO THIS REPORT

DECLARATION OF INTEREST

Ntumbuluko Consulting Pty (Ltd) has no vested interest in the property studied nor is it affiliated with any other person/body involved with the property and/or proposed development. Ntumbuluko Consulting Pty (Ltd) is not a subsidiary, legally or financially of the proponent. The study was undertaken by Mr Tshuxekani Maluleke, he is a registered Natural Scientists with the following details:

Specialist Name	Tshuxekani Maluleke (Wetland and Biodiversity Specialist)
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2017 Environmental Impact Assessment (EIA) Regulations, that: • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

	• All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.
Signature	
Date	2026//09/28

EXPERTISE OF THE SPECIALIST

Specialist	Role	Details
Tshuxekani Maluleke (Pr.Sci.Nat) Animal, Plant and Environmental Scientist	Fieldwork, primary author & sign-off	Tshuxekani is an independent professional natural scientist working as Environmental Scientist and Wetland / Aquatic and Terrestrial Ecologist at Ntumbuluko Consulting with a MSc in Environmental Science, BSc Honours in Zoology and BSc Honours in Animal, Plant & Environmental Sciences where he specialised in Animal, Plant and Environmental Sciences He is a registered Professional Natural Scientist (Pr. Sci. Nat.) with over 8 years' experience, having worked extensively on numerous Terrestrial Biodiversity and Animal species assessment projects across South Africa.

Selected Project Experience

- Avian and Ecology Impact Assessment Report For The Proposed Expansion of the Eskom Carolina Customer Network Center (CNC), located in the Chief Albert Luthuli Local Municipality, Gert Sibande District of Mpumalanga Province. 2024
- Animal Species Impact Assessment Report For The Proposed Development Of A 160 Megawatts Leano Alpha Energy Solar Project, in Steelpoort, Fetakgomo Tubatse Local Municipality, Sekhukhune District Municipality Limpopo Province. 2024
- Terrestrial Biodiversity Impact Assessment: Proposed Manyeleti Nature Reserve Bush Camp, Bushbuckridge Local Municipality, Mpumalanga Province. (2022)
- Terrestrial Biodiversity Assessment for the Proposed upgrade of the R40 Road, in the Bushbuckridge Local Municipality, Mpumalanga Province. (2022)
- The Proposed Maholisi Borrow Pit and Upgrading of the National Road R578 Section 1 From N1 to Maholisi in the Makhado Local Municipality Within Magisterial District of Vhembe District in Limpopo Province.2023

- Terrestrial Biodiversity Impact Assessment: The Proposed Construction of the Umflolozi-Mbewu (Theta) Transmission Line, Kwazulu-Natal Province.2023
- Biodiversity Impact Assessment: Doornbosch-Steelpoort Mine, Fetakgomo Tubatse Local Municipality, Sekhukhune District Municipality of Limpopo Province (2020).
- Ecological Assessments Report -Propose development of a poultry farm Magalies-2 in Magaliesburg, Gauteng Province (GDARDREF.NO: GAUT 002/17-18/E0050) January 2018
- Botanical Walkthrough Report as per condition 34 of the of the Environmental authorization for the proposed construction of a 100m×100m 88/22kv Dam switching station, three 88kv interconnector power lines and dismantling of the T-off arrangement within Rustenburg and Madibeng Municipalities, in the North West Province (2017).

QUALIFICATIONS

SPECIALIST	QUALIFICATION
Mr Tshuxekani Maluleke (SACNASP Reg. No. 120501)	MSc Environmental Sciences (Wits University) BSc Hons Zoology (University of Limpopo) BSc Hons Animal, Plant and Environmental Sciences (Wits University)

INDEMNITY

Although Ntumbuluko Consulting Pty (Ltd) exercises due care and diligence in rendering services and preparing documents, the client takes full responsibility for this report and its implementation in terms of the National Environmental Management Act of 1998, and exempt Ntumbuluko Consulting Pty (Ltd) and its associates and their sub-contractors from any legal responsibility based on the timing of the assessment, the result and the duration thereof, which has an influence on the credibility and accuracy of this report. Ntumbuluko Consulting Pty (Ltd) accepts no liability, and the client indemnifies Ntumbuluko Consulting Pty (Ltd) and its directors, managers, agents, and employees against all actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, directly or indirectly, by Ntumbuluko Consulting Pty (Ltd) and by the use of this document.

EXECUTIVE SUMMARY

Ntumbuluko Consulting (Pty) Ltd was appointed by QEMS Management and Business Solutions CC, on behalf of the National Transmission Company South Africa (NTCSA), to undertake a Plants, Animals and Terrestrial Biodiversity Assessment for the proposed installation of new synchronous condensers and associated infrastructure at the Gromis Substation, located within the Ubuntu Local Municipality of the Pixley Ka Seme District, Northern Cape Province. The purpose of this assessment was to determine the ecological suitability of the site for construction and to identify any potential biodiversity constraints.

A dry-season terrestrial biodiversity survey was conducted on 10 April 2026 using a stratified sampling approach across the full development footprint. Although seasonal limitations may have reduced detectability of certain plant species, the survey provided a reliable indication of the site's ecological condition. According to the Northern Cape Conservation Plan (C-Plan), the area is classified as an Other Natural Area (ONA), representing a natural or near-natural landscape that contributes to ecosystem functioning but is not designated as a priority conservation feature.

The site falls within the SKs 7 Namaqualand Strandveld vegetation unit, which is classified as Least Threatened. Disturbances associated with the existing substation infrastructure were evident, and no plant or animal Species of Conservation Concern (SCC) were recorded during the assessment. Overall terrestrial biodiversity sensitivity is therefore considered low, and no significant ecological constraints to the proposed development were identified.

The proposed installation of synchronous condensers is regarded as environmentally acceptable, provided that all recommended mitigation measures outlined in this report are fully implemented. Should any sensitive species be encountered during construction, appropriate permits must be obtained, and translocation must be undertaken under the guidance of the Environmental Control Officer (ECO).

Constructability Statement

From a constructability perspective, no fatal ecological constraints were identified, and the proposed installation of synchronous condensers can proceed, subject to adherence to the prescribed mitigation measures and ECO oversight to ensure environmentally responsible implementation.

TABLE OF CONTENTS

1. INTRODUCTION AND PROJECT DESCRIPTION 1
1.1 INTRODUCTION 1
1.2 PROJECT BACKGROUND 2
1.3 STUDY AREA 3
1.4 SITE SENSITIVITY VERIFICATION AND MINIMUM REPORT CONTENT REQUIREMENTS 5
1.5 TERMS OF REFERENCE AND OBJECTIVES 5
1.6 SCOPE OF STUDY 5
1.6.1 FLORAL STUDY: 5
1.6.2 FAUNAL STUDY: 6
1.7 LIMITATIONS AND ASSUMPTIONS 6
2. REPORT LEGISLATIVE FRAMEWORK 6
3. LEGAL FRAMEWORK 8
3.1 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO 107 OF 1998) (NEMA) AS AMENDED 8
3.2 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (ACT NO 10 OF 2004) (NEM: BA) 8
3.3 THE NATIONAL BIODIVERSITY FRAMEWORK (2017-2022) 9
3.4 CONSERVATION OF AGRICULTURAL RESOURCES ACT (ACT NO 43 OF 1983) (CARA): 9
3.5 THE NATIONAL FOREST ACT (ACT NO 84 OF 1998) (NFA) 9
3.6 CONVENTION ON BIOLOGICAL DIVERSITY 10
3.7 CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES) 10
3.8 CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS 10
3.9 THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE 11
3.10 CONVENTION ON WETLANDS (POPULARLY KNOWN AS THE RAMSAR CONVENTION) 11
3.11 WORLD HERITAGE CONVENTION (WHC) 11
3.12 RAMSAR CONVENTION 11
3.13 INTERNATIONAL PLANT PROTECTION CONVENTION (IPPC) 11
3.14 NORTHERN CAPE NATURE CONSERVATION ACT NO. 9 OF 2009 12
3.15 NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) 12
3.16 NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREA (NFEPA) STATUS 13
4. TERRESTRIAL BIOSIVERSITY METHODOLOGY 13

4.1 THE ASSESSMENT 13
4.2 SPECIES OF CONSERVATION CONCERN 14
4.3 SAMPLING PROTOCOL 14
4.4 VEGETATION MAPPING 15
4.5 FAUNA SURVEY 16
4.6 SENSITIVITY ASSESSMENT 16
4.7 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT 17
4.7.1 IMPACT RATING METHODOLOGY 17
5. SITE CHARACTERISTICS 24
5.1 GEOLOGY & SOILS 24
5.2 CLIMATE 24
5.3 VEGETATION TYPE- NAMAQUALAND STRANDVELD (SKs 7) 24
5.3.1 Distribution of the Vegetation Unit 24
5.3.2 Conservation Status of the Vegetation Unit 25
5.4 IMPORTANT TAXA ASSOCIATED WITH THE STUDY SITE 27
5.5 2024 NORTHERN CAPE BIODIVERSITY SPATIAL PLAN 28
6. RESULTS 30
6.1 GENERAL OVERVIEW OF THE PROJECT AREA 30
6.2 VEGETATION TYPES RECORDED ON SITE 32
6.3 ETHNOBOTANICAL PLANT SPECIES 34
6.4 PLANT SPECIES OF CONSERVATION CONCERN 34
6.5 ALIEN INVASIVE SPECIES PRESENT ON SITE 35
6.6 FAUNAL ASSESSMENT 36
6.6.1 Fauna And Avi-Fauna 36
6.6.2 Invertebrates 38
7. TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT 40
7.1 GENERAL IMPACT ASSESSMENT 41
7.2 CUMULATIVE IMPACTS: LOSS OF VEGETATION AND HABITAT 46
8. IMPACT STATEMENT, CONCLUSIONS AND RECOMMENDATIONS 48
9. STATEMENT AND OPINION OF THE SPECIALIST 48
10. REFERENCES 49

LIST OF FIGURES

Figure 1-1:Locality Map 4
Figure 4-1: Survey Path followed on the 10 April 2026. 15
Figure 5-1:Vegetation Map 26

Figure 5-2:Sensitivity Map..... 29
Figure 6-1: Overview of the site with evidence of the dominant shrubs. 30
Figure 6-2:Evidence of the disturbance associated with existing Gromis Substation, powerline and the mining activities acquiring on the neighbouring property. 31
Figure 6-3: Dominant vegetation observed onsite. 31
Figure 6-4: Overview of the potential laydown area. 32
Figure 6-5: Babiana thunbergii observed onsite. 33
Figure 6-6: Agathosma elata observed onsite. 33
Figure 6-7: Argyrolobium velutinum observed onsite. 34
Figure 6-8: Duiker observed onsite. 37
Figure 6-9: Droppings observed onsite. 38
Figure 6-10; Molluscs Shells observed onsite. 39

LIST OF TABLES

Table 2-1: Requirements of a Terrestrial Biodiversity Assessment Report. 7
Table 4-1: Criteria for establishing Site Ecological importance and description of criteria. 17
Table 4-2: Biodiversity Impact Assessment Parameter Ratings 19
Table 4-3: Probability Consequence Matrix. 22
Table 4-4: Significance Threshold Limits. 22
Table 5-1: Important Taxa within the study site (Mucina and Rutherford 2006) 27
Table 7-1: Mitigation hierarchy of impacts 40
Table 7-2: Assessment of impacts associated with the proposed development. 41
Table 7-3: Loss of habitat during operation phase 44
Table 7-4: Loss of habitat during decommissioning 44
Table 7-5: Loss of habitat during post-closure phase 45
Table 7-6: Cumulative Impact Assessment: Loss of Vegetation and Habitat. 47

DEFINITIONS

Alien animal	(a) Any live vertebrate, including a bird and a reptile, but excluding a fish, belonging to a species or subspecies that is not a recognised domestic species and the natural habitat of which is not in the Republic; or (b) The egg of such vertebrate.
Biodiversity	Means the diversity of animals, plants or other organisms, including the diversity of animals, plants or other organisms found within and between— (a) Ecosystems; (b) Habitats; (c) The ecological complexes of which these systems and habitats are part; and (d) Species.
CITES	Means the Convention on International Trade in Endangered Species of Wild Fauna and Flora;
Endangered Species	Means a species is endangered when it is facing a very high risk of extinction in the wild in the near future and includes— (*a*) Any living or dead specimen of such a species; or (*b*) Any egg, skin, bone, feather, seed, flower or any other part or derivative of such a species.
Environment	Means the surroundings within which humans exist and that are made up of— (*a*) The land, water and atmosphere of the earth; (*b*) Microorganisms, plant and animal life; (*c*) Any part or combination of (*a*) and (*b*) and the interrelationships amongst and between them; and (*d*) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;
Indigenous plant	(*a*) Means any living or dead plant which is indigenous to the Republic, whether artificially propagated or in its wild state; and (*b*) Includes the flower, pollen, seed, cone, fruit, bulb, tuber, stem or root or any other part or derivative of such plant but does not include a plant declared a weed in terms of any legislation.
Protected area	Means— (*a*) A provincial nature reserves; (*b*) A site of ecological importance; (*c*) A protected environment; (*d*) A private nature reserves; or (*e*) A resource use area.

Protected environment	Means an area declared a Protected Environment or Private Nature Reserve in terms of section 21 (1) (*a*).
Rare species	Means a species of fauna and flora referred to in section 68 (*a*) (ii), and includes— (*a*) any living or dead specimen of such a species; or (*e*) any egg, skin, bone, feather, seed, flower or any other part or derivative of such a species.

1. INTRODUCTION AND PROJECT DESCRIPTION

1.1 INTRODUCTION

Ntumbuluko Consulting (Pty) Ltd was appointed by QEMS Management and Business Solutions CC, on behalf of the National Transmission Company South Africa (NTCSA), to undertake a Plants, Animals and Terrestrial Biodiversity Assessment for the proposed installation of new synchronous condensers at the Gromis substation and its associated infrastructures within jurisdiction of the Ubuntu Local Municipality, under the Pixley Ka Seme District Municipality, in the Northern Cape Province. The study aims to determine the site's suitability for constructability from a plants, animals, and terrestrial biodiversity sensitivity perspective.

The purpose of this study is to describe and characterise the terrestrial environment, habitats, species present on site. A wet season terrestrial biodiversity survey was conducted on the **10 April 2026**. The survey covered the entirety of the proposed development, with a stratified sampling methodology.

This assessment follows the requirements of the Environmental Impact Assessment Regulations, as promulgated in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), published in the Government Notice (GN). No. 320 in terms of NEMA, dated 20 March 2020 for Terrestrial Biodiversity, and in GN. No. 1150 dated 30 October 2020 for Terrestrial Plant Species and Terrestrial Animal Species themes.

As per these Regulations, the approach for assessing sensitivity with respect to Terrestrial Biodiversity, Plant and Animal Species is in accordance with guidelines described in the latest version of the "Species Environmental Assessment Guideline", available at https://bgis.sanbi.org/. The results of the screening tool, together with the site sensitivity verification report (SSVR), ultimately determined the minimum report content requirements. As per the results of the Screening Report generated for the proposed development the Plant Species and Plant Species themes are classified as "Medium" respectively, while the Terrestrial Biodiversity theme was classified as "Low". Based on the results of the site inspection, a full Terrestrial Biodiversity Impact Assessment, including plants and animals, has been undertaken for the project area. The findings and recommendations of this report are intended to inform the Environmental Assessment

Practitioner (EAP) and regulatory authorities to make informed decisions as to the ecological viability or constructability of the proposed development.

1.2 PROJECT BACKGROUND

NTCSA proposes to expand the Gromis Substation by approximately 7 hectares, increasing the current substation footprint from approximately 12 hectares to 19 hectares. The proposed development will include the installation of two Synchronous Condensers (SynCons), associated infrastructure, temporary laydown areas of approximately 6 hectares, and an access road. The proposed access road will be located within the designated laydown area and will provide access to the construction and operational areas of the expanded substation.

The proposed expansion is intended to accommodate the installation and operation of the two SynCons and associated infrastructure at the existing Gromis Substation located within the jurisdiction of the Nama Khoi Local Municipality in the Namakwa District Municipality of the Northern Cape Province. NTCSA plans to implement SynCons to enhance grid reliability and grow renewable energy adoption. SynCons will provide several ancillary energy services, increasing rotating inertia in order to improve grid stability. The SynCons do not generate power; however, through their inertial, rotating mass provide grid stability to the local area of the national transmission grid (**Figure 1-1**).

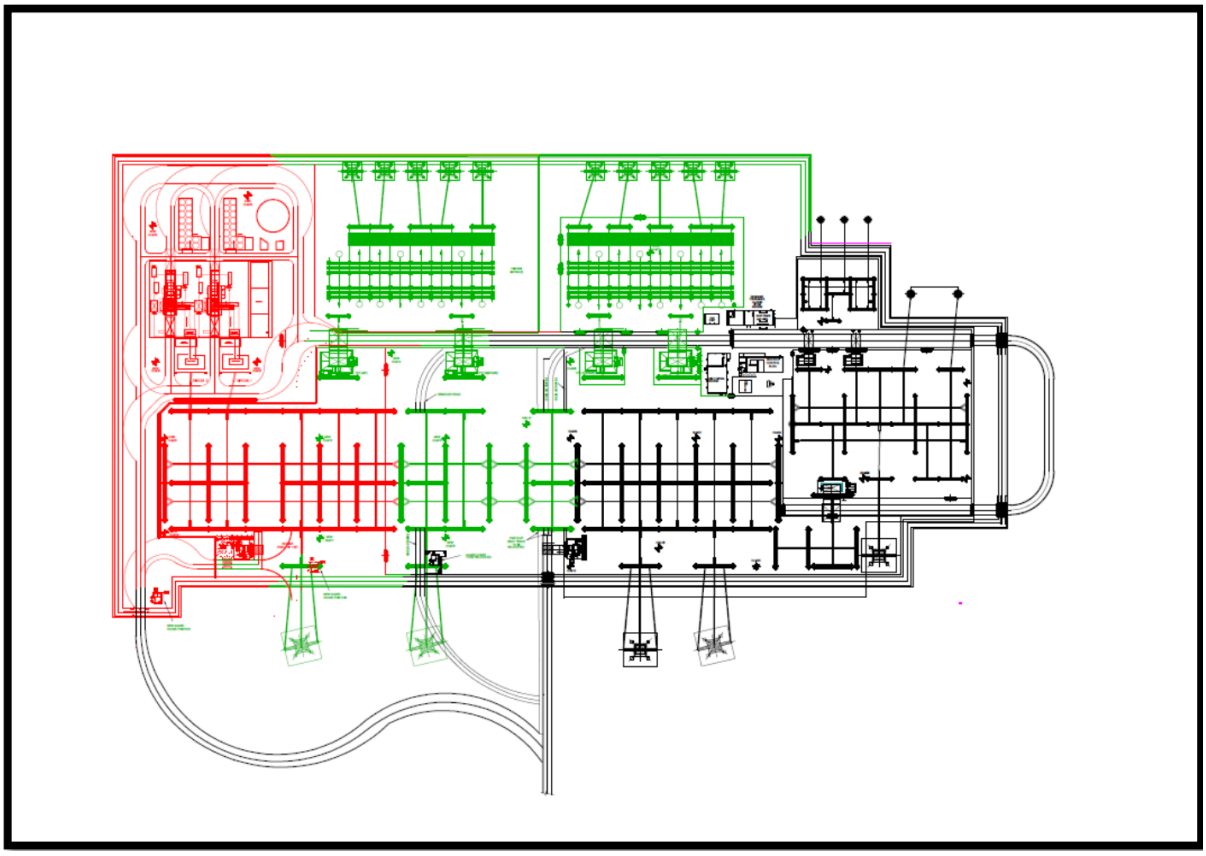


Figure 1-1: Layout Plan

1.3 STUDY AREA

The proposed expansion site is located on Farm Dikgat No. 195 and covers approximately 7 hectares for the synchronous condenser expansion area and an additional 6 hectares for the temporary laydown area. (**Figure 1-2**). The site is situated near the mine along the R355 Road, approximately 0.95 km north of the existing Gromis Substation and about 68.30 km southwest of Springbok Town within the Nama Khoi Local Municipality, Namakwa District Municipality, Northern Cape Province. The proposed development falls within the Strategic Transmission Corridor (Figure 3). The central coordinates of the site are 29°36'4.71"S and 17°10'34.48"E. The site falls within the jurisdiction of the Nama Khoi Local Municipality of Namakwa District Municipality in Northern Cape Province.

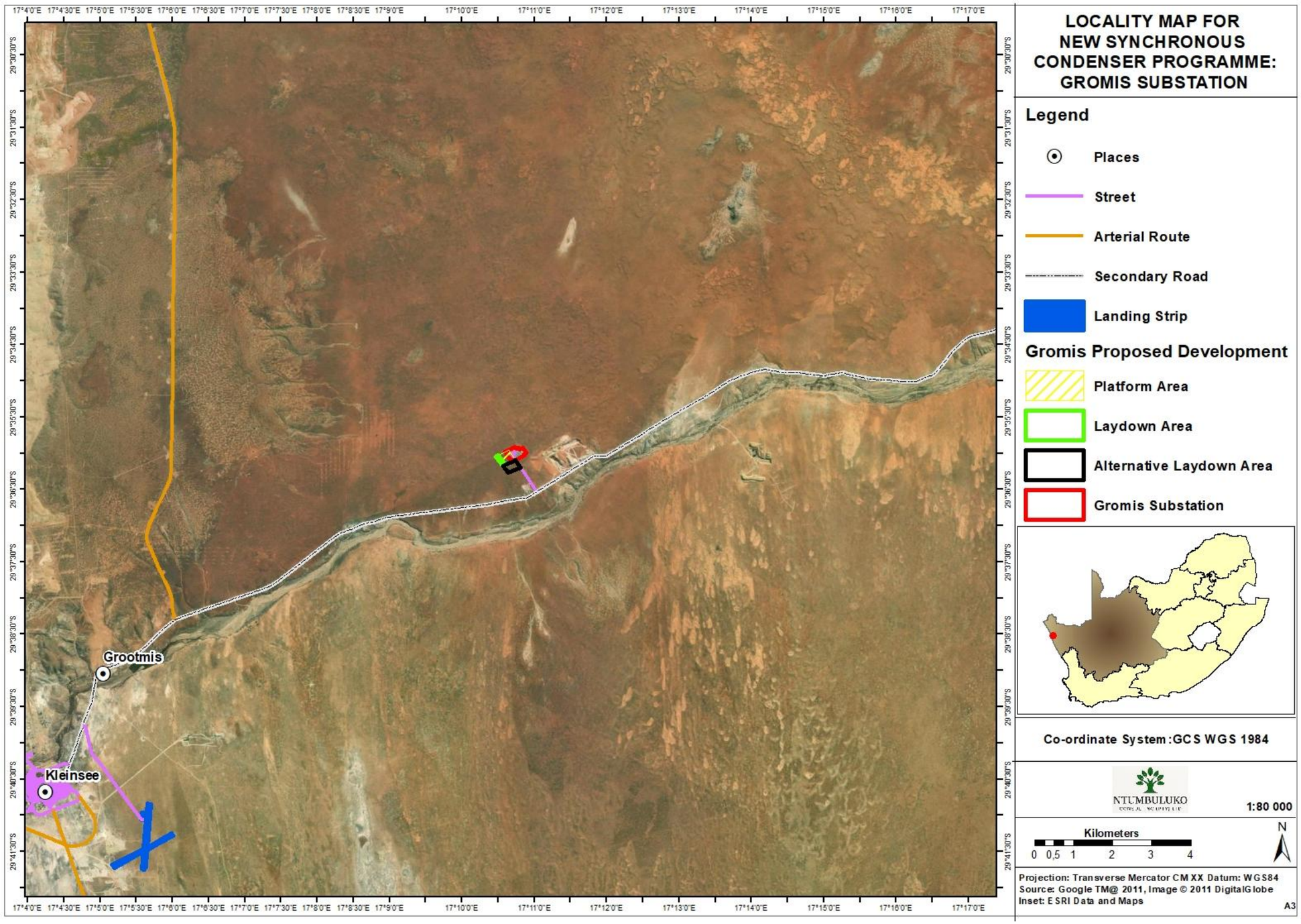


Figure 1-2:Locality Map

1.4 SITE SENSITIVITY VERIFICATION AND MINIMUM REPORT CONTENT REQUIREMENTS

In terms of the Protocol for the Specialist Assessment and Minimum Reporting Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN R. 320 of 2020) and Terrestrial Animal and Plant Species (GN R. 1150), prior to the commencement of a specialist assessment, the current use of the land and the potential environmental sensitivity of the site under consideration as identified by the screening tool, must be confirmed by undertaking a site sensitivity verification. The results of the screening tool, together with the site sensitivity verification, ultimately determines the minimum report content requirements.

1.5 TERMS OF REFERENCE AND OBJECTIVES

Ntumbuluko Consulting (Pty) Ltd has been appointed to undertake the following specialist functions:

- Describe and map the vegetation types in the study area.
- Describe the biodiversity and ecological state of each vegetation unit.
- Identify plant and animal species of conservation concern (Red Data List, PNCO and TOPS lists). In the case of the fauna, this was done at a desktop level.
- Identify alien plant species, assess the invasive potential and recommend management procedures.
- Assess the potential impacts of the proposed project on both the fauna and flora.
- Provide mitigation measures, rehabilitation process and/or vegetation removal procedures that would reduce the potential impacts of the developments on biodiversity.

1.6 SCOPE OF STUDY

1.6.1 FLORAL STUDY:

- Identify sensitive vegetation types and critical biodiversity areas on site.
- Identify Critical Biodiversity and Ecological Support Areas onsite.
- Describe the potential direct, indirect and cumulative negative and positive impacts of the proposed activity on the vegetation species during construction, operation and decommissioning phases of the project.

- Provide monitoring requirements, mitigation measures and recommendations.

1.6.2 FAUNAL STUDY:

- Describe the existing micro-habitats, and the species associated with those habitats.
- Provide a description of species composition and conservation status in terms of protected, endangered or vulnerable faunal species.
    - This description will include species which are likely to occur within, traverse across or forage within the proposed project area, as well as species which may not necessarily occur on site, but which are likely to be impacted upon as a result of the proposed development.

1.7 LIMITATIONS AND ASSUMPTIONS

This report is based on current available information and, as a result, the following limitations and assumptions are implicit:

- The report is based on a project description received from the client.
- The study was done during a single day over a single season.
- Species of Conservation Concern (SCC) are difficult to find and difficult to identify, thus species described in this report do not comprise an exhaustive list. It is almost certain that additional SCCs will be found during construction and operation of the development.
- The specialist responsible for this study reserves the right to amend this report, recommendations and/or conclusions at any stage should any additional or otherwise significant information come to light.

2. REPORT LEGISLATIVE FRAMEWORK

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity, as per Government Notice 320 published in terms of NEMA, dated 20 March 2020. "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Act, 1998, when applying for Environmental Authorisation"-section 3, subsection 1:

- An applicant intending to undertake an activity identified in the scope of the protocol, on a site identified on the screening tool as being of 'Very High sensitivity

for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment; however

- Where the information gathered from the site sensitivity verification differs from the designation of Very High terrestrial biodiversity sensitivity on the screening tool and it is found to be of a Low sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.

The site sensitivity verification, which included both a desktop assessment and an on-site field survey, confirmed that the proposed development is located within an area classified as Medium sensitivity for both the Animal Species Theme and the Plant Species Theme. The Terrestrial Biodiversity Theme was verified to be of Low sensitivity. Based on these findings, a Terrestrial Biodiversity Impact Assessment is required and will be undertaken and submitted as part of the environmental application for this project. As per sections 2 and 3 of the protocol discussed above, a Terrestrial Biodiversity Compliance Statement must contain the information as presented in **Table 2-1** below.

Table 2-1: Requirements of a Terrestrial Biodiversity Assessment Report.

Specialist Report Requirements According to GNR 320.		Chapter
Terrestrial Biodiversity		
3.1	The **Animal**, Plant and **Terrestrial Biodiversity Specialist** Assessment Report must contain, as a minimum, the following information:	
3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page I-V
3.1.2	A signed statement of independence by the specialist;	Page I-V
3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Chapter 1 Page 1
3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 4
3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 4
3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 5.5
3.1.7	Additional environmental impacts expected from the proposed development;	Chapter 7
3.1.8	Any direct, indirect, and cumulative impacts of the proposed development;	Chapter 7
3.1.9	The degree to which the impacts and risks can be mitigated;	Chapter 7
3.1.10	The degree to which the impacts and risks can be reversed;	Chapter 7
3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources;	Chapter 7
3.1.12	Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Chapter 7
3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	N/A

3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, iXf it should receive approval or not; and	Chapter 9
3.1.15	Any conditions to which this statement is subjected.	Chapters 8.9 and 10
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.	N/A
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	N/A

A signed copy of the Terrestrial Biodiversity Report must be appended to the Basic Assessment Report or Environmental Impact Assessment Report if necessary.

3. LEGAL FRAMEWORK

The following national and provincial legislative guidelines and requirements were followed as part of this study:

3.1 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO 107 OF 1998) (NEMA) AS AMENDED

This Act embraces all three (3) fields of environmental concern namely: resource conservation and exploitation; pollution control and waste management; and land-use planning and development. The environmental management principles include the duty of care for wetlands and special attention is given to management and planning procedures. NEMA provides for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (ACT NO 10 OF 2004) (NEM: BA)

NEMBA was signed into law in mid-2004 and entered into effect on 1 September 2004. NEM: BA provides for the consolidation of biodiversity legislation through establishing national norms and standards for the management of biodiversity across all sectors and by different management authorities. Certain activities, known as Restricted Activities, are regulated on listed species using permits by a special set of regulations published under

the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing and exporting, and selling.

3.3 THE NATIONAL BIODIVERSITY FRAMEWORK (2017-2022)

The National Biodiversity Framework (NBF) is a requirement under Section 38 of the National Environmental Management: Biodiversity Act (Act 10 of 2004, hereafter referred to as the 'Biodiversity Act'). The NBF is a short to medium-term coordination tool that shows the alignment between the strategic objectives and outcomes identified in the National Biodiversity Strategy and Action Plan (NBSAP v.2, 2015) and other key national strategies, frameworks and systems that currently guide the work of the biodiversity sector and identifies mechanisms through which this work is coordinated. It also identifies a set of interventions or "acceleration measures" that can unlock or fast-track implementation of the NBSAP and indicates the relative roles of the many agencies involved in implementing these activities. The purpose of the NBF is not to provide a comprehensive review of all work currently being undertaken in the biodiversity sector, nor to list all of the actions required to conserve and manage South Africa's biodiversity in support of sustainable development.

3.4 CONSERVATION OF AGRICULTURAL RESOURCES ACT (ACT NO 43 OF 1983) (CARA):

This act regulates the utilization and protection of wetlands, soil conservation and all matters relating thereto; control and prevention of veld fires, control of weeds and invader plants, the prevention of water pollution resulting from farming practices and losses in biodiversity.

3.5 THE NATIONAL FOREST ACT (ACT NO 84 OF 1998) (NFA)

The main objective of the National Forests Act, 1998 is to promote the sustainable management and development of forests and to provide protection for certain forests and trees. This said protection is provided through the protection of all natural forests (Section 7 (1), the protection of all trees declared to be protected in terms of section 12(1) of the Act, and the regulation of certain activities in a proclaimed State Forest (Section 23(1)(a) – (k)). It should be noted that there are other environmental legislation administered by other State Departments that also regulate natural resources. The Act is responsible for:

- Promotes the sustainable management and development of forests for the benefit of all;

- Creates the conditions necessary to restructure forestry in South Africa;
- Provide special measures for the protection of certain forests and protected trees;
- Promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes;
- Promotes community forestry; and
- Promotes greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

3.6 CONVENTION ON BIOLOGICAL DIVERSITY

The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from commercial and other utilization of genetic resources. The agreement covers all ecosystems, species, and genetic resources.

3.7 CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)

The CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Through its three appendices, the Convention accords varying degrees of protection to more than 30,000 plant and animal species.

3.8 CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

The CMS, or the Bonn Convention aims to conserve terrestrial, marine and avian migratory species throughout their range. Parties to the CMS work together to conserve migratory species and their habitats by providing strict protection for the most endangered migratory species, by concluding regional multilateral agreements for the conservation and management of specific species or categories of species, and by undertaking co-operative research and conservation activities.

3.9 THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

The objectives of the Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security. The Treaty covers all plant genetic resources for food and agriculture, while it's Multilateral System of Access and Benefit-sharing covers a specific list of 64 crops and forages. The Treaty also includes provisions on Farmers' Rights.

3.10 CONVENTION ON WETLANDS (POPULARLY KNOWN AS THE RAMSAR CONVENTION)

The Ramsar Convention provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The convention covers all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.

3.11 WORLD HERITAGE CONVENTION (WHC)

The primary mission of the WHC is to identify and conserve the world's cultural and natural heritage, by drawing up a list of sites whose outstanding values should be preserved for all humanity and to ensure their protection through a closer co-operation among nations.

3.12 RAMSAR CONVENTION

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Ramsar Convention is the only global environmental treaty that deals with a particular ecosystem. The treaty was adopted in the Iranian city of Ramsar in 1971 and the Convention's member countries cover all geographic regions of the planet.

3.13 INTERNATIONAL PLANT PROTECTION CONVENTION (IPPC)

The IPPC aims to protect world plant resources, including cultivated and wild plants by preventing the introduction and spread of plant pests and promoting the appropriate measures for their control. The convention provides the mechanisms to develop the

International Standards for Phytosanitary Measures (ISPMs), and to help countries to implement the ISPMs and the other obligations under the IPPC, by facilitating the national capacity development, national reporting and dispute settlement. The Secretariat of the IPPC is hosted by the Food and Agriculture Organization of the United Nations (FAO).

3.14 NORTHERN CAPE NATURE CONSERVATION ACT NO. 9 OF 2009

To provide for the sustainable utilisation of wild animals, aquatic biota and plants; to provide for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); to provide for offences and penalties for contraventions of the Act; to provide for the appointment of nature conservators to implement the provisions of the Act; to provide for the issuing of permits and other authorisations; and to provide for matters connected therewith.

3.15 NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways. Of specific importance to this application is Section 19 of the NWA, which states that an owner of land, a person in control of land or a person who occupies or uses the land which thereby causes, has caused or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring and must therefore comply with any prescribed waste standard or management practices.

Regulations GN 704 dated June 1999 under the NWA, 1998 (Act 36 of 1998) stipulates that no development activities may take place within the 1:100 year floodline of a watercourse, or within 100 m of the watercourse, whichever is the furthest.

Regulations GN 509 dated August 2016 under the Section 21 c and i water uses of the NWA, 1998 (Act No 36 of 1998) stipulates the:

"Extent of a watercourse" as:

(a) The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam.

"Regulated area of a watercourse" for section 21(c) or (i) of the Act water uses in terms of this Notice means:

(a) The outer edge of the 1 in 100-year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;

(b) In the absence of a determined 1 in 100-year flood line or riparian area the area within 100 m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or

(c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.

3.16 NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREA (NFEPA) STATUS

In an attempt to better conserve aquatic ecosystems, South Africa has recently categorised its river systems according to set ecological criteria (i.e. ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver et al. 2011) The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act (NEM:BA) biodiversity goals (Nel et al. 2011).

4. TERRESTRIAL BIOSIVERSITY METHODOLOGY

4.1 THE ASSESSMENT

A site inspection was undertaken on **10th of April 2026** to assess the site-specific ecological state, current land-use, identify potential sensitive ecosystems and identify fauna and flora species associated with the proposed project activities. The site inspection also served to identify potential impacts of the proposed development, and its impacts on the surrounding ecological environment.

In addition to the site visit, key resources that were consulted include the following:

- South African Vegetation Map (SA VEGMAP) (Mucina et al., 2018);
- The National Freshwater Ecosystem Priority Areas (NFEPA, 2011/14);

- The National Environmental Management: Biodiversity Act (NEM:BA), 2004: List of Threatened Ecosystems (2011);
- National Biodiversity Management: Biodiversity Act (NEMBA) List of Threatened or Protected Species (2005);
- The 2024 Northern Cape Biodiversity Spatial Plan ; and
- International Union for Conservation of Nature (IUCN).

4.2 SPECIES OF CONSERVATION CONCERN

Data on the known distribution and conservation status for each potential Species of Conservation Concern (SCC) has to be obtained to develop a list of 'Species of Concern'. These species are those that may be impacted significantly by the proposed activity. In general, these will be species that are already known to be threatened or at risk, or those that have restricted distributions (endemics) with a portion of their known range falling within the study area i.e. strict endemic and near endemic species. Species that are afforded special protection, notably those that are protected by NEM:BA (Act No. 10 of 2004).

4.3 SAMPLING PROTOCOL

The study site was visually surveyed to evaluate vegetation composition, and faunal assemblages and to provide detailed information on the plant communities present. The aim of the site inspection was to characterise and describe each fauna and flora community within the study site as well as identify areas of high sensitivity and SCC. Prior to the site visit, sampling locations representative of each vegetation type were identified (**Figure 4-1**). At these sampling locations, vegetation types within the study area were assessed and surveyed using plant identification guides and other published literature. Vegetation communities were then described according to the dominant set of species recorded from each type. These were mapped and assigned a sensitivity score using the methodology outlined in Species Environmental Assessment Guideline Document.

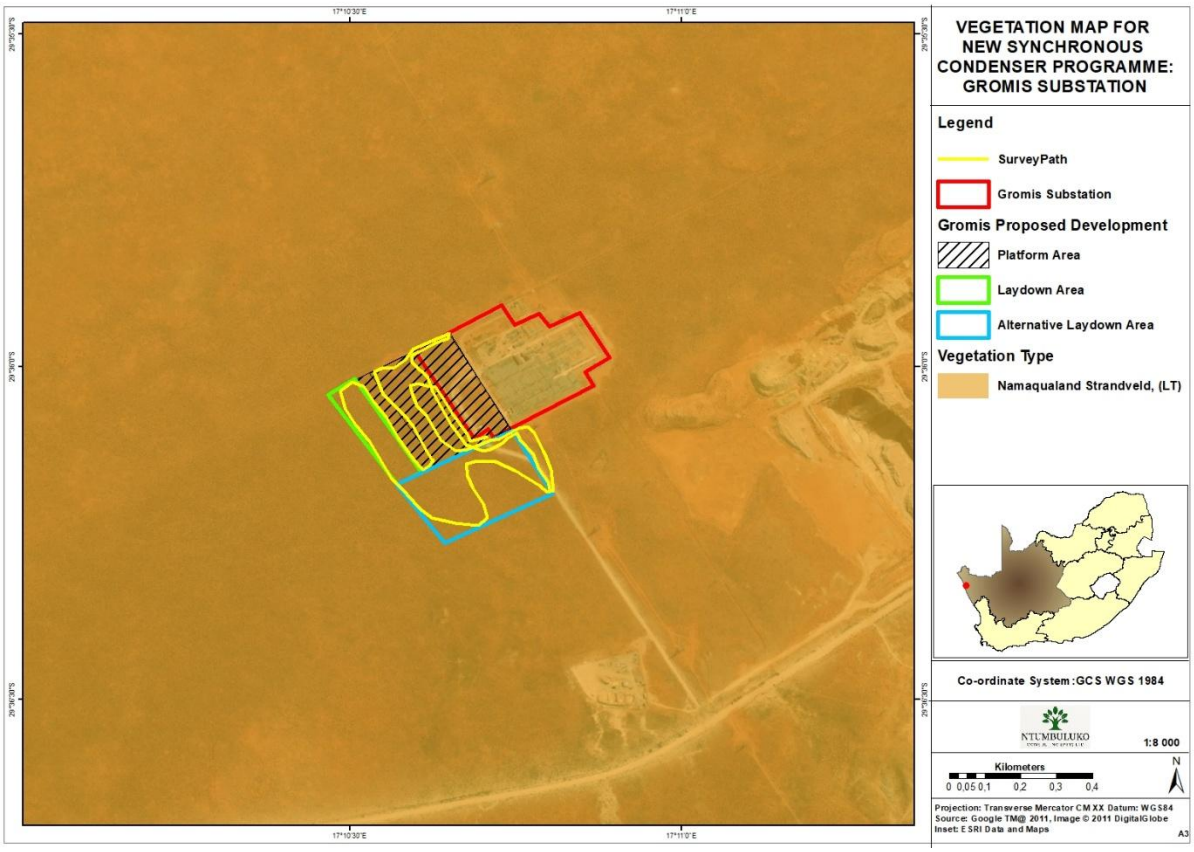


Figure 4-1: Survey Path followed on the 10 April 2026.

4.4 VEGETATION MAPPING

The revised SA VEGMAP (2018) was established in order to "provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before." The map was developed using a wealth of data provided by a network of ecologists, biologists and conservation planners that make periodic contributions to the project. These contributions have allowed for the best national vegetation map to date, the last being that of Acocks developed over 50 years ago. The SANBI Vegetation map informs finer scale bioregional plans and includes an additional 47 new vegetation units since its refinement in 2012.

The SA VEGMAP project has two main aims:

1. To determine the variation in and units of Southern African vegetation based on the analysis and synthesis of data from vegetation studies throughout the region, and
2. To compile a vegetation map- The aim of the map was to accurately reflect the distribution and variation on the vegetation and indicate the relationship of the vegetation with the environment. For this reason, the collective expertise of

vegetation scientists from various universities and state departments were harnessedto make this project as comprehensive as possible.

The map and accompanying book describes each vegetation type in detail, along with the most important species, including endemic species and those that are biogeographically important.

The SA VEGMAP is compared to actual conditions of vegetation observed onsite during the site assessment through mapping from aerial photographs, satellite images, literature descriptions (e.g. SANBI and ECBCP) and related data gathered on the ground.

4.5 FAUNA SURVEY

The faunal field survey comprised of the following and passive techniques:

- Active hand-searches are used for species that shelter in or particular microhabitats. Diagnostic features of the individuals that were captured were photographed at site and realised: and
- Visual and auditory searches- This typically comprised of traversing the PAOI and using a camera to view species from a distance without them being disturbed a well s listening to species calls. Due to the secretive behaviour as well as climatic and habitat characteristics of the project area, the use of signs and tracks was vital in recording species.

Relevant field guides and texts consulted for identification purposes included the following.

- Field Guide to snakes and other Reptiles of Southern Africa: and
- Mammals of Southern Africa and their Tracks and Signs.

4.6 SENSITIVITY ASSESSMENT

The Species Environmental Assessment guideline (SANBI, 2020) was applied to assess the Site Ecological Importance (SEI) of the project area. The habitats and the species of conservation concern in the project area were assessed based on their conservation importance, functional integrity and receptor resilience (**Table 4-1**). The combination of these resulted in a rating of SEI and interpretation of mitigation requirements based on the ratings.

The sensitivity map was developed using available spatial planning tools as well as by applying the SEI sensitivity based on the field survey.

Table 4-1: Criteria for establishing Site Ecological importance and description of criteria.

CRITERIA	DESCRIPTION
Conservation Importance (CI)	The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of IUCN Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range- restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.
Functional Integrity (FI)	A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivityto other natural areas and the degree of current persistent ecological impacts.
Biodiversity Importance (BI) is a function of Conservation Importance (CI) and theFunctional Integrity (FI) of a receptor.	
Receptor Resilience (RR)	The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.
Site Ecological Importance (SEI) is a function of Biodiversity Importance (BI) and ReceptorResilience (RR)	

4.7 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

4.7.1 IMPACT RATING METHODOLOGY

To ensure a balanced and objective approach to assessing the significance of potential impacts, a standardized rating scale was adopted which allows for the direct comparison of specialist studies. This rating scale has been developed in accordance with the requirements of the NEMA EIA Regulations (2014 and subsequent 2017 amendments).

The potential impacts of the proposed establishment of a powerline route (Corridor) is rated using a clearly defined rating scale. The significance rating formula is as follows:

Significance = Consequence x Probability

Where

Consequence = Type of Impact x (Intensity + Spatial Scale + Duration)

And

Probability = Likelihood of an Impact Occurring

In addition, the formula for calculating consequence:

Type of Impact = +1 (Positive Impact) or -1 (Negative Impact)

The weight assigned to the various parameters for positive and impacts to biodiversity is provided for in the formula and is presented in **Table 4-2**. The probability consequence matrix is displayed in **Table *4-3***, with the impact significance rating described in **Table 4-4**.

Table 4-2: Biodiversity Impact Assessment Parameter Ratings

RATING	INTENSITY		SPATIAL SCALE	DURATION	PROBABILITY
	Negative Impacts (Type of Impact = -1)	**Positive Impacts (Type of Impact = +1)**			
7	Very significant impact on the environment. Irreparable damage to highly valued species, habitat or ecosystem. Persistent severe damage. Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order.	Noticeable, on-going social and environmental benefits which have improved the livelihoods and living standards of the local community in general and the environmental features.	International The effect will occur across international borders.	Permanent: No Mitigation The impact will remain long after the life of the Project.	Certain/ Definite. There are sound scientific reasons to expect that the impact will definitely occur.
6	Significant impact on highly valued species, habitat or ecosystem. Irreparable damage to highly valued items of cultural significance or breakdown of social order.	Great improvement to livelihoods and living standards of a large percentage of population, as well as significant increase in the quality of the receiving environment.	National Will affect the entire country.	Beyond Project Life The impact will remain for some time after the life of a Project.	Almost certain/Highly probable It is most likely that the impact will occur.

5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread positive benefits to local communities which improves livelihoods, as well as a positive improvement to the receiving environment.	Province/ Region Will affect the entire province or region.	Project Life The impact will cease after the operational life span of the project	Likely The impact may occur.
4	Serious medium-term environmental effects. Environmental damage can be reversed in less than a year. On-going serious social issues. Significant damage to structures / items of cultural significance.	Average to intense social benefits to some people. Average to intense environmental enhancements.	Municipal Area Will affect the whole municipal area.	Long term 6-15 years.	Probable Has occurred here or elsewhere and could therefore occur.
3	Moderate, short-term effects but not affecting ecosystem function. Rehabilitation requires intervention of external specialists and can be done in less than a month.	Average, on-going positive benefits, not widespread but felt by some.	Local Extending across the site and to nearby settlements.	Medium term 1-5 years.	Unlikely Has not happened yet but could happen once in the lifetime of the Project, therefore there is a possibility

	On-going social issues. Damage to items of cultural significance.				that the impact will occur.
2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Low positive impacts experience by very few of population.	Limited Limited to the site and its immediate surroundings.	Short term Less than 1 year.	Rare/ improbable Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the Project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures.
1	Limited damage to minimal area of low significance that will have no impact on the environment.	Some low-level social and environmental benefits felt by very few of the population.	Very limited Limited to specific isolated parts of the site.	Immediate Less than 1 month.	Highly unlikely/None Expected never to happen.

	Minimal social impacts, low-level repairable damage to commonplace structures.				

Table 4-3: Probability Consequence Matrix.

	Significance

Probability	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Table 4-4: Significance Threshold Limits.

Score	Description	Rating
109 to 147	A very beneficial impact which may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change.	

Score	Description	Rating
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and/or social) environment.	
36 to 72	An important positive impact. The impact is insufficient by itself to justify the implementation of the project. These impacts will usually result in positive medium to long-term effect on the social and/or natural environment.	
3 to 35	A small positive impact. The impact will result in medium to short term effects on the social and/or natural environment.	
-3 to -35	An acceptable negative impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the social and/or natural environment.	
-36 to -72	An important negative impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the Project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the social and/or natural environment.	
-73 to -108	A serious negative impact which may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term change to the (natural and/or social) environment and result in severe effects.	
-109 to -147	A very serious negative impact which may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects.	

5. SITE CHARACTERISTICS

5.1 GEOLOGY & SOILS

The area is underlain by Quaternary stabilised aeolian deposits, comprising deep red to yellowish-red sands forming stable dune systems overlying marine sediments and granite gneisses. In places, weakly developed and scattered heuweltjies occur, particularly further inland from the coast. Along the shoreline, unstable white sand dune plumes originate from river mouths and extend northwards and northeastwards for up to 25 km. Dune systems show increasing stability north of Kleinzee. The broader landscape represents a mosaic of Ah, Ae, Af, Ai and Ag land types, reflecting the interplay between aeolian processes, underlying geology, and coastal geomorphology.

5.2 CLIMATE

The project area falls within an arid, winter-rainfall region with a Mean Annual Precipitation (MAP) of approximately 112 mm. Rainfall is highly seasonal, occurring almost exclusively between May and August, with little to no rainfall recorded in December and February. Frost is rare, reflecting the moderating influence of the coastal climate. Winter minimum temperatures typically range between 8–10 °C, while summer maximum temperatures generally remain just below 30 °C.

5.3 VEGETATION TYPE- NAMAQUALAND STRANDVELD (SKs 7)

The site falls within the Namaqualand Strandveld vegetation unit, characterised by a flat to gently undulating coastal peneplain. The vegetation comprises a low, species-rich shrubland dominated by a diverse assemblage of erect and creeping succulent shrubs including *Cephalophyllum*, *Didelta*, *Othonna*, *Ruschia*, *Tetragonia*, *Tripteris* and *Zygophyllum*. This is complemented by a range of non-succulent shrub species such as *Eriocephalus*, *Lebeckia*, *Pteronia* and *Salvia*. In years with favourable winter rainfall, the landscape supports spectacular displays of annuals interspersed with perennial flora, contributing to the high seasonal diversity typical of this vegetation type.

5.3.1 Distribution of the Vegetation Unit

The Namaqualand Strandveld is distributed across the Northern and Western Cape Provinces, extending from Gemboksvlei at the southern foothills of the Vyftienmyl se Berge in the southern Richtersveld, southwards to Donkins Bay (south of Doringbaai). In

the northern portion of its range particularly on the plains north and south of the Buffels River the unit extends up to 40 km inland. Much of the vegetation unit occurs inland, separated from the coastline by a belt of SKs 8 Namaqualand Coastal Duneveld, and only reaches the coast near the mouths of the Buffels, Swartlintjies, Spoeg, Bitter, and Groen Rivers.

South of Abraham Villiersbaai (south of the Groen River mouth), the Namaqualand Strandveld descends to the coastline and continues as an unevenly broad band extending as far south as Donkins Bay (north of Lamberts Bay). In the southern extent, the unit also penetrates inland along the Groen and Swartdoorn Rivers, as well as along the lower reaches of the Olifants River. The vegetation occurs across an altitudinal range of approximately 20–380 m.

5.3.2 Conservation Status of the Vegetation Unit

The primary threat to the Namaqualand Strandveld is coastal mining for heavy minerals, currently concentrated around the Brand-se-Baai area east of Lutzville, with mining activities expanding at an alarming rate. The national conservation target is 26%, yet none of this vegetation unit is formally protected within statutory conservation areas. Limited protection is afforded through a number of small private reserves, including Bojaansklip, Donkins Bay, Doorspring, Molyneux and Zeven Puts.

Approximately 10% of the vegetation unit has been transformed, primarily through mining, localized agriculture, and associated disturbances. The vegetation is also subject to extensive grazing, which may influence species composition and vegetation structure over time. Alien Acacia species pose an emerging threat, particularly in the southern portion of the distribution range. Overall, erosion levels remain very low, reflecting the stabilising influence of the deep sandy substrates and low rainfall regime[1].

[1] Remark: Given the **considerable geographic extent** of this vegetation unit spanning **over 2°36' of latitude** a more detailed **floristic, biogeographical, and vegetation-ecological analysis** is warranted. Additional data collection and analysis would likely support the subdivision of **SKs 7 Namaqualand Strandveld** into at least **two distinct vegetation units**, representing northern and southern variants with their own ecological characteristics.

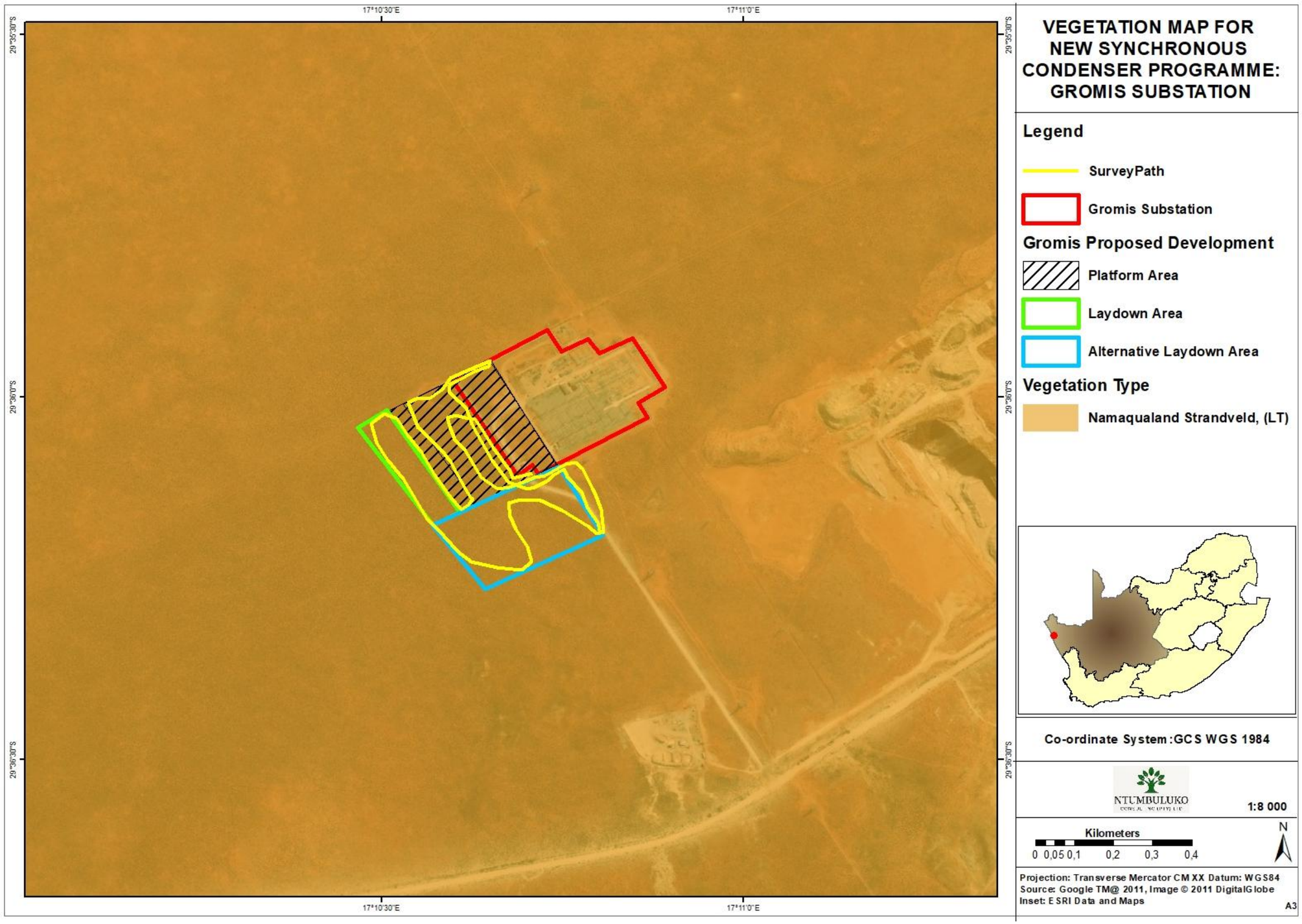


Figure 5-1: Vegetation Map

5.4 IMPORTANT TAXA ASSOCIATED WITH THE STUDY SITE

Table 5-1: Important Taxa within the study site (Mucina and Rutherford 2006)

PLANT FORM	SPECIES
Succulent Shrubs	*Didelta carnosa var. carnosa (d), Euphorbia burmannii (d), Othonna cylindrica (d), Ruschia brevibracteata (d), Salsola nollothensis (d), Tetragonia fruticosa (d), T. spicata (d), Zygophyllum morgsana (d), Adromischus mammillaris, Aridaria noctiflora subsp. noctiflora, Euphorbia tuberculata var. macowani, Exomis microphylla var. axyrioides, Manochlamys albicans, Othonna sedifolia, Salsola namibica, Sarcocaulon flavescens, Senecio sarcoides, Stoeberia utilis, Tylecodon paniculatus, T. reticulatus, T. wallichii subsp. wallichii.*
Tall Shrubs	*Nylandtia spinosa, Putterlickia pyracantha.*
Low Shrubs	*Galenia fruticosa (d), Pteronia onobromoides (d), Tripteris oppositifolia (d), Zygophyllum spinosum (d), Asparagus capensis var. capensis, Berkheya fruticosa, Chrysocoma longifolia, Galenia secunda, Helichrysum cylindriflorum, H. hebelepis, Hermannia cuneifolia, H. multiflora, H. trifurca, Hirpicium alienatum, Justicia cuneata subsp. latifolia, Lebeckia halenbergensis, L. spinescens, Limeum africanum, Nenax arenicola, Pelargonium praemorsum, Pharnaceum aurantium, P. confertum, Pteronia divaricata, Salvia lanceolata, Tripteris sinuata, Wiborgia fusca subsp. fusca. Semiparasitic Shrub: Thesium spinosum.*
Woody Climbers	*Asparagus fasciculatus, A. retrofractus, Microloma sagittatum.*
Herbs	*Oncosiphon suffruticosum (d), Amellus microglossus, Arctotheca calendula, Gazania jurineifolia subsp. scabra, Heliophila coronopifolia, Hermannia althaeifolia, Leidesia procumbens, Nemesia ligulata, Osteospermum pinnatum, Rhynchopsidium pumilum.*
Geophytic Herbs	*Bulbine frutescens, Oxalis annae, O. pes-caprae, O. purpurea.*
Succulent Herbs	*Aloe arenicola, Conicosia pugioniformis subsp. pugioniformis, Psilocaulon dinteri.*
Graminoids	*Ehrharta calycina (d), Schismus barbatus (d), Stipagrostis zeyheri subsp. macropus (d), Chaetobromus involucratus subsp. dregeanus, Cladoraphis cyperoides, Ehrharta barbinodis, E. delicatula, E. triandra, Pentaschistis airoides, Willdenowia incurvata.*

5.5 2024 NORTHERN CAPE BIODIVERSITY SPATIAL PLAN

The Northern Cape CBA Map identifies biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) which, together with protected areas, are important for the persistence of a viable representative sample of ecosystems and species, as well as the long-term ecological functioning of the landscape as a whole. The database consists of the following information:

1. Protected Areas (PA);
2. Critical Biodiversity Areas 1 (CBA1);
3. Critical Biodiversity Areas 2 (CBA2);
4. Ecological Support Area 1 (ESA1);
5. Ecological Support Area 2 (ESA2);
6. Other Natural Areas (ONA).

According to the Northern Cape Critical Biodiversity Areas (CBA) Map, the preferred site including the existing substation is situated within a Other Natural Areas (ONA) (**Figure 5-3**).Other Natural Areas (ONA) is a term commonly used in environmental planning, conservation assessments, and land-use classification systems to describe natural or semi-natural areas that do not fall under more formal conservation categories (like nature reserves, national parks, or protected wetlands) but still hold ecological value.

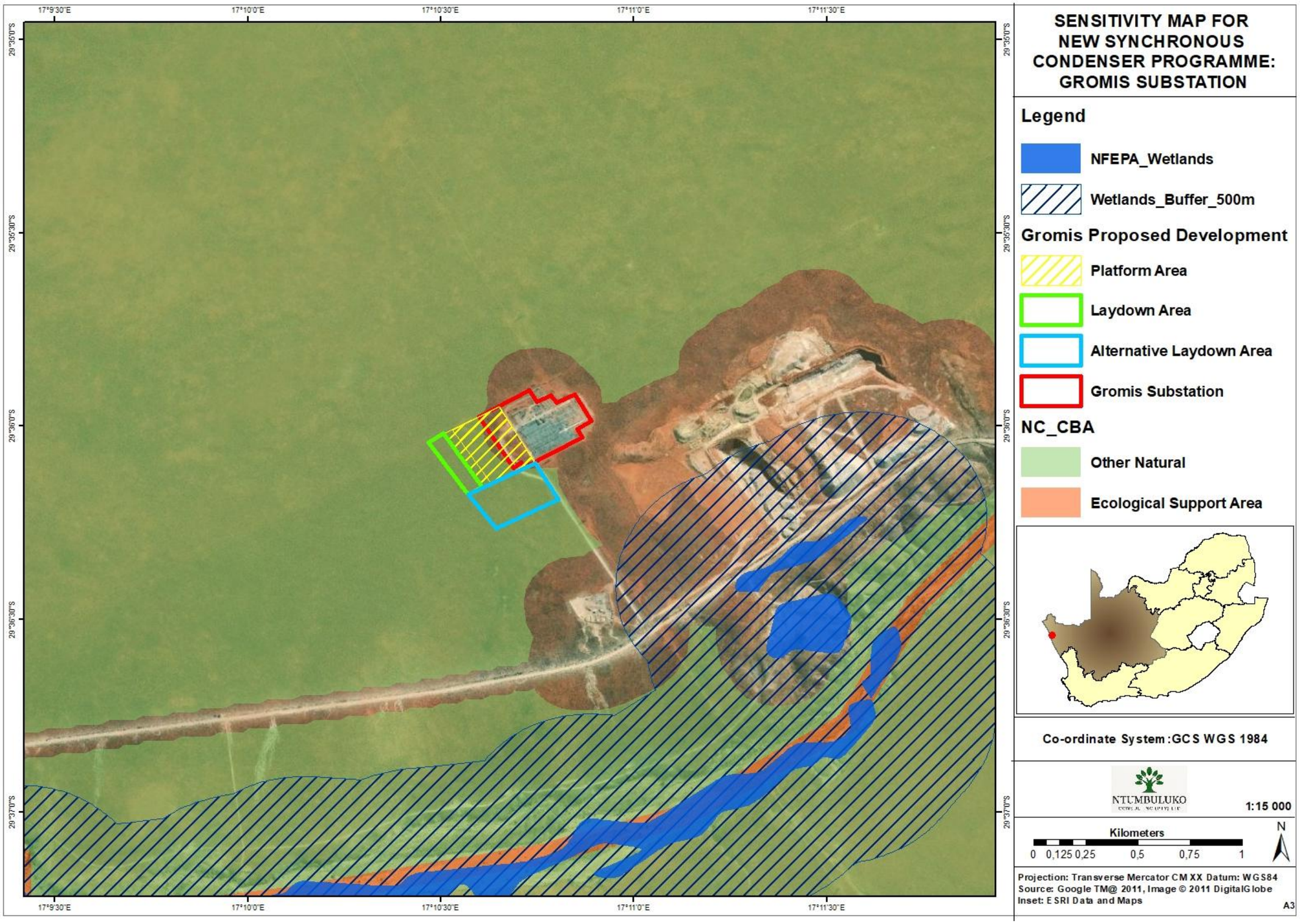


Figure 5-2:Sensitivity Map.

6. RESULTS

6.1 GENERAL OVERVIEW OF THE PROJECT AREA

While National level vegetation maps have described broad vegetation types, local conditions, and micro-habitats (rainfall, soil structure, rocky outcrops, etc.) can result in variations in plant composition. As such, site surveys are critical for the verification of desktop findings and establishing the baseline ecological conditions of a site. The site inspection conducted on 10 April 2026 confirmed that the area earmarked for the proposed infrastructure falls within the Namaqualand Strandveld (SKs 7) vegetation unit. The site supports a low, species-rich shrubland dominated by a diverse assemblage of erect and creeping succulent shrubs, including *Cephalophyllum*, *Didelta*, *Othonna*, *Ruschia*, *Tetragonia*, *Tripteris* and *Zygophyllum*. These shrubs are scattered across deep red sandy soils, consistent with the stabilised aeolian dune systems characteristic of this vegetation type.



Figure 6-1: Overview of the site with evidence of the dominant shrubs.

The site itself shows minimal disturbance, with natural vegetation largely intact. Disturbance is limited to the immediate footprint of the existing substation, the access road, and the powerline servitudes, where vegetation has been partially cleared or compacted as part of routine maintenance activities. Beyond these areas, the vegetation remains largely undisturbed.

However, significant anthropogenic impact is evident on the neighbouring property, where active mining operations are underway (**Figure 6-2**). This represents the most substantial alteration to the surrounding landscape and contrasts with the relatively intact condition of the project site (**Figure 6-3**).



Figure 6-2:Evidence of the disturbance associated with existing Gromis Substation, powerline and the mining activities acquiring on the neighbouring property.



Figure 6-3: Dominant vegetation observed onsite.

During the site inspection, the survey included an area that may serve as a potential laydown zone during construction, the area is 150m from the substation fence in the northern direction, and has been subjected to vegetation clearance, the vegetation is still representative of the Namaqualand Strandveld (**Figure 6-4**).

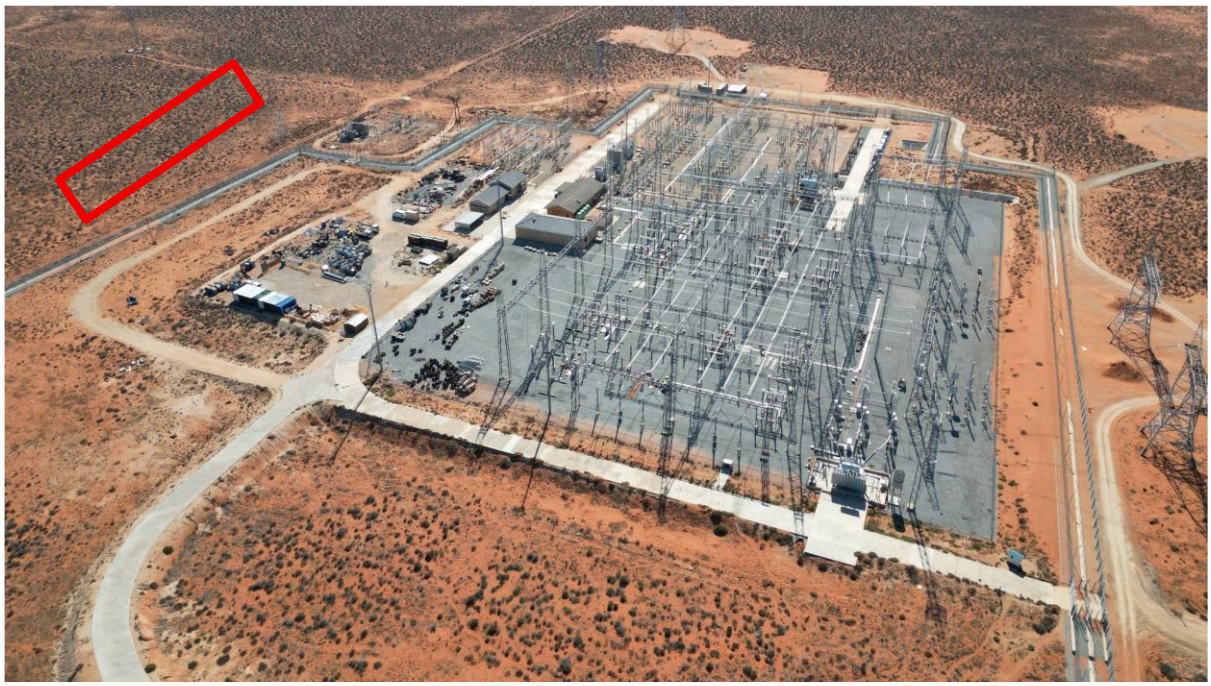


Figure 6-4: Overview of the potential laydown area.

6.2 VEGETATION TYPES RECORDED ON SITE

The species recorded onsite during the inspection are summarised below, providing an overview of the representative flora associated with the habitat present within the proposed development footprint.



Figure 6-5: Babiana thunbergii observed onsite.



Figure 6-6: *Agathosma elata* observed onsite.



Figure 6-7: *Argyrolobium velutinum* observed onsite.

6.3 ETHNOBOTANICAL PLANT SPECIES

Ethnobotany/ Ethnoecology is a branch of botany that focuses on the use of plants for medicines, cultural and recreational purposes. The overexploitation of indigenous plants for ethnobotanical purposes can be detrimental to populations of those particular plant species, and the other species that depend on its existence for their survival. South Africa has a rich diversity of medicinal plants that not only have a global significance but also have a cultural and historical role (van Wyk *et al.* 2009). There is a rapidly growing concern for conservation of medicinal plants that are dwindling in number due to illegal harvesting (Institute of Natural Resources 2003). This is particularly apparent in rural areas where medicinal plants are overexploited by traditional doctors (Mazid *et al.,* 2012).

No species of notable ethnobotanical value were identified within the development footprint during the survey; however, it remains possible that some of the existing plant species may hold traditional or occasional use for surrounding Indigenous communities.

6.4 PLANT SPECIES OF CONSERVATION CONCERN

According to provincial and national assessments, the Northern Cape is home to an estimated 5 400 plant species, occurring across six major biomes including the Succulent Karoo and Richtersveld; more than 30% of these species are endemic, and many have very restricted ranges.

A substantial number of Northern Cape plants are considered rare or threatened due to habitat loss, mining impacts, illegal collection (notably succulent poaching), and climate change, with recent Red List updates showing rising threat levels for several succulent groups[2]. The plant species expected to occur within the study site are outlined below:

Schedule 1: Specially Protected Flora

- Family Geraniaceae - Pelargonium spp. all species

Schedule 2 Protected Flora

- Amaryllidaceae – All species
- Apiaceae – All Species
- Apocynaceae – All Species
- Asphodelaceae – All species except Aloe ferox
- Iridaceae – All species
- Mesembryanthemaceae – All species
- Crassulaceae - All species except those listed in Schedule 1
- Euphorbiaceae - Euphorbia spp. All species
- Oxalidaceae - Oxalis spp All species
- Portulacaceae - Anacampseros spp. All species

6.5 ALIEN INVASIVE SPECIES PRESENT ON SITE

An "invasive species" is any species whose establishment and spread outside of its natural distribution range (i) threatens ecosystems, habitats or other species or has a demonstrable potential to threaten ecosystems, habitats or other species; and (ii) may result in economic or environmental harm or harm to human health. Invasive alien plant species are globally considered as one of the greatest threats to the environment, biodiversity, ecosystem integrity and the economy.

According to the Conservation of Agricultural Resources Act (No. 43 of 1983 - Regulation 15, 30 March 2001) (CARA), for agricultural land, and the National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA), for natural areas, invasive alien plant species should be controlled and eradicated with an emphasis on urgent action in biodiversity priority areas. NEMBA published a list of Alien and Invasive Species (No 599)

[2] F – Flora | Northern Cape South Africa

in 2014 which regulates the management of alien and invasive plants in natural environments.

During the site inspection, no invasive species were observed within the project area. The vegetation present comprised predominantly indigenous and naturally occurring species, with no evidence of alien or listed invasive plants emerging, regenerating, or encroaching into the surveyed footprint. Overall, the site currently reflects a low risk of invasive species proliferation, and no immediate management interventions are required based on the conditions observed at the time of assessment.

6.6 FAUNAL ASSESSMENT

6.6.1 Fauna And Avi-Fauna

The fauna of the broader area is represented by invertebrates and vertebrates, with the invertebrate component being largely unstudied. The broader area supports about 46 mammal species including the unusual straw-coloured fruit bat (*Eidolon helvum*) and the beautiful spectacled dormouse (*Graphiurus ocularis*). The elusive and shy leopard (*Panthera pardus*) is a periodic visitor to the area. Reptile species (38) include black spitting cobra (*Naja nigricollis woodi*), common barking gecko (*Ptenopus garrulous maculatus*), and the colourful Southern rock agama (*Agama atra atra*). Amphibians are represented by 3 species, namely, Karoo toad (*Bufo gariepensis*), Cape river frog (*Rana fuscigula*) and the Namaqua caco (*Cacostrernum namaquensis*). There are 37 terrestrial invertebrate families represented in the arae with the largest being the Anthophoridae, Apidae, Colletidae, Fideliidae, Halictidae, Megachilidae and Melittidae (Bee) families with 270 species.

The broader area hosts about 96 bird species, including ostriches and one exotic species (the house sparrow). Notable birds are the threatened martial eagle, Ludwig's bustard, Kori bustard, Cape eagle owl, Verreaux's eagle, and the endemic cinnamon-breasted warbler (Source: http://denc.ncpg.gov.za). It is a fact that faunal diversity changes through space and time and are directly influenced by anthropogenic activities, including mining and overgrazing by livestock and human settlements (e.g., transformation of land) (Tilman et al., 1997; Chapin et al., 2000). **During the site inspection, a single duiker was observed grazing within the project area (Figure 6-8). The presence of this individual indicates that portions of the site still provide suitable foraging habitat for small to medium-sized antelope species, despite the broader landscape being subject to**

grazing, disturbance, and ongoing anthropogenic pressures. Apart from the presence of a dropping of small carnivorous mammal (Figure 6-9)- No additional mammalian species were recorded during the survey period.



Figure 6-8: Duiker observed onsite.



Figure 6-9: Droppings observed onsite.

Because of the disturbed nature of the larger site it is considered unlikely that the proposed project will have any significant impact on any of these species.

6.6.2 Invertebrates

Invertebrate activity within the project area was low, no Species of Conservation Concern or specialised habitat features were identified, consistent with the dry Karoo conditions and absence of riparian or moisture-dependent microhabitats. A few mollusc shells were also found (**Figure 6-10**); however, with no suitable aquatic habitat and no live individuals present, these are considered incidental and likely wind-blown from the coastline approximately 14 km away. Overall, the invertebrate assemblage reflects a disturbed but functioning ecosystem typical of an arid, modified Karoo landscape.

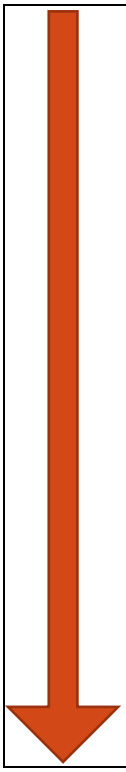


Figure 6-10; Molluscs Shells observed onsite.

7. TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

The impact assessment is aimed predicting potential impacts of the proposed projects. Impact assessment strives to avoid damage, loss of ecosystems services, and where they cannot be avoided, to reduce and mitigate these impacts (DEA, 2013). Offsets to compensate for loss of habitat are regarded as a last resort, after all efforts have been made to avoid, reduce and mitigate. The mitigation hierarchy is represented in **Table 7-1**.

Table 7-1: Mitigation hierarchy of impacts

	**Avoid or prevent**	Refers to considering options in project location, sitting, scale, layout, technology and phasing to avoid impacts on biodiversity, associated ecosystem services and people. This is the best option but is not always possible. Where environmental and social factors give rise to unacceptable negative impacts, the activity should not take place. In such cases, it is unlikely to be possible or appropriate to rely on the other steps in the mitigation.
	Minimise	Refers to considering alternatives in the project location, sitting, scale, layout, technology and phasing that would minimise impacts on biodiversity, associated ecosystem services. In cases where there are environmental constraints, every effort should be made to minimise impacts.
	Rehabilitate	Refers to rehabilitation of areas where impacts are unavoidable, and measures are provided to return impacted areas to near natural state or an agreed land use after mine closure. Rehabilitation can, however, fall short of replicating the diversity and complexity of natural systems.
	Offset	Refers to measures over and above rehabilitation to compensate for the residual negative impacts on biodiversity after every effort has been made to minimise and then rehabilitate the impacts. Biodiversity offsets can provide a mechanism to compensate for significant residual impacts on biodiversity.

A significant portion of the preferred site with the remaining natural habitat is anticipated to be disturbed due to the proposed construction and associated activities. The impact of the proposed activity will involve a loss of habitat for both flora and fauna (**Table 7-2**).

7.1 GENERAL IMPACT ASSESSMENT

Table 7-2: Assessment of impacts associated with the proposed development.

CONSTRUCTION PHASE

IMPACT 1: LOSS OF VEGETATION
Cause and Comment ***Direct Impact*** The clearing of land for the construction will result in the loss of vegetation. However, vegetation clearance will only be restricted to the project footprint. Therefore, the clearance of vegetation required for the required soil material is likely to impact on the extent and long-term conservation of this vegetation types. The overall significance of the project activities at this site, provided the recommended mitigation measures are implemented, would be moderate negative. ***Cumulative Impact*** The bulk of the vegetation is still intact, with evidence of disturbance along certain sections of the substation. The proposed development will have a negative impact on the vegetation onsite. The additional loss of vegetation as a consequence of the proposed development will therefore have a High cumulative impact. ***No-Go Alternative*** If the project does not go ahead, the current impacts associated with existing susbation will continue. However, these are relatively minor within the proposed site and as such, the No-go Alternative is classified as **low negative**.

Mitigation Measures:

- *Construction vehicles and machinery must not encroach into identified 'sensitive' areas or areas outside the project footprint. Refer to* **Figure 5-2**
- Topsoil (20 cm, where possible) must be collected and stored in an area of low sensitivity and used to rehabilitate impacted areas that are no longer required during the operational phase (e.g. laydown areas).
- Only indigenous species must be used for rehabilitation. The species include*d* in **Table 5-1** for the full list of indigenous species.
- Lay down area must not be located within any watercourses or drainage lines.
- Employees must be prohibited from making open fires during the construction phase.

Significance Assessment:

Impact	Nature	Duration	Extent	Severity	Likelihood	Significance Before Mitigation	Reversibility	Irreplaceable Loss	Mitigation Potential	Significance After Mitigation
Available Site	Direct	Permanent	Study-Area	Moderate	Definite	**MODERATE (-)**	Reversible	Resource will be partly lost	Achievable	**MODERATE (-)**
Cumulative	Cumulative	Long-Term	Study-Area	Slight	Possible	**LOW (-)**	It is difficult to implement mitigation measures specific to the cumulative impacts as the applicant only has jurisdiction over their development and not over other developments or farming activities in the area. However, it is imperative that the applicant			**N/A**

							implement the mitigation measures listed above for the direct impacts.	
No-Go	Direct	Short-Term	Localised	Moderate	Probable	**Low (-)**	**N/A**	

OPERATIONAL PHASE

No direct loss of habitat is expected during this phase of the project. Alien plant invasion is, however expected to occur. In addition, vehicular transport through the site may increase the risk of roadkill of fauna species that occur (**Table 7-3**).

Table 7-3: Loss of habitat during operation phase

Loss of habitat					
Phase	**Operational**				
Criteria	**Details / Discussion**				
Description of impact	• Establishment of alien plant species in disturbed areas				
Mitigation required	• Manage alien invasive species establishment continually through chemical or mechanical removal. • Reinstate vegetation cover through concurrent rehabilitation • Erect signage to control the speed limit for trucks and other vehicles moving through the site				
Parameters	***Intensity***	***Spatial scale***	***Duration***	***Probability***	***Significance***
Pre-Mitigation	Serious (4)	Limited (2)	Short-term (3-5 years) (3)	Likely (6)	Major (negative) (54)
Post Mitigation	Limited (1)	Minor (2)	Short-term (3-5 years) (3)	Likely (4)	Minor (negative) (24)

DECOMMISSIONING PHASE

No direct loss of habitat is expected during this phase of the project. Alien plant invasion is, however expected to occur as vehicles and machinery move throughout the site and disturb the soil (**Table 7-4**).

Table 7-4: Loss of habitat during decommissioning

Loss of habitat	
Phase	**Decommissioning**
Criteria	**Details / Discussion**

Description of impact	• Removal infrastructure and equipment • Disturbance of the soil • Vehicle operation				
Mitigation required	• Minimise the impacted area and revegetate with indigenous where disturbed • Avoid erosion, manage alien invasive species establishment, ensure the re-establishment of natural vegetation • Employ stormwater management measures				
Parameters	***Intensity***	***Spatial scale***	***Duration***	***Probability***	***Significance***
Pre-Mitigation	Very Significant (7)	National (6)	Permanent (6)	Likely (6)	Major (negative) (115)
Post Mitigation	Significant (6)	National (6)	Short-term (3-5 years) (3)	Likely (6)	Minor (negative) (90)

POST CLOSURE PHASE

No direct loss of habitat is expected during this phase of the project. Alien plant invasion should be monitored for up to 1-6 months after closure (**Table 7-5**).

Table 7-5: Loss of habitat during post-closure phase

Loss of habitat					
Phase	**Post-closure**				
Criteria	**Details / Discussion**				
Description of impact	• On-going establishment of alien plant species in disturbed areas				
Mitigation required	• Manage alien invasive species establishment continually through chemical or mechanical removal. • Revegetation of the site where previously disturbed.				
Parameters	***Intensity***	***Spatial scale***	***Duration***	***Probability***	***Significance***
Pre-Mitigation	Serious (4)	Limited (2)	Short-term (3-5 years) (3)	Likely (6)	Major (negative) (54)

Post Mitigation	Limited (1)	Minor (2)	Short-term (3-5 years) (3)	Likely (4)	Minor (negative) (24)

7.2 CUMULATIVE IMPACTS: LOSS OF VEGETATION AND HABITAT

The cumulative impact associated with vegetation clearing and habitat loss should be considered in the context of the existing Gromis Substation, associated transmission infrastructure, and other electrical substations and energy-related developments within the broader Nama Khoi Local Municipality and Namakwa District. The establishment and operation of these facilities have already resulted in varying degrees of habitat transformation and fragmentation within the surrounding landscape.

The proposed installation of two synchronous condensers and associated infrastructure will occur within the existing Gromis Substation footprint, which has previously been disturbed and transformed for electrical infrastructure purposes. Consequently, the project will not introduce a new disturbance node into the landscape but rather represents an expansion and intensification of an existing facility. The incremental loss of vegetation and habitat will therefore be limited when compared to the cumulative footprint of the existing substation network and associated power infrastructure within the region.

Nevertheless, the ongoing expansion of energy infrastructure contributes to the progressive reduction of natural habitat and may cumulatively affect ecological connectivity, habitat availability, and ecosystem functioning over time. These cumulative effects are particularly relevant where multiple developments occur within similar vegetation types or ecological corridors. However, given the highly localised extent of the proposed development, the already transformed nature of the project area, and the absence of extensive intact habitat within the immediate footprint, the project's contribution to regional cumulative habitat loss is expected to be negligible.

With the implementation of mitigation measures, including restricting disturbance to demarcated work areas and preventing unnecessary vegetation clearing, the cumulative impact on vegetation and habitat is assessed as being of Low significance and is unlikely to materially alter the ecological character or biodiversity functioning of the broader landscape. **Refer to Table 7-6 below for the cumulative impact assessment.**

Table 7-6: Cumulative Impact Assessment: Loss of Vegetation and Habitat.

Impact	Cumulative Loss of Vegetation and Habitat
Project Phase	Construction and Operation
Nature of Impact	The proposed installation of two synchronous condensers and associated infrastructure will result in further disturbance and loss of vegetation within the existing Gromis Substation footprint. When considered cumulatively with the existing Gromis Substation, surrounding substations, transmission line infrastructure, access roads, renewable energy developments, and other energy-related facilities within the Nama Khoi Local Municipality, the project contributes incrementally to ongoing habitat transformation and fragmentation within the broader landscape.
Impact Type	Direct, Indirect and Cumulative
Extent	Regional
Duration	Long-term
Intensity	Low to Moderate
Probability	Probable
Reversibility	Partially Reversible
Irreplaceable Loss of Resources	Low
Status	Negative
Confidence Level	High
Pre-Mitigation Significance	Medium
Mitigation Measures	• Restrict construction activities to demarcated work areas. • Utilise existing disturbed areas wherever feasible. • Minimise vegetation clearing and grubbing to the smallest practicable footprint. • Prevent off-road vehicle movements into adjacent natural habitat. • Stockpile topsoil separately and utilise it during rehabilitation. • Rehabilitate all temporarily disturbed areas following construction. • Implement erosion and stormwater control measures to prevent secondary habitat degradation. • Conduct environmental awareness training for construction personnel.
Extent (	Local to Regional
Duration (Post-Mitigation)	Long-term
Intensity (Post-Mitigation)	Low
Probability (Post-Mitigation)	Possible
Post-Mitigation Significance	Low
Residual Impact	Low
Impact	Acceptable with implementation of recommended mitigation measures.

8. IMPACT STATEMENT, CONCLUSIONS AND RECOMMENDATIONS

The site inspection was conducted during the beginning of the dry season, which means that certain plant species may have been missed or misidentified. Species that emerge or flower during other seasons, or only under specific environmental conditions, may not have been detectable at the time of the survey.

A biodiversity assessment of the study area was undertaken on 10 April 2026 to determine the overall ecological condition of the site. According to the Northern Cape C-Plan, the proposed development footprint falls within an area classified as an Other Natural Area (ONA). ONAs are portions of the landscape that remain in a natural or near-natural ecological state but are not designated as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). Although they generally hold lower biodiversity importance relative to CBAs and ESAs, ONAs still contribute meaningfully to ecosystem functioning, landscape connectivity, and the support of common species.

Given this classification, development activities should be confined to the preferred areas to minimise the extent of disturbance. Sensitivity maps must be used to guide the identification of no-go areas, and all such delineations should be verified under the supervision of a suitably qualified Environmental Control Officer (ECO).

From a constructability perspective, no fatal flaws were identified, and the proposed development can therefore be allowed to proceed.

A summary of the biodiversity assessment is outlined Below:

9. STATEMENT AND OPINION OF THE SPECIALIST

The proposed site falls within the SKs 7 Namaqualand Strandveld vegetation unit, which is classified as Least Threatened. The areas earmarked for the installation of the synchronisers, as well as the potential laydown area, show varying levels of disturbance associated with the construction and ongoing maintenance of the existing substation. No plant or animal Species of Conservation Concern were recorded during the site inspection. From an ecological perspective, the overall sensitivity of the area is therefore considered low. The proposed development is regarded as environmentally acceptable, provided that all mitigation measures and recommendations outlined in this report are fully implemented and strictly adhered to.

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