DRAFT BASIC ASSESSMENT REPORT

THE EXPANSION OF GROMIS SUBSTATION AND ITS ASSOCIATED INFRASTUCTURE LOCATED ON PORTION 0 OF FARM DIKGAT NO. 195, WITHIN THE JURISDICTION OF NAMA KHOI LOCAL MUNICIPALITY OF NAMAKWA DISTRICT MUNICIPALITY IN NORTHERN CAPE PROVINCE.

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October 2026

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EXECUTIVE SUMMARY

Eskom Holdings SOC Ltd, South Africa's state-owned power company, has historically relied on large coal-fired power stations and peaking plants for electricity generation. Peaking plants were comprised of a mix of gas-fired turbines (burning diesel as fuel) and hydro plants to supplant base load electricity generation. The national transmission grid, primarily consisting of a range of 220 kV to 765 kV overhead lines, transmits power across the country.

The latter is owned and operated by the National Transmission Company South Africa SOC Ltd (NTCSA), a subsidiary of Eskom Holdings SOC Ltd. In addition to the above, NTCSA manages a number of 88kV to 132 kV power lines that are strategic in nature as well. To enhance grid reliability amid growing renewable energy adoption, NTCSA plans to implement Synchronous Condensers (SynCons). SynCons will provide several ancillary energy services, increasing rotating inertia 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 where they are located.

Quality Environmental Management and Business Solutions cc (QEMS) has been appointed as the independent Environmental Assessment Practitioner (EAP) for National Transmission Company South Africa SOC Ltd (NTCSA) to undertake a Basic Assessment process for the expansion of the existing Gromis Substation and its associated infrastructures. The expansion of the substation includes the installation of two Synchronous Condensers (SynCons) and associated infrastructure. The project will involve the extension of the existing 400 kV and 132 kV yards from within the Gromis Substation into the proposed new development area. The extensions will be integrated with the existing substation infrastructure and continue into the new area to accommodate the SynCons and associated infrastructure.

The development will also include two temporary laydown areas, namely Laydown Area 1 (approximately 6 hectares) and Laydown Area 2 (approximately 2 hectares). Additional, the existing access road will be affected by the proposed development, necessitating the construction of a diverted access road approximately 300m in length, which will connect to the existing access road to maintain access to the substation.

The proposed project is located near Kleinsee on portion 0 of Farm Dikgat No. 195, within the jurisdiction of the Nama Khoi Local Municipality of the Namakwa District Municipality in the Northern Cape Province.

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA) and the 2014 EIA Regulations GN.982 and GN.983 as amended, the proposed development triggers activities that require NTCSA to obtain an Environmental Authorisation (EA) through a Basic Assessment (BA) process from the National Department of Environment Forestry and Fisheries (DFFE) before commencement of the proposed development.

The project triggers the following activities that necessitate the need for a Basic Assessment:

- Listing Notice 1- Activity 27.
- Listing Notice 1- Activity 47.

The following specialist studies were undertaken by the appointed specialist(s) respectively:

- Aquatic Biodiversity Impact Assessment (compliance statement)
- Terrestrial Biodiversity Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment

The following compliance statement has been requested:

- Agricultural Impact Assessment
- Palaeontology Impact Assessment

Section 24(5)(h) of the NEMA and regulation 16 (1)(b)(v) of the EIA Regulations of 2014 also require the submission of a national web-based environmental screening tool report (GNR. 960/ 05 July 2019), when applying for an Environmental Authorisation in terms of Regulation 19 and 21 of the EIA Regulations of 2014. The Screening Tool Report (STR) was generated using the DFFE's national online GIS-based 'National web-based Environmental Screening Tool and provides detail on the environmental sensitivity, restriction, exclusion, or prohibition zones and specific requirements, including specialist studies, that are applicable to the proposed development site, based on the national sector classification and the site's environmental sensitivity

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ABBREVIATIONS AND ACRONYMS

ACRONYM	DESCRIPTION
BID	Background Information Document
CA	Competent Authority
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA Regulations	Environmental Impact Assessment Regulations
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
IRR	Issues and Response Report
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NTCSA	National Transmission Company South Africa SOC Ltd
QEMS	Quality Environmental and Business Management Solution cc
SAHRA	South African Heritage Resources Agency
SynCons	Synchronous condensers

SECTION A: PROJECT BACKGROUND

1. INTRODUCTION

1.1 BACKGROUND

Eskom Holdings SOC Ltd, South Africa's state-owned power company, has historically relied on large coal-fired power stations and a few hydro plants for electricity generation. The national grid, primarily consisting of 400 kV and 765 kV overhead lines, transmits power across the country. To enhance grid reliability amid growing renewable energy adoption, the National Transmission Company South Africa SOC Ltd (NTCSA), a subsidiary of Eskom, plans to implement Synchronous Condensers at seven host main transmission substations (MTSs). The host substations are in the Eastern (two) and Northern Cape (five), where there is an immediate need to improve grid stability.

Synchronous condensers (SynCons) are large spinning machines that act like stabilizing anchors to the grid. SynCons are a proven technology that is commonly used to provide inertia, damping, voltage support, and stronger grid conditions. This, in turn, enables the reliable operation of renewable energy inverters. Quality Environmental and Business Management Solution cc (QEMS) has been appointed by The National Transmission Company South Africa SOC Ltd (NTCSA) to undertake a Basic Assessment Report for the expansion of Gromis substation and its associated infrastructures located on portion 0 of farm Dikgat no. 195, within the jurisdiction of Nama Khoi Local Municipality of Namakwa District Municipality in Northern Cape Province.

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA) and the 2014 EIA Regulations GN.982 and GN.983 as amended, the proposed development triggers activities that require NTCSA to obtain an Environmental Authorisation (EA) through a Basic Assessment (BA) process from the National Department of Environment Forestry and Fisheries (DFFE) before commencement of the proposed development.

1.2. DETAILS OF THE APPLICANT

The details of the applicant, which is NTCSA, are reflected in Table 1 below.

Table 1: Details of the applicant

ITEM	DESCRIPTION
Name of Applicant	National Transmission Company South Africa SOC (Ltd)
Address of Applicant	2 Maxwell Drive, Megawatt Park, Sunninghill, Sandton, 2157
Contact details	PhiriM@ntcsa.co.za 011 800 3550

1.3. DETAILS OF THE EAP

This report was prepared by QEMS for NTCSA. The details of the responsible Environmental Assessment Practitioner (EAP) are in Table 2 below.

Table 2: Details of the EAP

ITEM	DESCRIPTION
Name of the EAP	Dr Patrick Sithole
Address	7 Munnik Avenue, Sterpark, Polokwane, 0700 Limpopo, South Africa
Contact details	Tel: 061 535 3141 Email: sitholetp@qems.co.za

1.4. EXPERTISE OF THE EAP

A Registered natural scientific professional (SACNASP – Environmental and Chemical Scientist), Registered Environmental Assessment Practitioner (EAPASA), and social and sustainability expert with 24 years of experience, Patrick Sithole specializes in Strategic Environmental, Social and Sustainable Development projects, Climate Change and Health, Environmental Management issues, and Construction Supervision of all infrastructural projects. Dr Sithole is also involved in vegetation clearance and pest control projects along infrastructural projects, e.g., roads, railway lines, power lines, golf courses and buildings like complexes, houses, malls, etc. His key experience includes the following areas; Environmental (Natural Resource) Management; Environmental Compliance; Social Facilitation and Consultation; Compensation of Land Claims; Climate Change; Climate (Change) and Human Health; Air Quality Management; Renewable Energy; Waste Management; Land

Rehabilitation; Water Quality/Demand Management; Strategic Environmental Assessment; Wastewater (sewer) Treatment; Project Management; ISO 9001 and ISO14001; Vegetation Control Bush Clearance (Invasive plants).

1.5. STRUCTURE OF THE REPORT

This Basic Assessment Report (BAR) is divided into five sections as follows:

Section A: Project Background

Section B: Public Participation Process

Section C: The Receiving Environment

Section D: Impact Assessment

Section E: Conclusion and Recommendations

Section F: EAP Declaration

2. PROJECT DESCRIPTION

2.1 PROJECT LOCALITY

The proposed expansion site is located on Portion 0 of Farm Dikgat No. 195 and covers approximately 5 hectares for the synchronous condenser expansion area, including the extension of the existing 400 kV and 132 kV yards. In addition, approximately 6 hectares and 2 hectares will be allocated for Temporary Laydown Areas 1 and 2, respectively. The development will also include the construction of a 300 m access road to divert the existing access road affected by the proposed expansion. 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. The proposed development falls within the Strategic Transmission Corridor (Figure 2). 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.

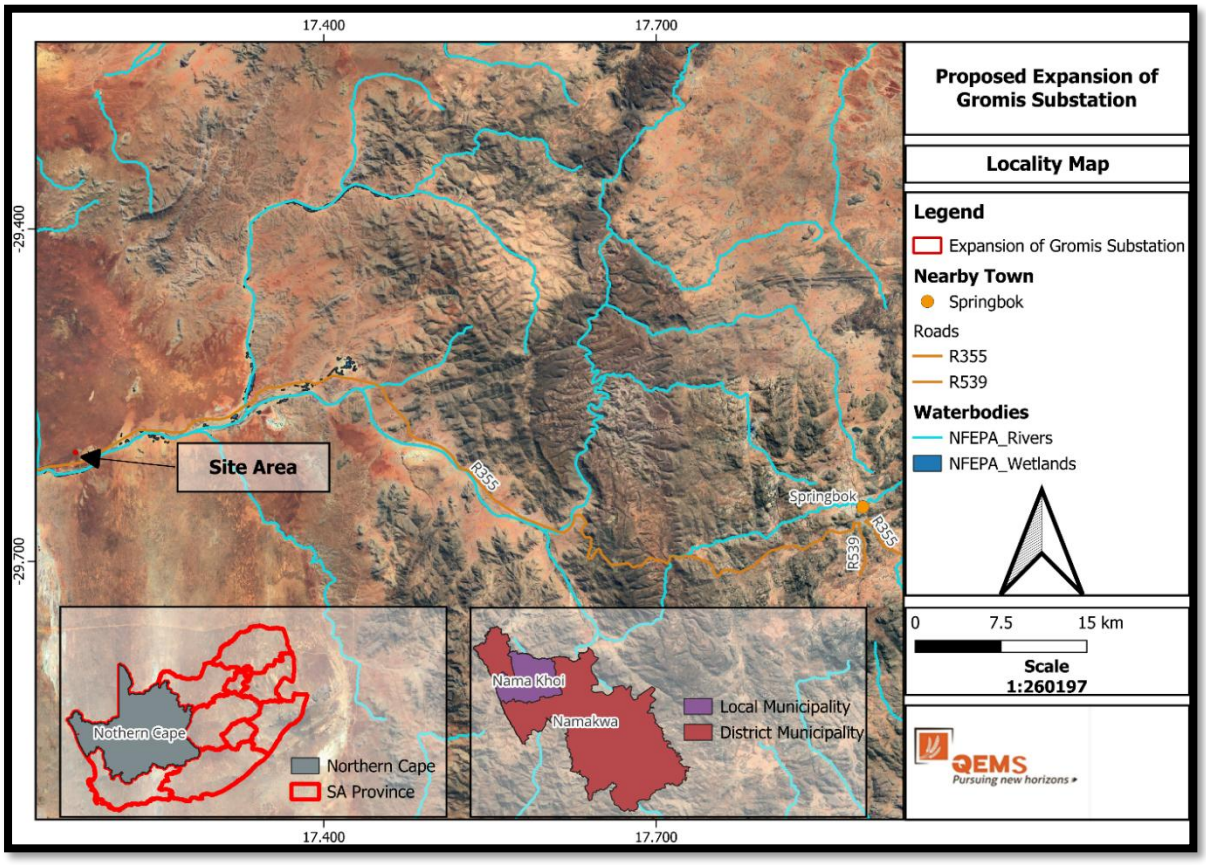


Figure 1: Locality Map

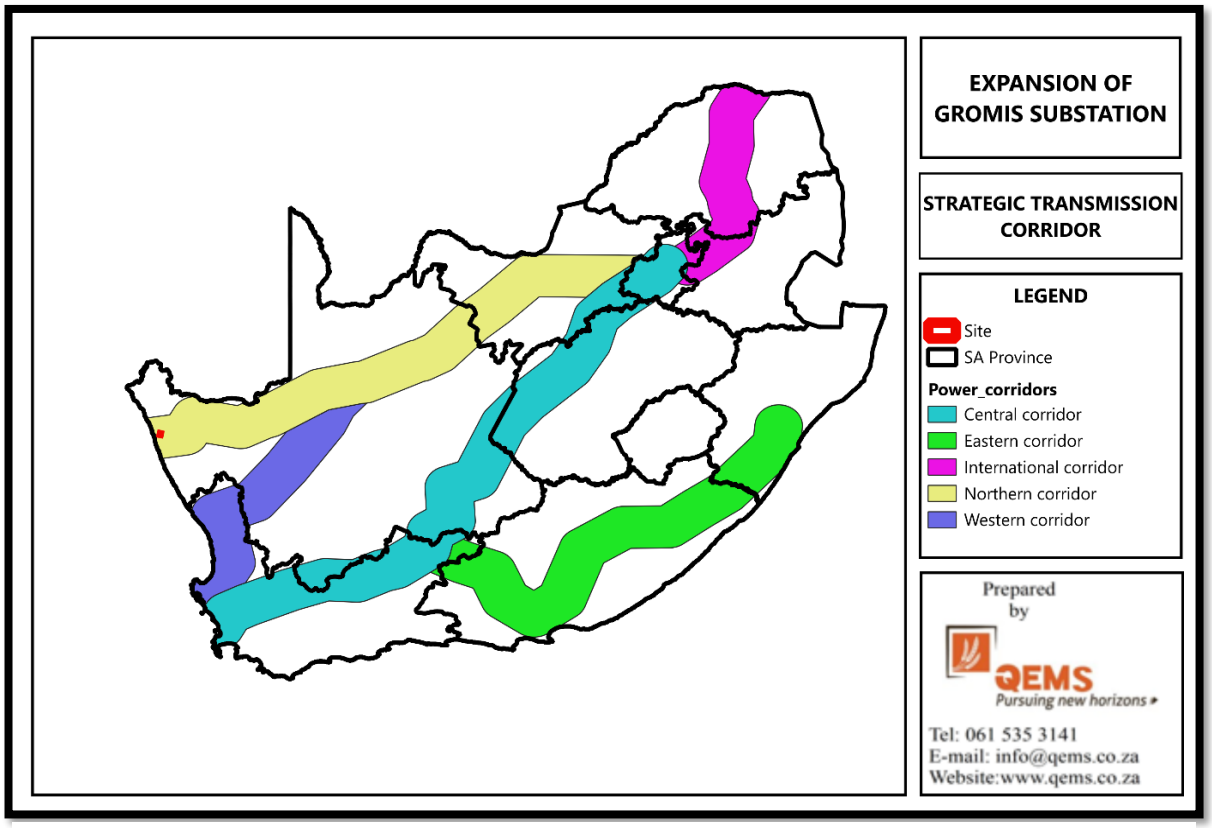


Figure 2: Strategic Transmission Corridor

2.1.1 Project Alternatives

The projects entail the expansion of the Gromis substation to install the two synchronous condensers and the extension of the 400kV and 132kV yard and new access road.

Location Alternative

There is no feasible alternative location for the expansion of the Gromis Substation and the extension of the 400 kV and 132kV infrastructure. The western side of the existing substation is the only area considered suitable for the proposed development. This is because the synchronous condensers can only be integrated into the 400 kV infrastructure, whereas the infrastructure on the eastern side operates at 132 kV.

Hence, the eastern side accommodates the existing mining area and 132 kV infrastructure, making it unsuitable for the proposed expansion. The northern and southern sides of the substation accommodate existing transmission power lines that supply electricity to the national grid. Relocating or dismantling these power lines to accommodate the proposed development could disrupt electricity transmission and affect the operation of the existing infrastructure.

Thus, the western side is considered the only viable location for the proposed substation expansion and 400 kV extension, with no alternative location identified.

Laydown Alternatives

There are no alternative laydown areas identified for the proposed development. The selected 6 hectare and 2 hectare laydown areas are located near the existing access road connecting the site to the R355 road, facilitating the transportation and delivery of construction materials and equipment to the site. The 6 hectare laydown area will accommodate the temporary storage of construction materials and equipment, while the additional 2 hectare laydown area is required due to its proximity to the proposed synchronous condenser expansion area. This smaller laydown area will provide convenient space for the temporary storage and staging of specialised equipment and materials required for the construction and installation of the synchronous condensers and associated substation infrastructure. Furthermore, the selected laydown areas are situated away from the mining area and existing transmission power lines, thereby minimising potential interference with mining activities and electricity infrastructure. The selected locations are therefore considered suitable for the temporary storage of construction materials and equipment and for supporting the proposed expansion activities.

Access road Alternative

The existing access road leading to the Gromis Substation will be affected by the proposed extension. Approximately 150 m of the existing access road will be affected, necessitating a deviation to maintain access to the substation. The proposed new access road 300m in length with 8m width, will connect to the existing access road beyond the affected section, ensuring continued access to the site. No alternative access road is proposed, as the deviation is required to accommodate the 400 kV yard extension and the positioning of the new gate while maintaining safe and controlled access to the substation.

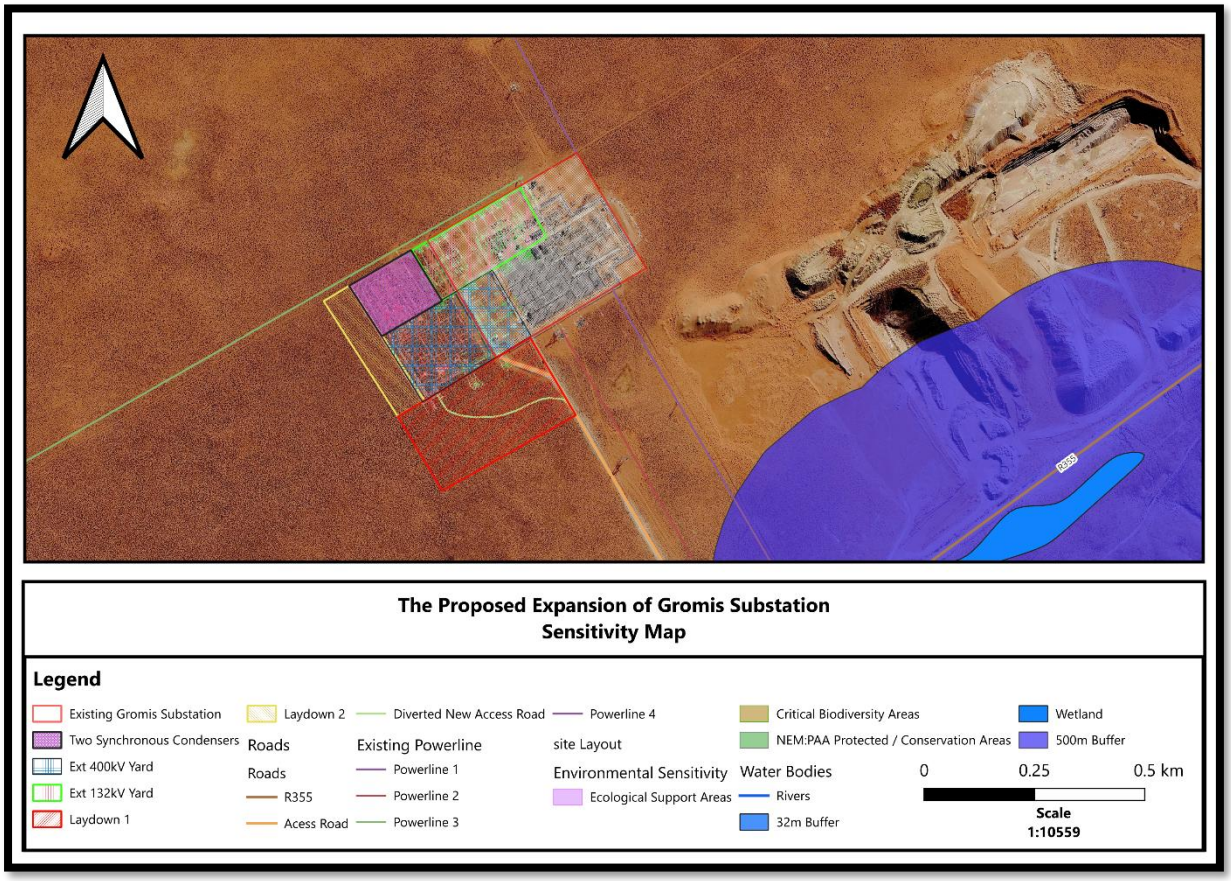


Figure 3: Sensitivity Map

2.1.2 Site Coordinates

Table 3: Farm portion and Surveyor General 21 Digit

Farm portion and No.	Surveyor General 21 Digit code
Portion 0 of Farm DIKGAT No. 195	C05300000000019500000

Table 4: Corner Coordinates of the existing Gromis Substation.

Corner coordinates	Latitude (S)	Longitude (E)
Corner A	29°35'52.25"S	17°10'48.45"E
Coner B	29°36'0.64"S	17°10'54.31"E
Coner C	29°36'7.38"S	17°10'41.70"E
Coner D	29°35'58.65"S	17°10'35.83"E

Table 5: Corner Coordinates of the Expansion Area

Corner coordinates	Latitude (S)	Longitude (E)
Corner A	29°35'58.54"S	17°10'35.87"E
Coner B	29°36'7.17"S	17°10'41.56"E
Coner C	29°36'9.89"S	17°10'36.50"
Coner D	29°36'1.32"S	17°10'30.50"E

Table 6: Corner Coordinates of the Temporary Laydown Area One (1)

Corner coordinates	Latitude (S)	Longitude (E)
Corner A	29°35'58.54"S	17°10'35.87"E
Coner B	29°36'5.61"S	17°10'44.72"E
Coner C	29°36'11.44"S	17°10'48.32"E
Coner D	29°36'15.89"S	17°10'38.63"E

Table 7: Corner Coordinates of the Temporary Laydown Area Two (2)

Corner coordinates	Latitude (S)	Longitude (E)
Corner A	29°36'11.44"S	17°10'48.32"E
Coner B	29°36'15.89"S	17°10'38.63"E
Coner C	29°36'10.81"S	17°10'34.22"E
Coner D	29°36'2.45"S	17°10'28.39"E

Table 8: Coordinates of the new access Road

Coordinates	Latitude (S)	Longitude (E)
Start Point	29°36'10.79"S	17°10'47.98"E
Middle Point	29°36'11.37"S	17°10'41.94"E
End Point	29°36'9.72"S	17°10'36.66"E

2.2 ACTIVITY ALTERNATIVES

There were no additional activities considered for the installation of the two synchronous condensers, extension of 400kV and 132kV yard and the access road. The alternative activity will not be practicable for the intended purpose; this is the sole activity capable of stabilizing the grid.

2.2.1 TECHNOLOGY ALTERNATIVES

NTCSA intends to install synchronous condensers and extend the existing 400 kV yard at the Gromis Substation to improve voltage regulation, provide reactive power support, and enhance grid stability. Alternative technologies, including Static Synchronous Compensators (STATCOMs) and Static VAR Compensators (SVCs), were considered. However, synchronous condensers are preferred because they provide dynamic reactive power compensation, physical rotational inertia, and increased short-circuit strength, supporting reliable electricity transmission and renewable energy integration. The preferred technology has the following advantages:

- Improved grid stability: Provides rotational inertia and supports stable network operation during disturbances.
- Voltage regulation: Supplies or absorbs reactive power to maintain appropriate voltage levels.
- Increased system strength: Contributes short-circuit current, supporting network stability and protection systems.
- Compatibility with existing infrastructure: Integrates with the existing 400 kV network through the proposed yard extension.
- Renewable energy integration: Strengthens the grid to accommodate increasing inverter-based renewable energy generation.
- Operational reliability: Allows efficient inspection, maintenance, and repairs within the substation.
- Reduced environmental disturbance: Utilises existing substation infrastructure, potentially reducing the need for a new site and additional land disturbance.
- Long-term grid support: Provides reactive power compensation, inertia, and system strength to improve the reliability and resilience of the transmission network.

2.2.2 No-Go Alternative

The No-Go alternative entails not proceeding with the proposed installation of synchronous condensers and the extension of the existing 400 kV and 132kV yard at the Gromis Substation. Although this alternative would maintain the current environmental status quo by avoiding construction-related impacts, it is not preferred because it would forgo the potential benefits of the project in improving electricity transmission network stability, voltage regulation, and the

reliability of electricity supply. Synchronous condensers provide reactive power support, physical rotational inertia, and increased system strength, which contribute to the efficient and reliable operation of the electricity grid. These functions are particularly important for facilitating the integration of renewable energy sources, such as solar and wind power, into the transmission network. By strengthening grid stability and supporting the integration of renewable energy, the project can contribute to a more reliable electricity supply and improve the network's ability to accommodate changing electricity generation and demand. Additionally, the No-Go alternative would result in missed socio-economic opportunities, including temporary employment and local economic benefits during construction. Therefore, proceeding with the proposed development is preferred, provided that appropriate environmental management and mitigation measures are implemented to minimise potential negative environmental impacts.

2.3 MOTIVATION FOR PREFERRED LOCATION

The western side of the existing Gromis Substation is the preferred location for installing two synchronous condensers, extending the 400 kV yard, and establishing the associated laydown areas and access road. The preferred location has the following advantages:

- Technical suitability: The western side accommodates the proposed 400 kV extension, which is required to integrate the synchronous condensers into the existing transmission network.
- Avoidance of existing infrastructure: The eastern side contains mining activities and 132 kV infrastructure, while the northern and southern sides accommodate existing transmission power lines that supply the national grid.
- Laydown area: The selected 6-hectare laydown area is close to the existing access road connecting to the R355 and is positioned away from the mining area and transmission power lines.
- Access road: Approximately 150 m of the existing access road will be affected by the expansion. A new access road will connect beyond the affected section to maintain safe and controlled access to the substation.
- Grid stability and renewable energy: The synchronous condensers will provide reactive power support, rotational inertia, and increased system strength, improve voltage regulation and support renewable energy integration.

The western side is considered the only feasible location for the proposed development because it allows integration with the existing 400 kV infrastructure while minimising interference with existing mining operations and electricity transmission infrastructure.

2.4 ACTIVITIES DESCRIPTION

The proposed expansion of the Gromis Substation will cover approximately 5 hectares. The development will include the construction of buildings to accommodate two synchronous condensers, with each unit occupying approximately 0.75 hectares. The synchronous condensers will be connected to the existing electricity transmission network through the extension of the existing 400 kV yard. The 400 kV yard will be expanded to accommodate the required electrical equipment and connections necessary for integrating the synchronous condensers into the transmission infrastructure.

The existing access road to the substation will be affected by the proposed expansion, as a new gate will be positioned at the end of the extended 400 kV yard. Consequently, the access road will be diverted through the construction of a new access road approximately 300 m in length and 8 m in width, connecting to the existing access road to maintain access to the substation.

2.5 LAND USE

The proposed development site is currently vacant and is predominantly characterised by shrub vegetation and sandy soils. The surrounding land uses include mining activities and existing electricity transmission power lines connected to the Gromis Substation. The site is located within an area influenced by existing mining and electricity transmission infrastructure. The proposed expansion will therefore be situated within an area where industrial and electricity infrastructure activities are already established.

2.6 SITE PHOTOGRAPHS



Figure 4: Access route to the existing Gromis Substation



Figure 5: Vegetation within the proposed site



Figure 6: Sandy Soil within the proposed site



Figure 7: Existing Gromis Substation

3. PROJECT ACTIVITIES

National Transmission Company South Africa SOC Ltd (NTCSA) proposes to expand the Gromis Substation by approximately 5 hectares, increasing the current substation footprint from approximately 12 hectares to 17 hectares. The proposed development will comprise the installation of two Synchronous Condensers (SynCons) and associated infrastructure. The project will involve the extension of the existing 400 kV and 132 kV yards from within the Gromis Substation into the proposed new development area. The extensions will be integrated with the existing substation infrastructure and continue into the new area to accommodate the SynCons and associated infrastructure.

The development will also include two temporary laydown areas, namely Laydown Area 1 (approximately 6 hectares) and Laydown Area 2 (approximately 2 hectares). Additionally, the existing access road will be affected by the proposed development, necessitating the construction of a diverted access road approximately 300m in length, which will connect to the existing access road to maintain access to the substation. The proposed access road will be located within the designated laydown 1 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 infrastructures 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 where they are located. Currently, the only inertial, rotating mass is provided largely by the coal-fired power stations, which are stationed in the north-eastern part of the country.

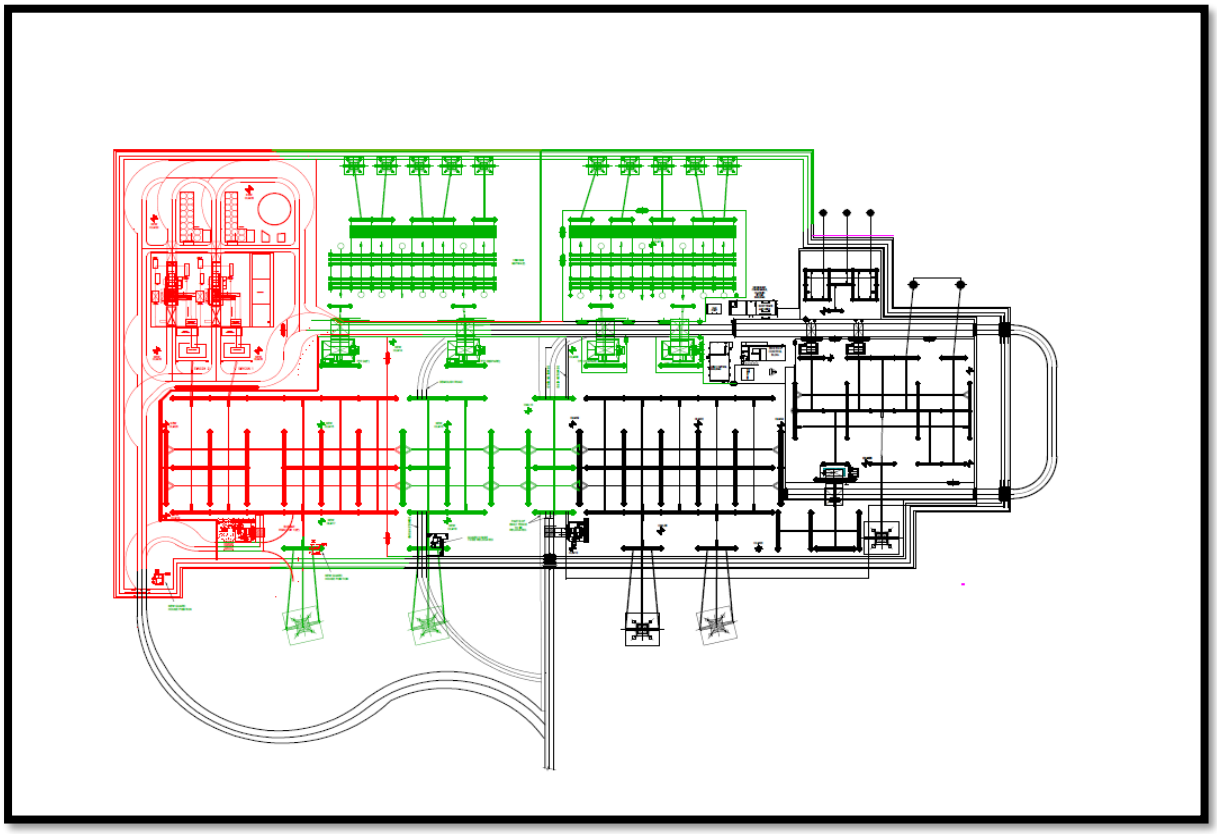


Figure 8: Preliminary Layout Plan

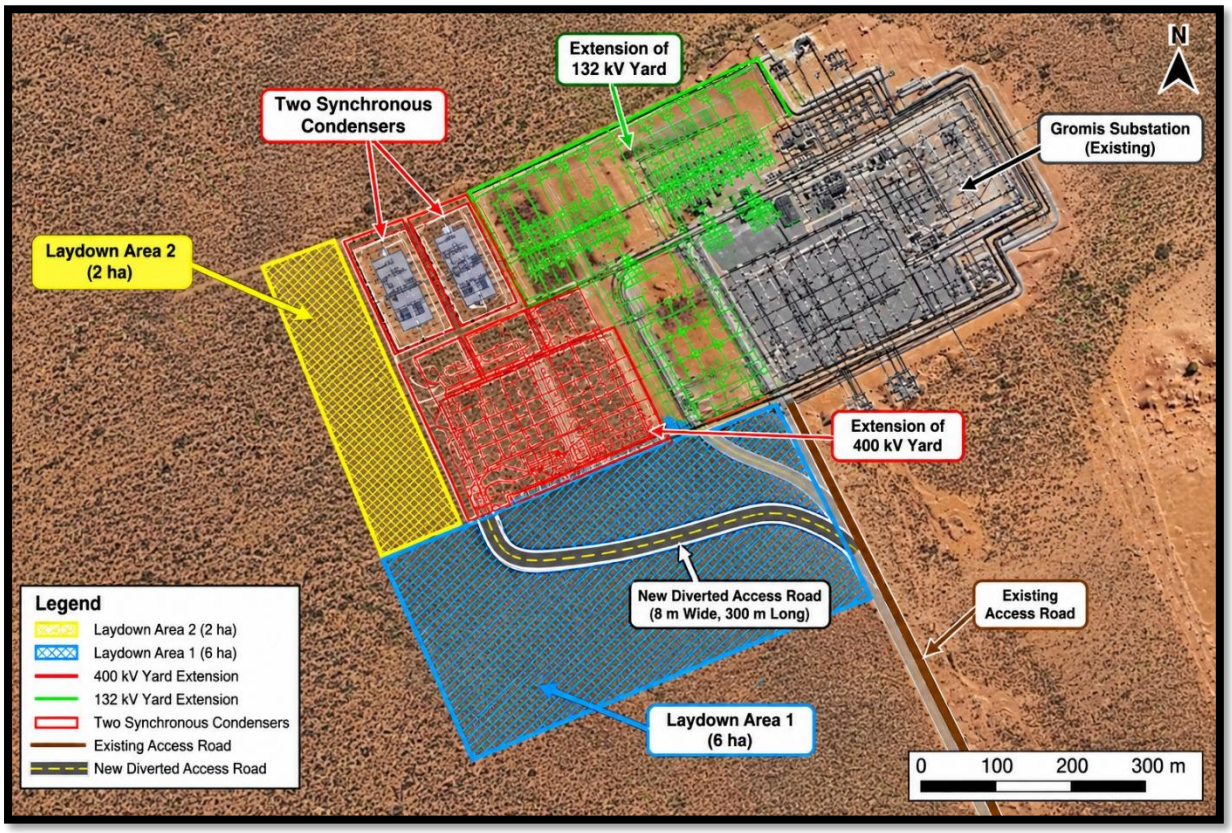


Figure 9: Layout Plan

3.1 ACCESS

The proposed Gromis Substation expansion site is accessible via the existing access road connecting the substation to the R355. The existing access road will be affected by the proposed 400 kV yard extension and the positioning of the new substation gate. Consequently, a new access road approximately 300 m in length and 8 m in width will be constructed to connect to the existing access road and maintain access to the substation during operation. The access road will facilitate the movement of construction vehicles, transportation of materials and equipment, and access for personnel during the construction and operational phases of the project.

3.2 REHABILITATION

Construction activities associated with the proposed expansion of the Gromis Substation may result in environmental degradation and disturbance of the surrounding area. It is therefore important that, upon completion of the development, all temporarily disturbed areas be rehabilitated to their original condition or as close as reasonably practicable. Eskom and the appointed contractor must ensure that rehabilitation measures are implemented to promote environmental sustainability and minimise long-term environmental impacts.

All excavations no longer required will be backfilled, and stockpiled topsoil will be spread evenly over disturbed areas to encourage the natural regeneration of vegetation and reduce soil erosion. Areas susceptible to erosion will be stabilised using appropriate measures, including stone pitching where necessary. Construction waste and surplus materials will be removed from the site, and rehabilitation activities will be monitored regularly to assess their effectiveness and ensure the successful restoration of temporarily disturbed areas.

3.3 MAINTENANCE

Regular maintenance will be undertaken at the proposed Gromis Substation expansion to ensure the safe, efficient, and reliable operation of the two synchronous condensers and the extended 400 kV a 132kV yard. NTCSA will be responsible for inspecting, servicing, and repairing the electrical equipment, buildings, access roads, and associated infrastructure as required. Maintenance activities will include routine inspections, testing of electrical systems, checking of connections, and servicing of the synchronous condensers and their auxiliary systems. Any defects identified during inspections will be addressed promptly to prevent equipment failure and ensure continued grid stability. The access road and drainage

infrastructure will also be maintained to ensure safe access and prevent soil erosion. All maintenance activities will be conducted in accordance with applicable safety standards, operational procedures, and environmental management requirements.

3.4 FOUNDATION

Excavation for foundations will be undertaken to support the two synchronous condenser buildings and the associated electrical structures within the extended 400 kV and 132kV yard at the Gromis Substation. The type of foundation to be used will be determined by several factors, including the underlying geological characteristics of the site, terrain, and any rock outcrops encountered during excavation. Before the structures are erected and the foundations are filled, precautionary measures will be implemented to ensure the safety of people and animals. Excavated foundations will be covered or fenced off to prevent unintended access and minimise the risk of accidents. Upon completion of construction, all foundations will be backfilled where appropriate, stabilised through compaction, and capped with concrete at ground level in accordance with the relevant engineering specifications.

3.5 SERVICES REQUIRED

3.5.1 Water

During all phases of the project, water will primarily be sourced from the existing municipal water supply infrastructure serving the substation. As the substation is an existing facility, the necessary water infrastructure is already available on site. However, a borehole is proposed as a supplementary water source to augment the municipal water supply and ensure adequate water availability throughout the construction and operational phases of the project.

3.5.2 Sewage

There is an existing ablution facility on site. During the construction phase, mobile toilets will also be provided to supplement the existing ablution facilities and accommodate the needs of construction personnel. The mobile toilets will be appropriately positioned, regularly serviced, and maintained by an approved service provider, with waste disposed of at an appropriately authorised facility.

3.5.3 Electricity

Electricity is currently available on site through the existing electricity supply infrastructure associated with the substation. The proposed development will utilise the existing electricity infrastructure, with any necessary connections or upgrades undertaken as required.

3.5.4 Solid Waste Disposal

It is expected that a significant volume of solid waste will be generated during the construction activities. All waste produced will be gathered and temporarily stored in a specified area within the construction site. The waste will be kept in enclosed areas or weatherproof bins/containers until it can be transported to a registered landfill site located near the construction area.

3.5.5 Site Camp

A site camp will be required for the duration of the project. The contractor will identify a suitable location for the establishment of the site camp, subject to approval by the Environmental Control Officer (ECO). The site camp must be located away from the river and other environmentally sensitive areas. The ECO will assist the contractor in identifying and selecting an environmentally suitable location for the site camp and will ensure that the selected area complies with the applicable environmental requirements.

3.6 NEED AND DESIRABILITY OF THE PROJECT

The proposed installation of synchronous condensers supports both national and regional socio-economic development by strengthening electricity supply reliability and enabling the continued integration of renewable energy into the national grid. Eskom Holdings SOC Ltd plays a critical role in ensuring energy security, which is essential for economic growth, industrial development, and service delivery across the Republic of South Africa. The NTCSA, as custodian of the national electricity grid, is required to ensure that the Grid is able to support these goals and objectives.

The Northern Cape has experienced significant growth in renewable energy projects, which contribute to job creation, local economic development, and infrastructure investment. However, the variability of renewable energy generation can place strain on the transmission network, potentially affecting supply reliability if grid stability measures are not implemented. The proposed synchronous condensers will improve voltage control and network resilience,

allowing renewable energy facilities to operate more efficiently and reducing the risk of energy curtailment. Improved grid stability will support economic activities within the region by ensuring a consistent electricity supply to industries, businesses, and communities. Reliable electricity supply is fundamental to maintaining productivity, attracting investment, supporting small and medium enterprises, and enabling socio-economic upliftment. The project will also contribute to South Africa's transition towards a more sustainable energy mix, supporting long-term environmental and socio-economic resilience. Furthermore, the project may generate temporary employment opportunities during construction and support skills development through infrastructure expansion. By strengthening transmission capacity and supporting renewable energy integration, the project contributes to national development priorities and supports sustainable economic growth.

4. LEGISLATIVE REQUIREMENTS

4.1 LEGISLATION RELEVANT TO THE PROJECT

The EIA Regulations require a description of applicable legislation in the Basic Assessment report. Therefore, this section lists and describes the acts and legislation relevant to the proposed development. The table below summarises the current South African environmental legislation pertinent to the proposed development.

Table 9: Legislation pertaining to the proposed project.

Act	Description	Relevance
The Constitution of The Republic of South Africa (Act 108 of 1996)	The Constitution of the Republic of South Africa, 1996, holds significant implications for environmental management. It serves to safeguard both the environment and individuals' property rights. Additionally, it alters the lands	The developer is tasked with ensuring that the proposed activity does not result in pollution or ecological deterioration. Furthermore, it is imperative for the developer to guarantee that the proposed activity is environmentally sustainable, while also fostering economic and social development.

	cape of administrative law, facilitating easier access to information, ensuring fair administrative procedures, and broadening the scope for individuals to pursue legal action. These amendments are crucial for upholding adherence to environmental laws such as the Environment Conservation Act (NEMA). Section 24 in the Bill of Rights of the Constitution Specifically states: "Everyone has the right: • To an environmental that is not harmful to their health or well-being; and • To have the environment protected, for the benefits of present and future generations, through reasonable legislative and other measures that- prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."	

National Environmental Management Act (Act 107 of 1998)	The National Environmental Management Act (No.107 of 1998) (NEMA) serves as the foundation for environmental governance in South Africa, establishing principles and institutions to guide decision-making on environmental matters. A central feature of NEMA is its provision of a comprehensive set of environmental management principles applicable nationwide to the actions of all state organs with potential significant environmental impacts. Section 2 of NEMA outlines these principles, which are likely to inform the decision-making process by the DFFE regarding this project. Furthermore, NEMA introduces an updated framework for conducting environmental impact assessments (EIAs) through the EIA Regulations (2014) and subsequent amendments in 2017. This framework is designed to prevent adverse environmental effects by regulating certain activities that require prior environmental authorisation before commencement.	Prior to commencing the proposed project activities, environmental authorization is required. The development triggers the need for a Basic Assessment (BA) process, in accordance with the 2014 Environmental Impact Assessment (EIA) Regulations as amended. The activities requiring authorization are specified in listing notices 1 and 3. An application for Environmental Authorization (EA) will be lodged with the Department of Forestry, Fisheries, and the Environment (DFFE), specifying the listed activities for which authorization is sought.

National Water Act (Act 36 of 1998)	The National Water Act (NWA) provides for fundamental reform of the law relating to water resources in South Africa. The purpose of the Act is "to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors– (a) Meeting the basic human needs of present and future generations; (b) Promoting equitable access to water; (c) Redressing the results of past racial and gender discrimination; (d) Promoting the efficient, sustainable and beneficial use of water in the public interest; (e) Facilitating social and economic development; (f) Providing for growing demand for water use; (g) Protecting aquatic and associated ecosystems and their biological diversity; (h) Reducing and preventing pollution and degradation of water resources;	The developer intends to drill a borehole; a formal water use license application (WULA) will be lodged to the Department of Water and Sanitation in terms of Section 21 of the National Water Act (Act No 36 of 1998). Prior to exercising the water usage, registration with the Departmentis required. General Authorizationis sought for the following water usesas stipulated in Section 21 of the National Water Act (Act 36 of 1998): • Section 21 (a): Taking water from a water resource

	(i) Meeting international obligations; (j) Promoting dam safety; (k) Managing floods and droughts." Section 21 of the NWA describes activities defined as a water use under the Act. These activities may only be undertaken subject to the application for, and issue of, a Water Use License (WUL) or General Authorisation (GA).	

National Heritage Resources Act (Act No 25 of 1999)	The National Heritage Resources Act establishes overarching principles for the management of heritage resources nationwide, providing a comprehensive framework for the identification, assessment, and management of South Africa's heritage resources through an integrated system. According to section 35(3), individuals encountering archaeological, paleontological objects, or meteorites during development or agricultural activities are obligated to promptly report their discovery to the relevant heritage resources authority. Alternatively, they can notify the nearest local authority offices or museum, which will promptly inform the heritage resources authority. Section 35(4) of the act further states that it is an offence to undertake the following without a permit from the relevant authority:	Although no heritage features were initially identified on the site, construction activities have the potential to uncover buried Objects deep underground. In the event of such discoveries, construction operations must cease immediately, and the nearest heritage Resource authority should be notified. A Heritage Impact Assessment specialist will then be engaged to conduct a comprehensive investigation of the site.

	(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite; (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.	

Occupational Health and Safety Act (Act 85 of 1993)	To provide for the health and safety of all persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.	Both the contractor and developer are responsible for ensuring that work conditions are safe and do not endanger the health of worker. Work conditions must comply with Occupational Health and Safety (OHS) regulations.

4.2 TRIGGERED LISTED ACTIVITIES

The following table provides the listed activities triggered.

Table 10: Triggered listed activities

Listing Notice and Activity Number	Description	Relevance
Listing Notice 1 Activity 27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The project will include the clearance of vegetation for 13 ha for the construction/ installation of Synchronous and laydown areas. However, it is anticipated that the entire 6-hectare laydown area (1) will not be cleared.
Listing Notices 1 Activity 47	The expansion of facilities or infrastructure for the transmission and distribution of	The extension of the 400kV yard

Listing Notice and Activity Number	Description	Relevance
	electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.	

4.3 NWA

The developer intends to drill a borehole; a formal water use license application (WULA) will be lodged to the Department of Water and Sanitation in terms of Section 21 of the National Water Act (Act No 36 of 1998). The WULA Procedure is regulated under the 'Procedural Requirements for Water Use License Applications and Appeals (GNR 267, 24 March 2017) published in terms of the NWA.

Table 11: Water Use Activities Triggered under NWA

WULA Triggered Activity	Description	Relevance
Section 21(a).	Taking water from a water resource.	Abstraction of underground water through a borehole.

SECTION B: PUBLIC PARTICIPATION PROCESS

5. PUBLIC PARTICIPATION PROCESS

5.1. PUBLIC PARTICIPATION BACKGROUND

Public participation is a process that is designed to enable all interested and affected parties [I&APs] to voice their opinion and/or concerns, which enables the practitioner to evaluate all aspects of the proposed development, with the objective of improving the project by maximising its benefits while minimising its adverse effects. I&APs include all interested stakeholders, technical specialists, and the various relevant organs of state who work together to produce better decisions.

The primary aims of the public participation process are:

- To inform I&APs and key stakeholders of the proposed application and environmental studies;
- To initiate meaningful and timely participation of I&APs;
- To identify issues and concerns of key stakeholders and I&APs with regard to the application for the development [i.e. focus on important issues];
- To promote transparency and an understanding of the project and its potential environmental [social and biophysical] impacts [both positive and negative];
- To provide information used for decision-making;
- To provide a structure for liaison and communication with I&APs and key stakeholders;
- To ensure inclusivity [the needs, interests and values of I&APs must be considered in the decision-making process];
- To focus on issues relevant to the project, and issues considered important by I&APs and key stakeholders; and
- To provide responses to I&AP queries.

The public participation process must adhere to the requirements of Regulations 41 and 42 [GNR 326] under the NEMA [as amended].

The public participation process was undertaken according to the phases outlined below:

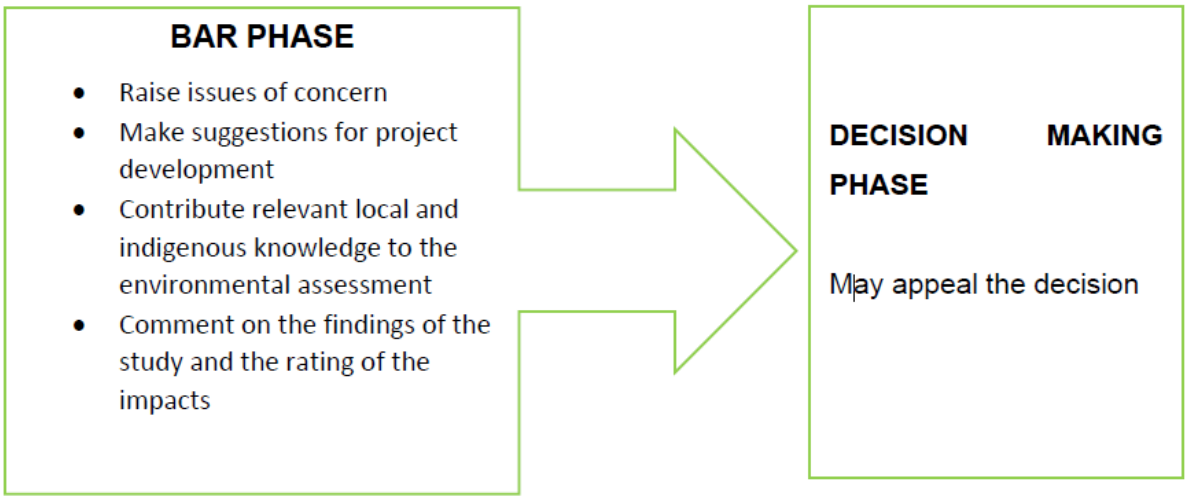


Figure 10: Responsibilities of I&APs in The Different PPP Stages

In order to achieve a higher level of engagement, a number of key activities have taken place and will continue to take place. These included the following:

- The identification of stakeholders is a key deliverable at the outset, and it is noted that different categories of stakeholders must be engaged, from the different levels and categories of government to the communities of wards of residential dwellings which surround the proposed development.
- The development of a living and dynamic database that captures details of stakeholders from all sectors;
- The convening of focused meetings with stakeholders during the BA process; this included engaging with Ward Councillors. The continued engagement of public leaders to whom the public generally turn for information, keeping such individuals well informed about process and progress;
- The fielding of queries from I&APs and others, and providing appropriate information;
- The convening of specific stakeholder groupings/forums as the need arises;
- The preparation of reports based on information gathered throughout the BA via the PPP and feeding that into the relevant decision-makers;
- The PPP includes distribution of pamphlets or Background Information Documents (BIDs) and other information packs; and
- Where appropriate, site visits may be organised, as well as targeted coverage by the media.

5.2 PUBLIC PARTICIPATION PROCESS FOLLOWED

Public consultation is a mandatory aspect of the Environmental Impact Assessment (EIA) process. Developers are obligated to engage in public consultation throughout the Basic Assessment process. Formal Basic Assessment (BA) documents, such as the Background Information Document, EMPr and Draft and Final Basic Assessment Reports (BARs), and the decision of the Competent Authority, must be made available for public review.

5.2.1 ADVERTISEMENT

Regulation 41(2) of the NEMA EIA Regulations 2014 (as amended in 2017) states that "The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice

to all potential interested and affected parties of the application which is subjected to public participation by—

fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—

(i) the site where the activity to which the application relates is or is to be undertaken; and

(ii) any alternative site mentioned in the application;

(b) giving written notice to—

Site notices where strategically positioned in various locations within the project vicinity to notify the public about the proposed development. Proof of site notice placement is attached as appendix E.

(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represents the community in the area;

(v) the municipality that has jurisdiction in the area;

(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and

(vii) any other party as required by the department;

(c) placing an advertisement in—

(i) one local newspaper; or

The project was advertisement (press advert) in a local newspaper.

(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if

an advertisement has been placed in an official Gazette referred to in sub regulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—

(i) illiteracy;

(ii) disability; or

(iii) any other disadvantage.

5.2.2 REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT

The draft BAR was made available to the public for review and comments. Electronic copies were distributed to various departments and organs of the state for their input. It was also made available at public venues for public review and comments. Interested and affected parties (I&APs) were given a 30-day period to provide comments and/or raise concerns regarding the proposed development.

5.2.3 COMMENTS AND RESPONSE REPORT

Comments and issues related to the project that will be received will be logged, addressed, and integrated into the final BAR for consideration by the Department of Forestry, Fisheries, and the Environment (DFFE) during the decision-making process.

5.2.4 PERIOD OF WHICH AN ENVIRONMENTAL AUTHORISATION IS REQUIRED.

An Environmental Authorisation for the expansion of Gromis substation and its associated infrastructure is required for a period of 10 years and the date at which the activity will be concluded is unknown at this stage.

SECTION C: THE RECEIVING ENVIRONMENT

6 NATURAL RECEIVING ENVIRONMENTS

6.1 VEGETATION AND LANDSCAPE FEATURES

The proposed expansion area and the temporary laydown area are located within the Namaqualand Strandveld vegetation type**,** while the Namaqualand Riviere vegetation type occurs nearby along the river (Figure 6). According to SANBI VEGMAP (2018), Namaqualand Strandveld forms part of the Succulent Karoo Biome and is characterised by low-growing succulent shrubs, dwarf shrubs, and sparse grasses adapted to the arid climate, low winter rainfall, and nutrient-poor soils of the Northern Cape. The expansion does not overlap with the Namaqualand Riviere vegetation, indicating that direct impacts on the more sensitive riverine habitat are unlikely, provided that construction activities remain within the proposed development footprint. Although the Namaqualand Strandveld vegetation is generally considered moderately resilient to disturbance, it remains ecologically important due to its high plant diversity and endemism. Potential threats to this vegetation include habitat disturbance, overgrazing, invasive alien species, and climate change, which may affect vegetation composition and cover over time.

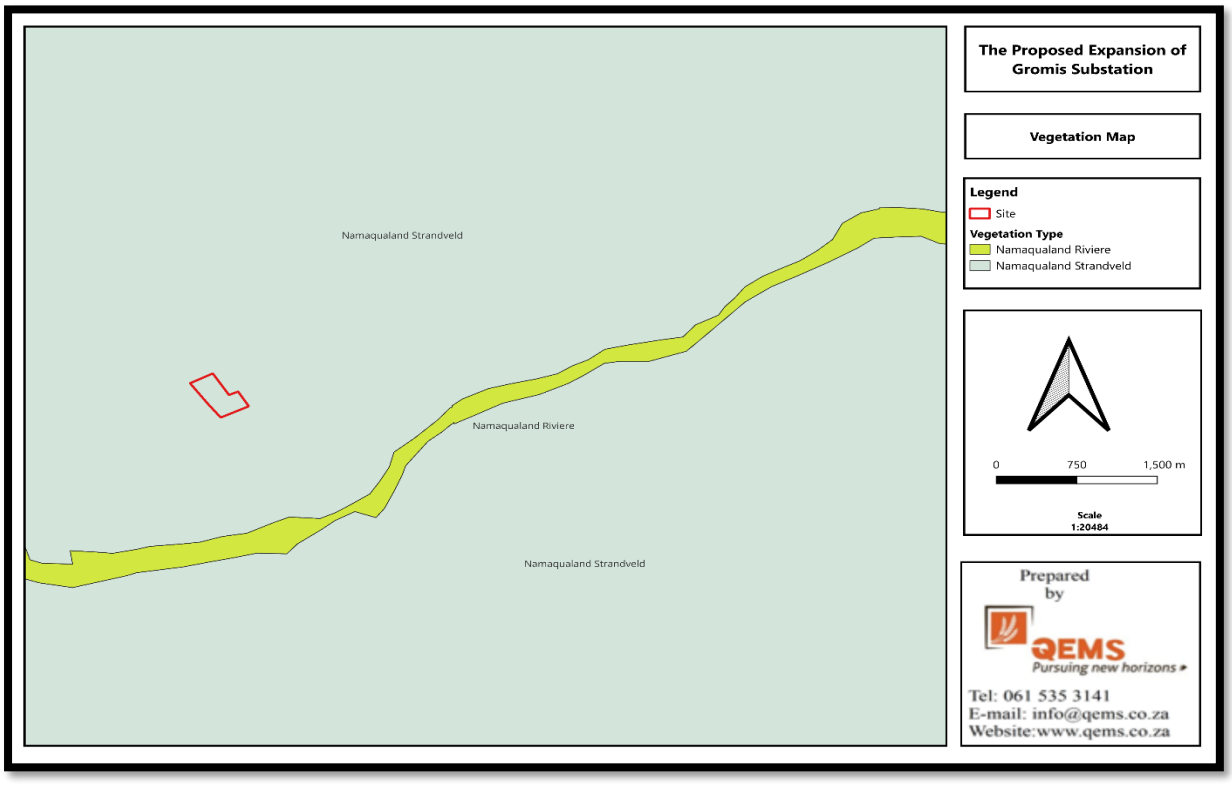


Figure 11 : Vegetation Map

6.2 GEOLOGY AND SOILS

The proposed expansion area and the temporary laydown area are predominantly situated within the West Coast Group, while the Gladkop Suite occurs immediately south of the site along the Buffels River, and the Richtersveld Suite is located further to the west (Figure 7). The West Coast Group comprises predominantly unconsolidated to semi-consolidated Cenozoic sediments, including sands, gravels, calcrete and silcrete deposits, which have been shaped by fluvial, marine and aeolian processes. These deposits generally give rise to sandy to gravelly soils with good drainage but variable bearing capacity depending on the degree of consolidation. The expansion does not extend into the Gladkop Suite or Richtersveld Suite, indicating that the development will remain within the West Coast Group geology.

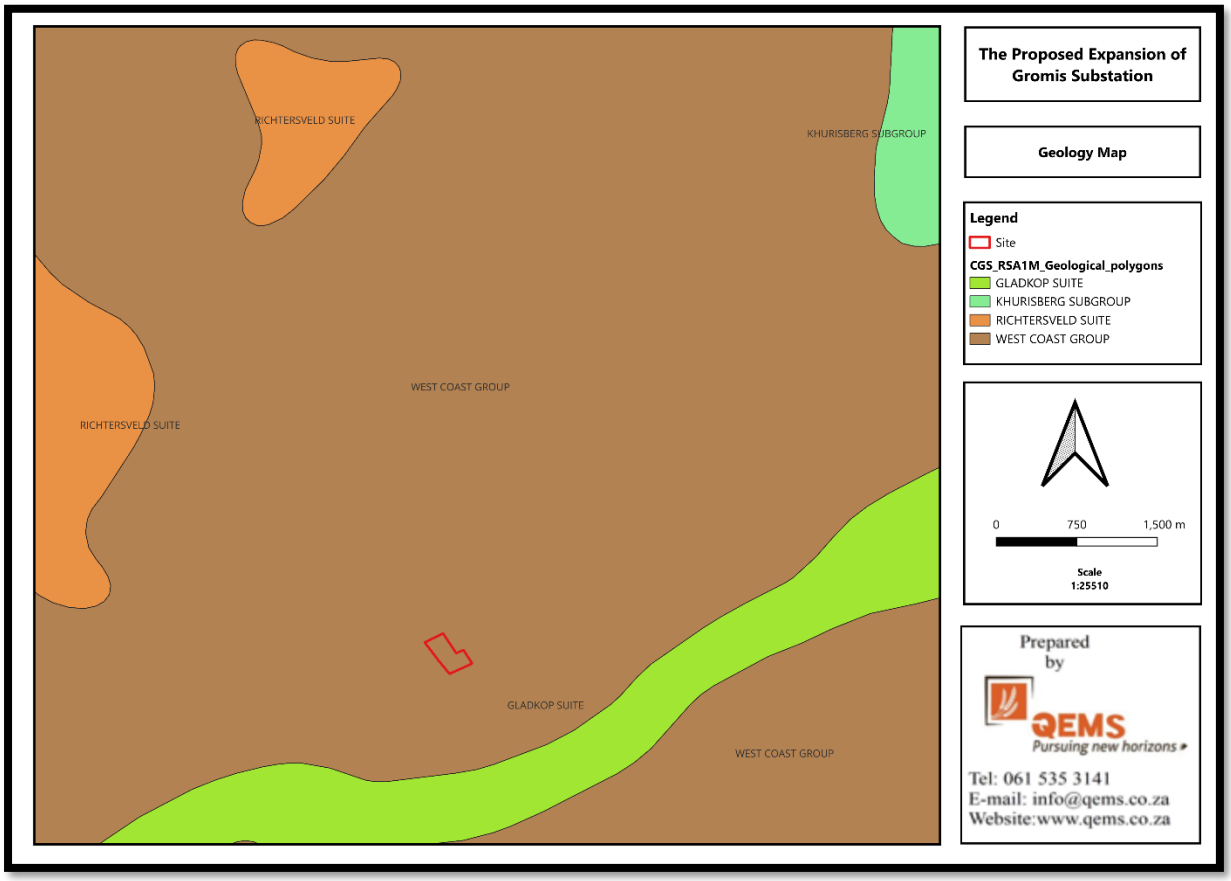


Figure 12: Geology Map

6.3 CLIMATE

The Gromis Substation is situated in the Northern Cape province of South Africa, a region characterized by an arid to semi-arid climate. The area receives minimal rainfall, averaging less than 300 millimeters per annum. This scarcity of precipitation contributes to the province's arid conditions. Temperature variations are notable, with summer highs frequently exceeding 30°C (86°F) and occasionally surpassing 40°C (104°F). Winters are typically frosty and clear, with southern areas sometimes experiencing bitter cold.

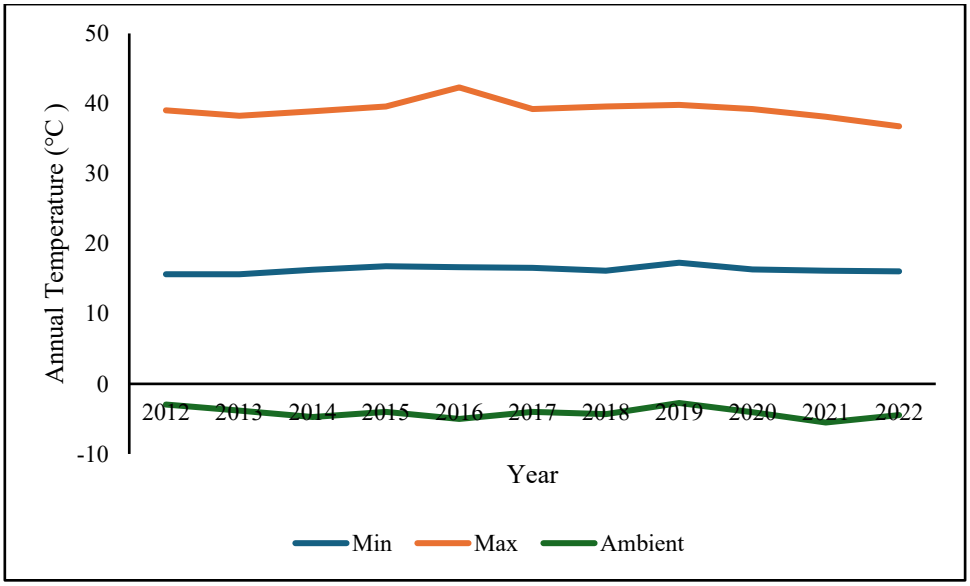


Figure 13: Gromis Substation site temperatures and rainfall between 2012 and 2022 (NASA).

6.4 LAND USE

The existing Gromis Substation and the proposed expansion are predominantly located within an area classified as low shrubland (Succulent Karoo), which is the dominant land cover type in the project area (DFFE South African National Land Cover, 2022). The surrounding landscape also includes areas associated with mines: extraction pits and quarries to the east of the proposed sites, as well as small patches of other bare surfaces, roads, and bare riverbed material associated with nearby drainage features. The proposed development is therefore situated within an already transformed landscape characterised by natural shrubland interspersed with existing mining and infrastructure activities, indicating that the project will be located within an area of relatively low land-use sensitivity.

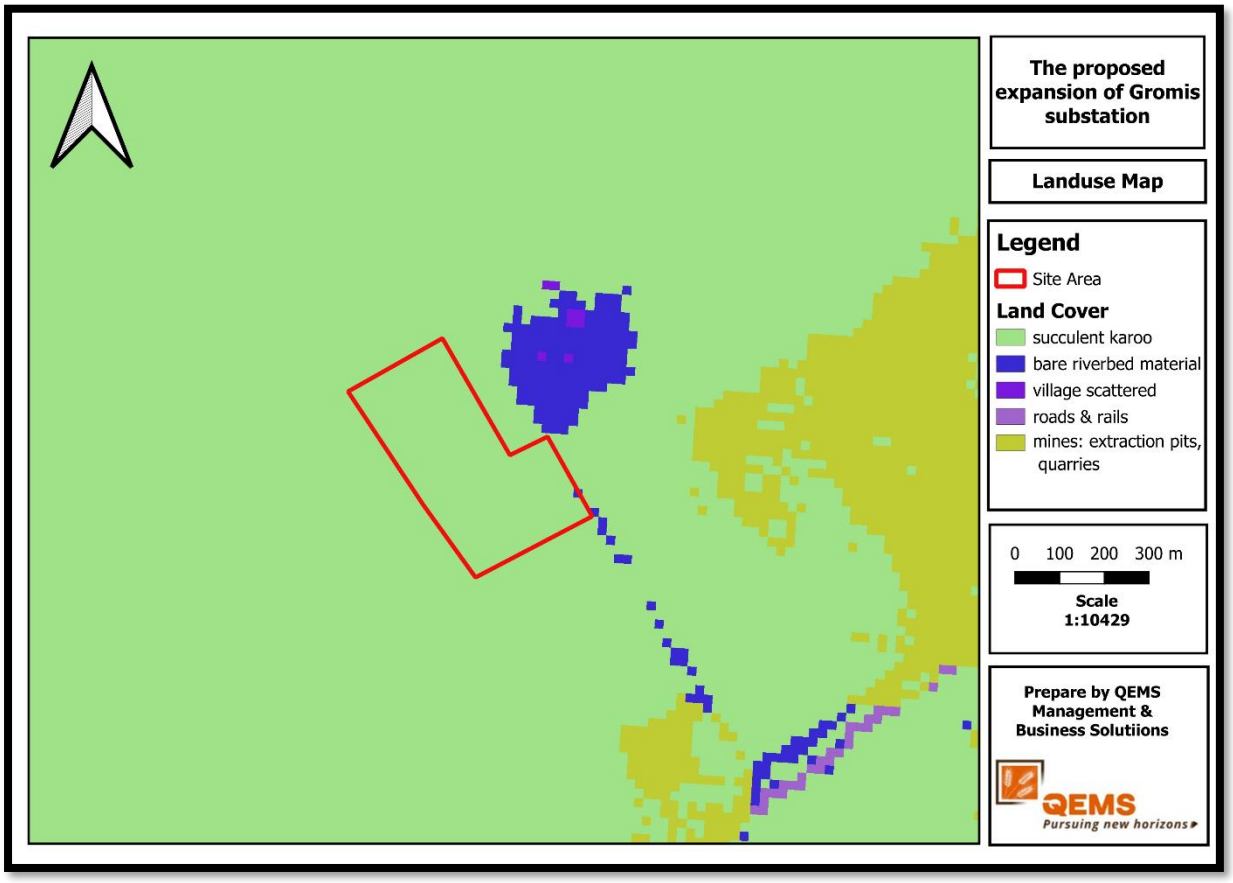


Figure 14: Landuse Map

SECTION D: IMPACT ASSESSMENT

7.SPECIALIST STUDIES

Specialist studies have been carried out for the proposed expansion of Gromis Substation and associated infrastructure project, guided by the insights from the DFFE Screening Tool Report (STR) and Site Verification Report (SVR) (STR and SVR attached as appendix G and H respectively). The STR pinpoints regions of significant sensitivity requiring detailed examination, a determination later confirmed or disputed by the SVR. The SVR evaluated whether the designated areas have experienced changes or remained unaffected, such as alterations in vegetation or new developments. Significant discoveries from these investigations and suggested mitigation strategies are integrated into the Environmental Management Plan (EMPr).

Table 8 below outlines specialist assessments that were identified by the screening tool report based on known impacts associated with the proposed development.

Table 12: Summary of specialist findings required by the screening tool

THEME	SENSITIVITY	SPECIALIST CONDUCTED (CONFIRMED/ DISPUTE)	STUDY CONDUCTED YES/ NOT	EAP/SPECIALIST MOTIVATION
Agriculture Impact Assessment	Low	Confirm	Yes	There is no evidence of agricultural activities observed onsite and the site is dominated by sandy soils, however, the compliance statement is conducted and will be submitted.
Animal species	Medium	Confirm	Yes	No animal species observed during the site visit. However, the screening tool identified numerous animals that might be found in the areas which include: Aves-Circus maurus Mammalia-Eremitalpa granti granti Sensitive species 21

				Invertebrate-Brinckiellamauerbergerorum Potentials impacts would be managed according to the provisions of the EMPr. Thus, the study will be conducted as part of Terrestrial Biodiversity Study.
Plant species	Medium	Confirm	Yes	No protected or threatened species were observed on-site. The site is dominated by dwarf microphyllous shrubs, with 'white' grasses of the genera Aristida and Eragrostis; Thus, the study has been conducted as part of Terrestrial Biodiversity Study
Aquatic biodiversity	Low	Confirm	Yes	No watercourses were observed within the proposed development. An Aquatic/wetland compliance statement has been conducted.
Archaeological and cultural heritage	Low	Confirm	Yes	No features of Archaeological and Cultural Heritage were observed on site. The Heritage/Archaeological Impact specialist study has been conducted.

Defence	Low	Confirm	No	There are no military bases or facilities on the site or within proximity to the site. Moreover, the DFFE Screening Tool Report also noted low sensitivity for the Defence theme. Hence, no further assessment is required or deemed necessary for the Defence theme.
Palaeontology	Low	Confirm	Yes	No features of paleontological value observed on site. The study has been conducted.
Terrestrial Biodiversity	Low	Confirm	Yes	No protected or threatened species were recorded during the site assessment. Terrestrial biodiversity assessment has been undertaken.
Civil Aviation	Medium	Disputed	No	The site is located approximately 11.67 km from Kleinzee Airfield. The proposed infrastructure will be of a similar height to the existing substation infrastructure and is therefore unlikely to interfere with civil aviation activities.; hence, no further assessment is required or deemed necessary for the Civil Avian theme.

7.1. SUMMARY OF SPECIALIST STUDIES

7.1.1 TERRESTRIAL IMPACT ASSESSMENT

Ntumbuluko Consulting (Pty) Ltd was appointed by QEMS Management and Business Solutions CC, on behalf of the National Transmission Company South Africa SOC Ltd (NTCSA), to undertake a Plants, Animals and Terrestrial Biodiversity Assessment for the proposed expansion of Gromis substation and its associated infrastructure located on portion 0 of farm Dikgat no. 195, within the jurisdiction of Nama Khoi Local Municipality of Namakwa District Municipality in 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.

7.1.1.1 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.

7.1.1.2 RESULTS

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 15: 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.

7.1.1.3. 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 the 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.

7.1.1.4 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 groups2. 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

7.1.1.5 ALIEN INVASIVE SPECIES PRESENT ON SITE

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.

7.1.1.6 FAUNAL ASSESSMENT

During the site inspection, a single duiker was observed grazing within the project area (Figure 14). 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 a small carnivorous mammal. No additional mammalian species were recorded during the survey period.



Figure 16: Duiker observed onsite.

7.1.1.7. Invertebrates

A few mollusc shells were also found (Figure 15); 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 17: Molluscs Shells observed onsite.

7.1.1.8 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.

7.1.1.9 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.

7.1.2 AQUATIC AND WETLAND COMPLIANCE STATEMENT:

Ntumbuluko Consulting (Pty) Ltd has been appointed by QEMS Management and Business Solutions cc on behalf of the National Transmission Company South Africa SOC Ltd (NTCSA) conduct a wetland delineation and compile an aquatic compliance statement for installation of new synchronous condensers and associated infrastructure at the Gromis Substation, located within the Nama Khoi Local Municipality of the Namakwa District, Northern Cape Province. The study aims to determine the site's suitability for constructability from an aquatic biodiversity sensitivity perspective.

7.1.2.1 ASSUMPTIONS AND LIMITATIONS

It is difficult to apply pure scientific methods within a natural environment without limitations, and consequential assumptions need to be made. The following constraints may have affected this assessment:

- The findings, results, observations, conclusions and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as available information regarding the perceived impacts on the watercourses and biodiversity;
- Data collection in this study relied heavily on data from representative, homogenous wetland sections, as well as general observations, analysis of satellite imagery from the past until the present, generic data and a desktop analysis.
- 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.

7.1.2.2 RESULTS

The site inspection confirmed the absence of drainage lines, aquatic habitat, watercourses, and wetland indicators within the delineated project footprint. The nearest mapped watercourse is located more than 1 000 m from the proposed development area. The lack of hydrophilic vegetation, hydric soils, or evidence of sustained surface water supports the classification of the site as having low aquatic sensitivity. As a result, the proposed development is expected to pose minimal risk of direct hydrological disruption**.**



Figure 18: Watercourse observed outside of the development footprint.

7.1.2.3 FINAL COMMENTS

Based on the site inspection and supporting desktop analysis, the proposed development area demonstrates low aquatic ecological sensitivity, with no wetlands, hydrophytic vegetation, or regulated watercourses present within the project footprint. The site does not intersect any NFEPA-mapped priority freshwater features and lies outside the 500-metre regulatory buffer of nearby rivers, substantially reducing the likelihood of direct hydrological impacts. Although minor anthropogenic disturbances such as grazing were noted, these are limited, reversible, and do not compromise the ecological suitability of the site. With the application of standard environmental management measures to control runoff, sedimentation, and pollution risks, the

site is considered suitable for development from an aquatic perspective, and no significant aquatic constraints are expected to influence the project's feasibility. From a constructability standpoint, the absence of saturated soils, wetlands, or hydrophytic vegetation indicates favourable ground conditions for construction activities, provided that stormwater is appropriately managed during earthworks to prevent erosion along the drainage feature.

7.1.2.4. MANAGEMENT RECOMMENDATIONS

Stormwater Management

A key consideration for the installation of Synchroniser condensers within an existing substation is the increase in stormwater runoff generated by additional impermeable surfaces such as concrete plinths, equipment bases, access routes, and associated hardstand areas. Elevated runoff volumes and higher flow velocities can concentrate stormwater within the substation platform and its discharge points. When this water is conveyed downslope into nearby drainage features, the resulting high-energy flows may accelerate erosion of the channel bed and banks. Given the steep slopes surrounding the substation, the non-perennial drainage line although located outside the development footprint, remains vulnerable to stormwater impacts arising from construction and operational activities. Effective stormwater attenuation, dispersion, and energy-dissipation measures will therefore be essential to prevent erosion and maintain the stability of the drainage feature. It is therefore important that stormwater generated on site should be managed according to Sustainable Drainage System (SuDS) principles.

Erosion Management

- Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.
- Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.
- Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint.

7.1.3 HERITAGE IMPACT ASSESSMENT:

7.1.3.1 ASSUMPTIONS AND DISCLAIMER

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including

graves and traces of mining heritage) usually occur below the ground level. Should artefacts or skeletal material be exposed during development activities, such activities should be halted immediately, and a competent heritage practitioner and SAHRA must be notified for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6). Recommendations contained in this document do not exempt the applicant from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. Mudzunga Consulting &ICT (Pty) Ltd assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

7.1.3.2 RESULTS OF THE FIELD STUDY

Archaeology

The study did not identify any significant archaeological remains within the proposed development site. Morris (2010) notes that previous studies have indicated that substantial MSA scatters are uncommon in the Bushmanland/Namaqualand areas. Herder sites were more limited to rock shelters and dune areas close to water sources such as pans and rivers. Based on the field study results and field observations, it is the considered opinion of the author that the receiving environment for the proposed development has low potential to yield previously unidentified archaeological sites during construction work. The most important observation is that the dryer inland has yielded low-density scatters of lithic tools, while the rocky coastal area is rich in archaeological remains (see Kaplan 2001, Prins 2011, Morris 2013). In terms of Archaeology, there are no fatal flaws or NO GO Areas. No significant sites were identified within the proposed development site.

Burial grounds and Graves

The field survey did not identify any burial sites within the proposed site. It should be noted that burial grounds and gravesites are accorded with the highest social significance threshold. Graves must be protected because they have both historical and social significance and are considered sacred. Whether they exist or not, they may not be tampered with or interfered with without a permit from SAHRA. The possibility of encountering human remains during subsurface earth-moving works anywhere in the landscape is ever-present. However, the possibility of encountering previously unidentified burial sites within the proposed development site is low; should such sites be identified during construction, they are still protected in terms of Section 36 of NHRA.

Graves and burial grounds can be encountered in most areas; however, the chances of encountering them in the project site are very limited. Farm graveyards are generally located near farmsteads and farmworker dwellings, which means they can be easily identified and avoided. However, the main concern of this study is the potential of encountering isolated and unmarked archaeological/historical graves and burial grounds. These are commonly found close to archaeological sites and abandoned settlements; however, since the site did not yield any archaeological remains, the chances of encountering archaeological graves are very low. It is often difficult to detect the presence of archaeological human burials on the landscape, as these burials, in most cases, are not marked at the surface and are concealed by dense vegetation cover.

If any human remains are exposed during the course of construction work, then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial, they would need to be exhumed under a permit from either SAHRA (for pre-colonial burials as well as burials later than about AD 1500) or the Department of Health for graves younger than 60 years.

Public Monuments and Memorials

The study did not record any public memorials or monuments within the proposed development site. As such, the proposed installation of new synchronous condensers at the Gromis Substation may be approved without any further investigation and mitigation in terms of Section 37 of the NHRA.

Buildings and Structures

In terms of the built environment, the study did not identify any buildings and structures that qualify for protection in terms of Section 34 of the NHRA.

7.1.3.3 RECOMMENDATIONS

The report makes the following recommendations:

- It is recommended that SAHRA endorse the report as having satisfied the requirements of Section 38 (8) of the NHRA.

- It is recommended that SAHRA make a decision in terms of Section 38 (4) of the NHRA to approve the proposed installation of new synchronous condensers at the Gromis Substation.
- From a heritage perspective, supported by the findings of this study, the proposed installation of new synchronous condensers at the Gromis Substation is supported. However, the proposed developments should be approved under the observation that activities do not extend beyond the area considered in this report/affect the identified heritage sites.
- Should chance archaeological materials or human remains be exposed during construction on any section of the site, work should cease on the affected area, and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resource barriers to the proposed installation of new synchronous condensers at the Gromis Substation. SAHRA may approve the proposed installation of new synchronous condensers at the Gromis Substation as planned without any further investigation in terms of Section 38 (8) of the NHRA.

7.1.4 AGRICULTURAL COMPLIANCE STATEMENT

7.1.4.1 ASSUMPTIONS, ASSUMPTIONS UNCERTAINTIES, LIMITATIONS, AND GAPS

The following assumptions, uncertainties, limitations, and gaps were applicable for the soil, land use, and land capability assessment:

- The proposed expansion activities will occur within the development footprint provided by the proponent.
- The layout supplied at the time of assessment are accurate and representative of the final development.
- Climatic conditions and rainfall patterns reflect long-term regional averages and are not significantly altered by abnormal climatic events.
- No significant contamination, soil disturbance, or historic land degradation exists beyond what was visibly observed during the site inspection.

- Water required for construction activities will be lawfully obtained and managed in compliance with applicable legislation.
- Appropriate soil management, erosion control, and rehabilitation measures will be implemented.

7.1.4.2 METHODOLOGY

The assessment of the Study Area's agricultural potential was conducted through a combination of desktop studies to gather general information, site visits for status quo evaluation, soil classification and characterization, as well as the validation of data derived from the desktop studies.

7.1.4.3 DESKTOP STUDY AND LITERATURE REVIEW

The literature review and the desktop study were conducted before the field assessment to gather the study area information about its land use, land capacity, geology and soils, vegetation and climate data. The data was collected from SANBI, VEGMAP and DFFE South African National Land Cover, 2022 other through using QGIS and Google Earth Pro.

7.1.4.4 SITE SURVEY AND SENSITIVITY VERIFICATION

A desktop assessment was initially conducted, followed by a field investigation to validate the results obtained during the desktop phase. The survey took place on 15 October 2026. The objectives of the on-site Site Sensitivity Verification were to:

- Verify the presence of any cultivation activities and assess the associated agricultural sensitivity;
- Verify the presence of any cultivation activities and assess the associated agricultural sensitivity;
- Gain insight into the agricultural potential of the study area;
- Confirm or dispute the current land use and environmental sensitivity as indicated by the National Environmental Screening Tool.

7.1.4.5 IMPACT STATEMENT AND SCREENING TOOL SENSITIVITY VERIFICATION

The assessed area is currently vacant and is characterised primarily by sandy soils with sparse shrubs. The surrounding land uses include existing powerlines traversing the area towards the substation, a water pipeline supplying the substation, and an access road providing access to the site. A mine is also located nearby. These existing infrastructure elements and adjacent mining activities form part of the broader land-use context of the assessed area. Agricultural impacts refer to any changes that affect the long-term ability of a land area to sustain farming

activities. These changes may arise from natural processes or human activities and can lead to a decline in soil fertility, productivity, or land usability. One significant source of agricultural impact is the conversion of land for urban expansion, industrial development, or infrastructure projects. When land is repurposed for non-agricultural uses, its capacity to support crop production or livestock farming is diminished, potentially leading to reduced food security, increased reliance on imports, and economic disruptions for local farming communities.

According to the proposed project layout, approximately 7 ha will be utilised for the expansion of the existing substation, while 6 ha will be allocated for the temporary laydown area. Within the 6-ha designated for the temporary laydown area, a permanent access road approximately 300 m in length will be constructed to provide access to the substation and connect the proposed development to the existing road network. No existing agricultural land will be lost, as the area is currently vacant.

The project area has the Land Capability Class VII and is underlain by Land Type AF17, characterised by predominantly sandy soils. Land Capability Class VII has severe limitations for cultivation and is generally unsuitable for regular crop production. The land is better suited to natural vegetation, conservation and extensive grazing, subject to appropriate land management practices. The area has grazing capacity of 60 ha per large stock unit (LSU), indicating low grazing potential. This means that a relatively large area of land is required to sustain one large stock unit. Grazing activities should therefore be carefully managed to prevent overgrazing, soil erosion and the degradation of the natural vegetation.

The predominantly sandy soils have limited agricultural suitability for cultivation due to their soil characteristics and the prevailing arid climatic conditions of the area. Consequently, the land is more suitable for livestock grazing and the maintenance of natural vegetation than for intensive agricultural production.

The proposed development will utilise 7 ha for the expansion of the existing substation and 6 ha for the temporary laydown area. Although the proposed activities will result in some land disturbance, no significant loss of high-potential agricultural land is anticipated, given the site's Land Capability Class VII classification, low grazing potential (approximately 60 ha/LSU), and predominantly sandy soils, which are generally unsuitable for cultivation and are more

appropriate for limited grazing. The temporary laydown area should be rehabilitated after construction, where feasible, to minimise long-term land degradation and allow the affected area to recover.

In accordance with the 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 NEMA, 1998, when applying for environmental authorisation the current use of the land and the environmental sensitivity of the site under consideration as identified by the national web-based environmental screening tool, must be confirmed by undertaking a site sensitivity verification.

The outcome of this Agricultural Impact Assessment is to:

- Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool; and
- Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

The allocated vs site-verified sensitivities for the agricultural theme are presented in Table 2

Table 13: Summary of the screening tool vs specialist-assigned sensitivities

Study Area	Screening Tool Assigned Sensitivity	Verified Sensitivity
The Proposed Expansion of Gromis Substation.	Low Sensitivity	Low Sensitivity

7.1.4.6 CONFIRMATION OF LINEAR ACTIVITY IMPACT

The protocol requires confirmation, in the case of a linear activity, that the land can be restored to its current condition within two years following completion of construction. It is hereby confirmed that the land temporarily disturbed during the construction of the 300m in length access road can be restored to its current condition within two years following completion of construction and can be returned to its existing level of agricultural production potential within this timeframe.

7.1.4.7 CONCLUSION

The study area is largely vacant and is characterised by predominantly sandy soils, sparse shrubs typical of the arid Namaqualand region. The surrounding land uses include existing powerlines, a water pipeline, access roads and nearby mining activities. The proposed project involves the expansion of the existing substation over approximately 7 ha, the use of an

additional 6 ha as a temporary laydown area, and the construction of a permanent access road approximately 300 m in length.

The site is classified as Land Capability Class VII and falls within Land Type AF17. Its predominantly sandy soils and estimated grazing capacity of 60 ha/LSU indicate low agricultural potential, with the land being more suitable for limited grazing and natural vegetation than for cultivation. The proposed development will result in the permanent loss of approximately 7 ha for the substation expansion, together with additional permanent disturbance associated with the 300m access road. The 6ha temporary laydown area can be rehabilitated following construction to facilitate the recovery of vegetation and potentially allow the resumption of limited grazing activities.

The national web-based environmental screening tool assigns Low sensitivity to the agricultural theme. The site verification assessment confirmed this rating as Low, based on the observed land characteristics, sandy soils, low grazing potential and absence of significant existing agricultural activities. Therefore, the proposed development is not expected to result in significant impacts on high-potential agricultural land.

The appropriate mitigation measures must be implemented to minimise soil disturbance, wind erosion and the formation or movement of sand dunes. These measures should include restricting construction activities to the approved footprint, minimising vegetation clearance, stabilising exposed sandy soils and rehabilitating the temporary laydown area as soon as practicable. The mitigation measures must be incorporated into the Environmental Management Programme (EMPr) and implemented throughout the construction and rehabilitation phases. The project is therefore considered acceptable from an agricultural perspective and compatible with sustainable land use objectives.

7.1.5 PALAEONTOLOGY IMPACT ASSESSMENT

7.1.5.1 Assumptions and uncertainties

Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and only some might contain fossil plant, insect, invertebrate and vertebrate material. The sands of the Quaternary period would not preserve fossils.

7.1.5.2 Recommendation

Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils of the Quaternary. There is a very small chance that fossils may occur below the sand cover in fossil traps such as palaeo-pans or palaeo-springs although no such image is visible in the satellite imagery. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer, or other responsible person once excavations for foundations and infrastructure have commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be low, as far as the palaeontology is concerned, so the project should be authorised.

ASPECT	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/ PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
Palaeontology	Low	Low	Palaeontological Impact Assessment	Section 7.2. SAHRA Requirements

7.2. Potential Impact Associated with the Proposed Project

Potential impacts for the proposed site area include post-impact evaluations, which encompass assessing the effects of the project after its completion. Additionally, there will be other post- impact evaluations considered, but not limited to:

- Loss of biodiversity: The clearing of vegetation for the construction for installation of the synchronous condensers impacts the loss of biodiversity.
- Bird collisions
- Increased influx of job seekers in the proposed area.
- Soil erosion: The absence of a stormwater management system and removal ofvegetation expose bare soil, leading to erosion.
- Soil pollution: Contamination from oil leaks and spills can result in soil pollution.
- Surface water pollution: Inadequate stormwater management infrastructure, slopemanagement, and oil spill management systems can lead to surface water

pollution. Lack of flood management strategies also contributes to this.

- Groundwater pollution: The absence of a soil pollution management system can lead togroundwater pollution.
- Increased ambient noise level: Construction machinery and equipment, as well as labourers on-site, contribute to an increase in ambient noise levels.
- Increased traffic: Construction trucks during both the construction and operational phases lead to increased traffic in the area.
- Visual aspects: Dust from site establishment without dust suppression methods, emissions from extended use of trucks and equipment during the construction phase, and the impact of substation on the aesthetics of the area are all visual concerns.
- Dust emissions during the construction phase.
- Socio-economic aspects: This includes job creation, opportunities for local economic development, development and empowerment of local small, medium, and micro- enterprises (SMMEs), as well as skills development and training opportunities. Increasein the electricity capacity within the receiving communities.
- Habitat fragmentation

7.3. Environment Impact Determination and Evaluation

According to the NEMA EIA Regulations, a significant impact means ‘an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds, targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence’.

The primary objective of the environmental impact assessment (EIA) is to evaluate and manage the potential environmental impacts associated with the proposed project. This assessment is conducted based on the environmental features and characteristics identified on-site, such as vegetation, wildlife, soils, and land uses. These factors are investigated by Environmental Assessment Practitioners (EAPs) and specialists through field studies, supplemented by input from public submissions. The identified impacts are carefully assessed for their relevance and significance. A rating is assigned to each impact to gauge its level of importance. Mitigation measures are then proposed as necessary to mitigate, avoid, prevent, or minimize any adverse impacts and to enhance positive ones.

The impact significance ranking/scoring for each identified impact considers the extent, duration, probability of occurrence, intensity, magnitude of an impact and to which degree the impact and risk can be mitigated.

The impacts of the proposed expansion of Gromis Substation and associated infrastructure will be assessed across the following project stages:

1. **Pre-construction phase:**
    - Initial site assessment
    - Environmental baseline studies
    - Identification of potential environmental impacts
2. **Construction phase:**
    - Clearing of vegetation and land preparation
    - Installation of synchronous condensers infrastructure
    - Construction of access roads and temporary facilities
    - Potential disturbances to local ecosystems and habitats
3. **Operation phase:**
    - Routine maintenance activities
    - Electromagnetic field emissions from synchronous condensers operation
    - Potential long-term effects on biodiversity, water quality, and surrounding landscapes
    - Bird collisions

4. Decommissioning and post-operation phase:

- Dismantling and removal of the synchronous condenser units and associated electrical and mechanical equipment.
- Removal of redundant foundations, transformers, cabling and other supporting infrastructure, where applicable.
- Removal and responsible disposal of hazardous and non-hazardous waste generated during decommissioning.
- Site restoration and rehabilitation of areas disturbed by the installation and operation of the synchronous condensers.
- Assessment of residual environmental impacts and monitoring of long-term environmental recovery.

Throughout each stage, the environmental impacts will be carefully evaluated to identify potential risks and opportunities for mitigation. This assessment will ensure that the project is conducted in an environmentally responsible manner and minimizes adverse effects on the surrounding ecosystem and communities.

7.4. IMPACT RATING METHODOLOGY AND ENVIRONMENTAL IMPACTS

After a list of potential impacts has been identified, the aim of the EIA process is to predict the nature of the impact, rank, and quantify it. From the rating system, the impacts of most significance can be highlighted.

According to the EIA Regulations of 2014, a significant impact means: "An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds, targets, and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity, and probability of occurrence".

The list of identified impacts for the proposed expansion of the Gromis Substation footprint, through the addition of six synchronous condensers, will be evaluated by considering several rating scales as listed below. These ratings include: extent, duration, intensity, significance, status of impact, and probability. The significance of impacts will be calculated as follows:

Significance = (Extent + Duration + Intensity) x Probability

The rating system is described below in the set of pages and then thereafter the impacts are listed and assessed.

Table 14: Extent and duration criteria rating for impacts

Criteria		**Extent:** defines the physical extent or spatial scale of the potential impact.
Rating	**Spatial Area**	**Description**
1	Site specific	Impacts extending only as far as the activity, limited to the site and its immediate surroundings.
2	Local	Impacts extending within 5km from the site boundary.
3	Regional	Impacts extending to the district (20km from the boundary of the site) of the local municipality.
4	Provincial	Impacts extending to provincial scale, e.g., Easter Cape Province / Northern Cape Province.
5	National	Impacts extending to within the country, i.e., South Africa.
6	International	Impacts extending beyond the international border / the borders of South Africa.

Criteria		**Duration:** defines the temporal scale.
Rating	**Period**	**Description**
1	Immediate	Less than 1 year
2	Short term	1-5 years
3	Medium term	6-15 years
4	Long term	Between 16 – 30 years
5	Permanent	Over 30 years. Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.

Table 15: Intensity criteria rating for impacts.

Criteria		**Intensity:** establishes whether the impact would be destructive or be negligible.
Rating (Positive)		**Description**
0	Negligible	Where impacts affect the environment in such a way that natural, cultural and social functions and processes are not greatly and in instances no mitigation measures will be required. (environment not really affected).
1	Low	Minor improvement is anticipated over a short term on the social and/or natural environment.
2	Medium	Where moderate improvements are anticipated over a medium- to long-term on the social and/or natural environment.
3	High	Where large improvements are anticipated over a long term on social, economic and/or bio-physical environment.
4	Very High	This results in permanent improvements at the social/or natural environment.

Criteria		**Intensity:** establishes whether the impact would be destructive or be negligible.
Rating (Negative)		**Description**
0	Negligible	Where impacts do not really affect the environment and no mitigation is required.
1	Low	Where impacts will result in short term effects on the social and/or natural environment. These impacts are not deemed largely substantial and are likely to have little real effect. (marginally affected).
2	Medium	Where impacts will result in medium term effects on the social and/or natural environment. These impacts will need to be considered as constituting a fairly important and usually medium-term change to the environment, these impacts are real but not substantial. Impacts are fairly easy to mitigate.
3	High	Whereby effects will be long term on social, economic and/or bio-physical environment. These will need to be considered as constituting usually long-term change to the environment. Mitigation is considered challenging and expensive.
4	Very High	Where impacts should be considered as constituting major and usually permanent change to the environment and usually result in severe to very severe effects. Mitigation would have little to now effect on irreversibility.

Table 16: Status and probability criteria rating for impacts

Criteria		**Status:** describes whether the impact would have a negative, neutral or positive effect on the affected environment.
Rating	**Spatial Area**	**Description**
+	Positive	Benefit to the environment.
=	Neutral	Standard/impartial.
-	Negative	cause damage to the environment.

Criteria		**Probability:** describes the likelihood of the impact occurring.
Rating	**Period**	**Description**
0	Improbable	Where the possibility of the impact occurring is low.
1	Probable	Where there is a distinct possibility that the impact will occur.
2	Highly probable	Where it is most likely that the impact will occur.
3	Definite	Where the impact will occur regardless of any prevention measures.

Table 17: Significance criteria rating for impacts

Criteria	**Significance:** attempts to evaluate the importance of a particular impact with mitigation measures included and excluded. The significance was calculated using the following formula: **Significance = (Extent + Duration + Intensity) X Probability**	
RATING		**DESCRIPTION**
0-4	Very Low	Where the impacts will not influence the development, social, cultural or natural environment.
5 -12	Low	Where impacts will result in short term effects on the social and / or natural environment. The impacts merits attention however is not deemed largely substantial are likely to have little real effect.
13-25	Medium	Where impacts will have a medium-term effect on the social and/or natural environment. These impacts need to be considered as constituting an important and usually medium-term change to the environment, these impacts can be mitigated by implementing effective mitigation measures.
26-44	High	Whereby effects will be long term on social economic and or biophysical environment. The impacts could have a major effect on the environment. This may bring forth the consideration of no-go areas/open areas on the development land regardless of mitigations implemented. Mitigation is however possible.
45	Very High	Whereby effects will be permanent on the social economic and or biophysical environment. Such impacts cannot be mitigated.

7.5 PRE-CONSTRUCTION

Table 18: Impacts identified during pre-construction or planning phase

Aspects	Potential Impacts	Significant rating without mitigation	Mitigation measures	Significant rating with mitigation
Permits and regulatory compliance	Not adhering to current policies and legal obligations could result in the project violating local, provincial, and national regulations, policies, and guidelines. This non-compliance may lead to a loss of institutional backing for the project, potentially causing it to fail and causing unwarranted disruption to the natural environment.	(16) Medium (-)	• Prior to commencing any construction activities, it is imperative to fulfil all legal requirements pertaining to Environmental Authorisation, Water-Use Licenses, tree permit and any other relevant permits. • Ensure comprehensive consultation of all pertinent legislation and policies and ensure strict compliance with these regulations. • Integrate best practice guidelines into the planning process for both the construction and operation phases of the proposed installation of Synchronous condensers.	(4)Very Low (-)

Community engagement	During the pre-construction or planning phase, it is common to engage stakeholders to gather information and consult with affected communities, landowners, and Indigenous groups. This engagement process may give rise to social tensions, conflicts, or concerns regarding the impacts and benefits of the project.	(22) Medium (-)	• Community engagement should be initiated as early as possible in the planning process. This can be achieved by organizing public meetings, workshops, and consultation sessions to inform affected parties about the project, gather feedback, and openly address any concerns in a transparent manner. • Appointing a Community Liaison Officer is essential to facilitate communication, mediation, and dispute resolution between the project team and the community. This role will help address conflicts and grievances effectively, fostering better collaboration and understanding between all parties involved.	(9) Low (-)

Site Establishment	Insufficient micro-siting of the structures may lead to encroachment and impact on sensitive areas such as wetlands, bird migratory paths, and heritage features. Additionally, the site establishment process can result in the loss of vegetation. Movement of equipment and personnel for the site establishment may have impact on the neighbouring flora and fauna species.	(30) High (-)	• Vegetation clearance should be restricted to the construction area, and any disturbed areas should be revegetated with native plant species. • Specialists should conduct comprehensive investigations to identify any Red Data species. • Movement of equipment and personnel to the site should be limited to the project site only.	(10) Low (-)

Stormwater	Inadequate stormwater design may elevate the risk of erosion and flooding, potentially leading to adverse impacts on nearby wetlands and other water sources. This could include issues like sedimentation and degradation of water quality.	(22) High (-)	• During the planning phase, it is essential to implement proper stormwater design to mitigate the risk of flooding and minimize the impact on watercourses.	(9) Low (-)
Civil aviation	Go through the FAA guidelines for the siting of facilities away from radar, navigational and other communication devices.	(11) Low (+)	• Consult or notify the relevant authority in Civil Aviation Authority for proper guidance.	(5) Low (+)

7.6 CONSTRUCTION

Table 19: Impacts identified during construction phase

Aspects	Potential Impacts	Significant rating without mitigation	Mitigation measures	Significant rating with mitigation
Air quality	The impact on air quality will primarily stem from heightened dust emissions due to site clearance and the movement of construction vehicles, especially on gravel roads.	(8) Low (-)	• Reduce or limit earthmoving activities when weather conditions are excessively windy. • Implement dust suppression techniques as needed to control dust emissions generated by vehicle movement and site clearance. • Enforce a speed limit of 30km/h for vehicles traveling along the access road.	(6) Low (-)
Noise pollution	During the construction phase, there will be heightened levels of noise due to the movement of construction vehicles, operation of heavy machinery, and various physical activities such as hammering, drilling, and grinding.	(10) Low (-)	• Construction vehicles can be equipped with noise-suppressing equipment such as noise barriers, mufflers, and silencers to mitigate the impact of noise pollution. • Construction activities should be scheduled between 07:00 and 17:00 on	(7) Low (-)

			weekdays, and from 07:00 to 14:00 on Saturdays.	
Surface and groundwater contamination	The potential for leaking equipment and hydrocarbon spillages poses a risk of groundwater pollution. Construction activities also have the potential to cause sediment to be deposited into drainage lines, wetlands, and other water bodies.	(20) Medium (-)	• Regular maintenance and monitoring of construction plant and machinery are essential to prevent oil or fuel leakage. • All chemicals should be stored on impermeable surfaces within secure and designated storage areas that are equipped with bunds. • Cement should be stored in impermeable areas protected from rain and should only be mixed in designated zones. Any cement residue should be promptly cleaned up. • Vehicle repairs, servicing, refuelling, and washing should only take place in designated areas with impermeable surfaces. • During service and repair of construction plant, it is imperative to use drip trays to capture drips,spills, and leaks.	(7) Low (-)

			• Furthermore, spill kits should be readily accessible at all sites where chemicals or hydrocarbons are stored, handled, or used, and any spills must be promptly cleaned up.	
Erosion	Construction activities necessitate the removal of vegetation and topsoil, which destabilizes the soil and exposes it to erosive forces from wind and water. Additionally, heavy machinery and equipment used during construction can compact the soil, reducing its porosity and permeability. Compacted soil is less capable of absorbing water, resulting in heightened surface runoff and erosion. Soil erosion and disturbance to affect growth and stability of flora	(32) High (-)	• Vegetation clearance should be restricted to the construction footprint only. • Newly cleared areas must be promptly restored with native vegetation to prevent soil erosion. Temporary stabilization methods should be employed, if necessary, until vegetation establishes. • A comprehensive plan should be developed to prepare for severe weather conditions such as heavy rainfall, runoff events, or strong winds. • Implement appropriate erosion control measures and establish a monitoring program to prevent erosion. • Remedial action should be taken at the first sign of erosion.	(10) Low (-)

			• Implement measures to disperse runoff effectively to minimize erosion.	
Soil Contamination	Leakage or spillage of oil from construction vehicles may result in soil contamination. Soil erosion may transpire due to the removal of vegetation, exposing bare soil, which can result in the loss of soil productivity and fertility.	(22) Medium (-)	• Protect all areas vulnerable to erosion and prevent undue soil erosion resulting from activities within and adjacent to the construction area. • Utilize drip trays during service and repair of construction plant to prevent spills and leaks onto the soil. • Promptly remove contaminated soil and dispose of it appropriately.	(8) Low (-)
Vegetation	Vegetation will be cleared during the excavation of foundations. Vegetation Clearance could cause habitat loss and fragmentation.	(18) Medium (-)	• Construction activities must take place within the footprint. • Harvesting of plants must be prohibited. • Open fires must be prohibited, as they can easily ignite nearby vegetation and spread rapidly.	(3) Low (-)
Visual intrusion	Visual impacts will result from stockpiles and poles erections.	(13) Medium (-)	• Construction waste and rubble should be promptly disposed of at the appropriate dumpingsite.	(10) Low (-)

			• Disturbed areas should be rehabilitated as soon as possible to minimize the duration of exposed soil surfaces. • Maintain cleanliness and organization in the construction camp by removing waste from the site or containing it within enclosed areas away from sensitive viewpoints. • Enhance screening of construction camps by erecting temporary fences with 3-meter-high shade cloth to mitigate their visual impact. • Ensure that stockpiles do not exceed a height of 2 meters.	
Archaeology	While no heritage or cultural sites were discovered on the project site, it's important to note that archaeological artifacts may be unearthed and inadvertently damaged or destroyed during the construction phase.	(6) Low (-)	• Chance find protocols are recommended in case any resources are unearthed: • If any heritage resources are uncovered or found, construction activities should halt immediately. • If any evidence of archaeological sites or remains (such as indigenous ceramics,	(3) Very Low (-)

			bones, stone artifacts, charcoal, ash, etc.) or fossils are discovered during construction, SAHRA must be alerted in accordance with Section 35(3) of the National Heritage Resources Act. • In the unlikely event of discovering unmarked graves, the SAHRA Burial Groups and Graves Unit must be alerted immediately as per Section 36(6) of the National Heritage Resources Act. • A professional paleontologist or archaeologist must be contacted as soon as possible to investigate or inspect the findings.	
Traffic	The area experiences moderate traffic, particularly as it is near the near mine. Therefore, construction activities will likely result in an increase in traffic congestion.	(22) Medium (-)	• Movement of construction vehicles to and from the site should be scheduled during off-peak traffic flow times. • Heavy vehicle crossing signs and entrance road construction signs must be placed along the gravel road to alert motorists.	(8) Low (-)

			• Traffic safety measures, including traffic warning signs, must be implemented during the construction phase to ensure safe passage for all road users.	
Allien invasive species	Construction activities related to the installation of the synchronous condensers, such as land clearing and soil disturbance, can inadvertently facilitate the spread of invasive species to new areas. Alien invasive species have the potential to outcompete native vegetation, leading to disruption of local species. Failure to plan for the removal and management of alien vegetation could result in the invasion of alien species during the construction phase.	(20) Medium (-)	• A duration of 12 months after construction completion to ensure that invasive plants do not reestablish themselves. • Ensure that vehicles and machinery park and operate only within designated areas to minimize disturbance to the surrounding environment. • Limit the use of vehicles and machinery within areas of moderate and high sensitivity to further reduce environmental impact.	(9) Low (-)
Health, safety and security.	The movement of people in the local area may pose security threats, including increased crime rates.	(18) Medium (-)	• A code of conduct for construction workers should be compiled, and all relevant stakeholders should be provided	(15) Medium (-)

			with and required to sign it. This will provide guidance on permissible behavior during the construction process. • An HIV/AIDS awareness program should be developed, and regular training sessions and roadshows should be conducted for both community members and workers. These sessions should focus on risky behaviors that could expose individuals to diseases. • The development area should be fenced off to prevent unauthorized trespassing, enhancing security and safety. • Whenever feasible and reasonable, laborers, especially semi-skilled and low-skilled workers, should be sourced locally. This approach reduces the influx of new individuals into the area and helps alleviate pressure on accommodation facilities. • Buffer zones and signages should be	

			established around the trees to help safeguard them.	
Social and economic impact.	Temporary employment opportunities Business opportunity for local SMMEs Influx of people looking for employment	(45) Very High (+)	• No mitigation measures recommended	
Civil Aviation	Use of crane, temporary tall equipment can interfere with aerodrome airspace. Metallic parts of the structures can reflect sunlight, potentially impairing pilots' vision.	(21) Medium (-)	• Use non-reflective coatings or dull-finish materials to reduce potential for glint/glare. • Use anti-perching devices • Ensure structures do not penetrate OLS; otherwise, obtain necessary approvals and implement compensatory measures (e.g., lighting, markings). • Submit Notice to Airmen (NOTAMs) during construction. • Mark temporary equipment with high-visibility flags or lights.	(11) Low (+)

7.7. OPERATIONAL PHASE

Table 20: Impacts identified during operational phase

Identified impacts	Significance without mitigation	Mitigation measure	Significance with mitigation
Noise emissions from rotating machinery and cooling systems.	(20) Medium (-)	To ensure continued compliance and minimise potential impacts, the following mitigation measures should be implemented: • Install acoustic enclosures around major noise-generating equipment. • Use low-noise cooling fans and machinery where feasible. • Maintain equipment regularly to prevent excessive noise due to wear and tear. • Conduct periodic noise monitoring to ensure compliance with applicable standards.	(7) Low (-)
Oil leakage from lubrication and auxiliary systems.	(32) High (-)	To ensure continued compliance and minimise potential impacts, the following mitigation measures should be implemented: • Secondary containment (bund walls) • Oil leak detection systems • Routine inspections and maintenance • Spill response plan and spill kits on-site	(6) Low (-)

Identified impacts	Significance without mitigation	Mitigation measure	Significance with mitigation
Stormwater contamination	(18) Medium (-)	To ensure continued compliance and minimise potential impacts, the following mitigation measures should be implemented: • Maintain drainage systems • Install oil interceptors • Prevent discharge of contaminated water • Routine inspection after rainfall events	(5) Low (-)
Fire risk (oil systems, electrical faults).	(20) Medium (-)	To ensure continued compliance and minimise potential impacts, the following mitigation measures should be implemented: • Fire detection and suppression systems • Fire walls between equipment • Routine thermographic inspections • Emergency response plan	(5) Low (-)
Waste generation (used oil, filters, oily rags).	(14) Medium (-)	To ensure continued compliance and minimise potential impacts, the following mitigation measures should be implemented: • Hazardous waste storage in labelled containers • Use licensed hazardous waste contractors • Maintain waste manifests	(5) Low (-)
Soil contamination from oil leaks or spills.	(32) High (-)	Install bunded areas, spill containment systems, and implement spill response plans.	(6) Low (-)

Identified impacts	Significance without mitigation	Mitigation measure	Significance with mitigation
Increased energy consumption for auxiliary systems.	(13) Medium (-)	Use energy-efficient auxiliary equipment and optimize operational performance.	(4) Very Low (-)
Improvement in grid stability and voltage control.	(45) Very High (+)	Not applicable – maintain proper operation and maintenance.	

7.8 DECOMMISSIONING PHASE

While the decommissioning phase is not anticipated for the proposed development, the area will undergo rehabilitation after construction activities to restore the site condition as much as possible to its original state. This process entails continuous monitoring and management of the site.

7.9 IMPACTS FOR THE LISTED ACTIVITIES APPLIED FOR (Listing Notice 1 Activity 27 and 47)

Table 21: Impacts Identified for Listing Notice 1 Activity 27

Identified impacts	Potential Impacts	Significant rating without mitigation	Mitigation measures	Significant rating with mitigation
Loss of natural vegetation	Clearance of approximately 7 ha of vegetation for the permanent expansion of the Gromis Substation will result in the permanent loss of existing vegetation within the development footprint. Limited vegetation clearance will also occur within the 6 ha laydown area.	(32) High (-)	• Restrict vegetation clearance to the approved development footprint. • Clearly demarcate the 7ha permanent footprint and 6 ha laydown area before construction. • Minimise vegetation clearance within the laydown area and retain vegetation wherever practicable. • Prohibit unnecessary clearing outside the designated areas. • Rehabilitate the laydown area after construction.	(20) Medium (-)
Loss and disturbance of natural habitat	The removal of vegetation may result in the loss and fragmentation of habitats used by terrestrial fauna and other organisms. Permanent habitat	(32) High (-)	• Retain natural vegetation in areas not required for construction. • Limit construction activities to approved areas.	(20) Medium (-)

	loss will occur within the 7 ha substation footprint.		• Conduct pre-construction searches for protected and sensitive species where required. • Relocate fauna encountered during construction in accordance with applicable permits and ecological recommendations. • Rehabilitate temporarily disturbed areas.	
Disturbance and displacement of fauna	Vegetation clearing, excavation, machinery movement and construction noise may disturb or displace small mammals, reptiles, birds and other fauna occurring within the site.	20) Medium (-)	• Undertake vegetation clearance gradually to allow fauna to move away from the construction area. • Prohibit the killing, trapping or unnecessary handling of wildlife. • Implement a search-and-rescue procedure where necessary. • Restrict construction activities to approved working hours where practicable. • Ensure that workers are informed about the importance of protecting fauna	(6) Low (-)

Soil disturbance and compaction.	Vegetation removal, excavation, movement of heavy machinery and temporary storage of construction materials may disturb and compact the underlying soil, potentially reducing soil permeability and affecting natural soil structure.	(32) High (-)	• Restrict machinery movement to designated access roads and working areas. • Minimise unnecessary excavation and soil disturbance. • Separate and stockpile topsoil for subsequent rehabilitation. • Avoid working on excessively wet soils. • Loosen compacted soils in the laydown area before rehabilitation.	(7) Low (-)
Soil erosion and sedimentation	Removal of vegetation and exposure of bare soil may increase susceptibility to wind and water erosion, particularly during rainfall events. This may result in sediment movement into surrounding areas.	(32) High (-)	• Vegetation clearance should be restricted to the construction footprint only. • Newly cleared areas must be promptly restored with native vegetation to prevent soil erosion. Temporary stabilization methods should be employed, if necessary, until vegetation establishes. • A comprehensive plan should be developed to prepare for severe weather conditions such as heavy rainfall, runoff events, or strong winds.	(10) Low (-)

			• Implement appropriate erosion control measures and establish a monitoring program to prevent erosion. • Remedial action should be taken at the first sign of erosion. • Implement measures to disperse runoff effectively to minimize erosion.	
Soil Contamination	Leakage or spillage of oil from construction vehicles may result in soil contamination. Soil erosion may transpire due to the removal of vegetation, exposing bare soil, which can result in the loss of soil productivity and fertility.	(22) Medium (-)	• Protect all areas vulnerable to erosion and prevent undue soil erosion resulting from activities within and adjacent to the construction area. • Utilize drip trays during service and repair of construction plant to prevent spills and leaks onto the soil. • Promptly remove contaminated soil and dispose of it appropriately.	(8) Low (-)
Dust generation and reduced air quality	Vegetation clearance, excavation, vehicle movement and handling of construction materials may generate dust,	(8) Low (-)	• Apply water to exposed surfaces and access roads when necessary. • Enforce appropriate vehicle speed limits.	(6) Low (-)

	affecting surrounding vegetation, fauna and workers		• Minimise unnecessary vehicle movement. • Cover transported fine materials where required. • Avoid excessive clearing of vegetation, particularly in areas not required for construction.	
Introduction and spread of alien invasive species.	Disturbed soils and exposed surfaces may create favourable conditions for the establishment and spread of alien invasive plant species. Machinery and construction vehicles may also introduce invasive plant seeds	(18) Medium (-)	• Inspect and clean construction machinery before entering the site where necessary. • Implement an alien invasive plant monitoring and management programme. • Remove invasive species before they become established. • Rehabilitate disturbed areas using suitable indigenous vegetation. • Monitor rehabilitated areas for invasive species.	(6) Low (-)

Waste generation during vegetation clearance	Vegetation clearing and construction activities may generate organic waste, rubble and other construction waste, which could negatively affect the surrounding environment if improperly managed	(22) Medium (-)	• Collect and remove waste regularly. • Where appropriate, utilise cleared vegetation for approved rehabilitation purposes or dispose of it at an authorised facility. • Prohibit the burning or indiscriminate dumping of vegetation and construction waste. • Maintain designated waste storage areas	(6) Low (-)

Table 22: Impacts Identified for Listing Notice 1 Activity 47

Identified impacts	Potential Impacts	Significant rating without mitigation	Mitigation measures	Significant rating with mitigation
Loss of natural vegetation	Clearance of existing vegetation within the proposed 400 kV yard extension footprint will result in the permanent loss of indigenous vegetation.	(32) High (-)	• Restrict vegetation clearance to the approved development footprint. • Demarcate the construction area before commencement. • Retain vegetation outside the construction footprint wherever possible.	(20) Medium (-)

			• Avoid unnecessary clearing of surrounding natural vegetation	
Loss of natural habitat	Permanent removal of vegetation will result in the loss of habitat for terrestrial fauna and other organisms occurring within the proposed expansion area	(32) High (-)	• Minimise the development footprint wherever practicable. • Retain natural vegetation outside the development area. • Conduct pre-construction searches for protected species where required. • Implement appropriate fauna rescue and relocation measures where necessary	(18) Medium (-)
Disturbance and displacement of fauna	Construction activities, machinery movement, excavation and noise may disturb fauna and result in temporary displacement from the surrounding habitat.	(20) Medium (-)	• Conduct vegetation clearance gradually to allow fauna to move away. • Prohibit the killing or unnecessary handling of wildlife. • Implement fauna rescue procedures where necessary. • Restrict construction activities to the approved working area	(6) Low (-)
Soil disturbance and compaction.	Excavation for foundations, installation of electrical	(32) High (-)	• Restrict machinery movement to designated working areas.	(7) Low (-)

	equipment and movement of heavy machinery may disturb the soil structure and cause soil compaction.		• Minimise unnecessary excavation. • Strip and stockpile topsoil separately where applicable. • Avoid unnecessary disturbance outside the approved footprint	
Soil erosion and sedimentation	Vegetation removal and exposure of bare soil may increase soil erosion, particularly during rainfall events, resulting in sediment movement into surrounding areas.	(32) High (-)	• Implement appropriate stormwater management measures. • Stabilise exposed soil and stockpiles. • Install erosion-control measures where necessary. • Rehabilitate disturbed areas as soon as construction is completed	(10) Low (-)
Soil Contamination	Accidental spills or leaks of fuel, oil, lubricants and other hazardous substances from construction machinery and electrical equipment may contaminate the soil.	(22) Medium (-)	• Refuel and service machinery in designated areas. • Provide spill kits on site. • Store hazardous substances in appropriately bunded areas. • Clean up spills immediately and dispose of contaminated materials appropriately.	(8) Low (-)

Dust generation and reduced air quality	Excavation, vegetation clearance, transportation of materials and movement of construction vehicles may generate dust, potentially affecting surrounding vegetation and fauna	(8) Low (-)	• Apply water to exposed surfaces when necessary. • Enforce appropriate vehicle speed limits. • Cover fine construction materials during transportation. • Minimise unnecessary vehicle movement	(6) Low (-)
Introduction and spread of alien invasive species.	Disturbed soils and exposed surfaces may create favourable conditions for the establishment and spread of alien invasive plant species. Machinery and construction vehicles may also introduce invasive plant seeds	(20) Medium (-)	• Inspect and clean construction machinery before entering the site where necessary. • Implement an alien invasive plant monitoring and management programme. • Remove invasive species before they become established. • Rehabilitate disturbed areas using suitable indigenous vegetation. • Monitor rehabilitated areas for invasive species.	(9) Low (-)

Generation of construction waste	Installation of electrical infrastructure, excavation and construction activities may generate waste materials, including packaging, scrap metal, concrete rubble and other construction debris	(22) Medium (-)	• Provide designated waste storage areas. • Separate recyclable and non-recyclable waste. • Remove waste regularly and dispose of it at authorised facilities. • Prohibit illegal dumping and uncontrolled burning of waste.	(6) Low (-)
Noise and vibration	Construction machinery, excavation equipment and transportation activities may generate noise and vibration, potentially disturbing nearby fauna and workers.	(21) Medium (-)	• Maintain construction machinery and equipment in good working condition. • Restrict noisy activities to reasonable working hours. • Avoid unnecessary hooting and idling of vehicles. • Provide appropriate personal protective equipment to workers	(6) Low (-)
Bird collision with electrical infrastructure	The installation or extension of electrical infrastructure, particularly overhead conductors and associated powerline connections, may	(18) Medium (-)	• Incorporate bird-friendly design principles into the electrical infrastructure where practicable. • Install appropriate bird flight diverters on sections of overhead conductors	(6) Low (-)

	increase the risk of bird collisions		identified as posing a collision risk by the avifaunal specialist. • Avoid unnecessary overhead structures where practicable. • Monitor bird interactions with the infrastructure during operation	
Bird electrocution	Birds perching, roosting or nesting on electrical infrastructure may be exposed to electrocution risks where they can simultaneously bridge energised components and earth structures.	(22) Medium (-)	• Incorporate bird-friendly electrical design into the 400 kV yard extension. • Ensure appropriate insulation and spacing of electrical components in accordance with applicable engineering and avifaunal recommendations. • Install perch deterrents or insulation where identified as necessary by the avifaunal specialist. • Conduct periodic inspections to identify bird electrocution incidents.	(6) Low (-)

7.10 CUMULATIVE IMPACTS (FROM THE SPECIALIST REPORTS)

Cumulative impacts refer to changes to the environment that result from an action in combination with other past, present, and future human actions. The cumulative impacts of the expansion of Gromis Substation and 400kV yard combine the effects of building and operating power distribution on the environment, communities, and ecosystems over time. There are no other similar projects within 30km radius.

7.10.1 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

7.10.1.1 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. ENVIRONMENTAL IMPACT ASSESSMENT

8.1 SUMMARY OF IMPACTS

The comprehensive method used for assessing each identified potentially significant impact and risk has been thoroughly discussed in the preceding sections. Below is a summary table (Table 16) providing an overview of the impacts, including their significance before and after mitigation measures are implemented:

Table 23: Summary of Impacts

Impact	**Significance (Pre-mitigation)**	Significance (Post-mitigation)
Pre-construction/planning phase		
Permits and regulatory compliance	(16) Medium (-)	(4) Very Low (-)
Community engagement	(22) Medium (-)	(9) Low (-)
Site establishment	(30) High	(10) Low
Stormwater	(22) Medium (-)	(9) Low (-)
Civil aviation	(11) Low (+)	(5) Low (+)
Construction phase		
Air quality	(8) Low (-)	6 Low (-)
Noise pollution	(10) Low (-)	(7) Low (-)
Surface and groundwater contamination	(20) Medium (-)	(7) Low (-)
Erosion	(32) High (-)	(10) Low (-)
Soil contamination	(22) Medium (-)	(8) Low (-)
Vegetation	(18) Medium (-)	(3) Low (-)
Visual	(13) Medium (-)	(10) Low (-)
Archaeology	(6) Low (-)	(3) Very low (-)
Traffic	(22) Medium (-)	(8) Low (-)
Alien Invasive Species	(20) Medium (-)	(9) Low (-)
Health, safety and security	(18) Medium (-)	(15) Low (-)
Social and economic impact	(45) Very High (+)	No mitigation measure

Operational phase		
Noise emissions from rotating machinery and cooling systems	(20) Medium (-)	(7) Low (-)
Oil leakage from lubrication and auxiliary systems.	(32) High (-)	(6) Low (-)
Stormwater contamination.	(18) Medium (-)	(5) Low (-)
Fire risk (oil systems, electrical faults).	(20) Medium (-)	(5) Low (-)
Waste generation (used oil, filters, oily rags).	(14) Medium (-)	(5) Low (-)
Soil contamination from oil leaks or spills.	(32) High (-)	(6) Low (-)
Increased energy consumption for auxiliary systems.	(13) Medium (-)	(4) Very Low (-)
Improvement in grid stability and voltage control.	(45) Very High (+)	No mitigation measure

Several negative impacts with moderate and low significance ratings have been identified for the planning, construction, and operational phases of the project. The majority of these impactscan be reduced, controlled, or remedied to a low significance rating, ultimately resulting in minor effects. Additionally, due to the location of the proposed development and the nature ofactivities within the area, most communities will not be significantly affected

SECTION E: CONCLUSION AND RECOMMENDATIONS

9. CONCLUSION AND RECOMMENDATION

The proposed expansion of Gromis substation should be authorised to ensure compliance with environmental laws and regulations. The expansion of the Gromis Substation footprint, through the addition of two synchronous condensers each with a capacity of 300 Mvar, will significantly enhance electricity network stability, voltage control, and overall system reliability.

The environmental assessment identified potential impacts primarily associated with the construction and operational phases; however, these impacts are expected to be localised and can be effectively managed through the implementation of appropriate mitigation measures. In addition, the project will contribute positively to infrastructure development and create short-term employment opportunities. Based on the assessment findings, the benefits of the project outweigh the potential environmental impacts. It is therefore recommended that Environmental Authorisation be granted, subject to the implementation of the proposed mitigation and environmental management measures.

10. OPINION OF THE EAP

The Environmental Assessment Practitioner (EAP) believes that any potential adverse impacts associated with the proposed expansion of the existing Gromis Substation can be effectively mitigated to prevent long-term degradation of the surrounding environment. Following the completion of a comprehensive Basic Assessment process, QEMS recommends that the proposed expansion of the existing Gromis Substation be authorised, provided that all mitigation measures outlined in the Environmental Management Programme (EMPr) are implemented and adhered to during the planning, design, construction, and operational phases of the project.

Furthermore, based on the assessment undertaken, the EAP is satisfied that the proposed expansion will take place within an area of low to medium environmental sensitivity. The proposed development is also located within the Strategic Transmission Corridor. The proposed development is therefore considered environmentally acceptable, as it will enhance

the reliability and capacity of the electricity supply network while limiting disturbance to surrounding land uses and sensitive environmental features.

In addition, the proposed project is expected to contribute positively to the local and regional economy through the creation of temporary employment opportunities during the construction phase and improved electricity infrastructure that may support future economic development initiatives.

SECTION F: EAP DECLARATION

11. UNDERTAKING BY EAP

I, **Dr. Patrick Sithole**, declare that I act as the independent environmental practitioner in this application:

- I do not have and will not have any financial interest in the undertaking of the activity other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- do not have and will not have a vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose to the competent authority any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations;
- will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;
- will keep a register of all interested and affected parties that participated in a public participation process and will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.



Signature of the Environmental Assessment Practitioner:

QEMS Business Solutions and Management CC

Name of Business