NALA

ENVIRONMENTAL

CONSULTING FIRM

RELOCATION OF THE AUTHORISED 400KV MAIN TRANSMISSION SUBSTATION ASSOCIATED WITH THE ELECTRICAL GRID INFRASTRUCTURE FOR THE SUTHERLAND , SUTHERLAND 2 AND RIETRUG WIND ENERGY FACILITIES, WESTERN CAPE PROVINCE

JULY 2021

MOTIVATION REPORT

DOCUMENT DETAILS

Applicant	:	South Africa Mainstream Renewable Energy Developments (Pty) Ltd
Title	:	Relocation of the authorised 400kV Main Transmission Substation associated with the electrical grid infrastructure for the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities, Western Cape Province
Author/EAP	:	Nala Environmental (Pty) Ltd Arlene Singh
Purpose of Report	:	Public Review and comment
Date	:	July 2021

RESOLUTION OF THE MOTIVATION REPORT AND INVITATION TO COMMENT

South Africa Mainstream Renewable Power Developments (PTY) Ltd (herein-after referred to as Mainstream) received an Environmental Authorisation (DEA Ref:. 14/12/16/3/3/1/2077) dated (08/06/2020) for the development of a 132 kV powerline, a 400 kV powerline and a 400 kV Main Transmission Substation (MTS) near Sutherland in the Northern and Western Cape. The authorised powerlines will evacuate electricity generated by the authorised Rietrug Wind Energy Facility (WEF), Sutherland WEF and the Sutherland 2 WEF (herein-after referred to as WEFs) to the national grid. These WEFs received EAs dated 10 November 2016 (Department of Environmental Affairs (DEA) Reference Numbers: 12/12/20/1782/1; 12/12/20/1782/2; and 12/12/20/1782/3, respectively), from the National Department of Forestry, Fisheries and Environment.

In this regard, South Africa Mainstream Renewable Power Developments (Pty) Ltd (Mainstream) is considering the MTS previously assessed and authorised as per centre co-ordinates 31º 41'51.998"S 21º15'18.445"E be relocated further south within the authorised 500m 400kV grid corridor and an amendment to the start and end co-ordinates of the 132kV and 400kV powerlines that are related to this 400kV MTS. The current authorised location of the MTS has been deemed to be unsuitable as it is located upon hilly terrain that would be unsuitable for construction, would require extreme amounts of earthworks and would hinder the connection of other renewable energy projects in the future. Mainstream is therefore requesting the DFFE to amend the Environmental Authorisation to reflect the new proposed location of the MTS and new start and end co-ordinates of the associated 132kV and 400kV powerlines,

In terms of Condition 6 of the Environmental Authorisation and Chapter 5 of the EIA Regulations of December 2014 (as amended on 07 April 2017 and 13 July 2018), it is possible for the holder of an Environmental Authorisation to apply for an amendment of the Environmental Authorisation with the Competent Authority for a change or deviation from the project description to be approved. The amendment to the location of the MTS within the authorised 500m grid corridor and the amendment to the powerline co-ordinates within the authorised grid corridor is not a listed activity in itself and will not trigger any new listed activities as the new location falls within the 500m grid corridor previously assessed.

Nala Environmental has prepared this Motivation Report in support of the amendment application on behalf of Mainstream. This report aims to provide detail pertaining to the impacts and significance of the proposed change to the location of the MTS and co-ordinates of the related 132kV and 400kV powerlines associated with the Rietrug, Sutherland and Sutherland 2 WEF's and associated electrical grid connection infrastructure in order for interested and affected parties to be informed of the proposed amendment and provide comment, and for the competent authority to be able to reach a decision in this regard. This report is supported by specialist studies in order to inform the final conclusion regarding the proposed amendment (refer to **Appendix D to G** of this report). This main report must be read together with these specialist studies in order to obtain a complete understanding of the proposed amendment and the implications thereof.

This amendment motivation report has been made available to registered interested and affected parties for a 30-day period from **12 July 2021 to 12 August 2021.** The availability of the report was advertised in the Cape Times newspaper on 08 July 2021 (refer to Appendix C2).

The motivation report and associated appendices were made available for download at https://nalaenvironmental.co.za/projects/ and CD copies were distributed on request from stakeholders and I&AP's.

All comments received during the review period have been included within the Issues Trail report (Appendix C7) will be submitted to the Department of Forestry, Fisheries and Environment (DFFE) with the final amendment motivation report.

SYNOPSIS OF THE PROJECT

1.1 Location

The applicant is proposing to develop three WEFs with a capacity of 140 MW each, comprising a total combined installed capacity of 420 MW. As noted above, these WEFs have already received EAs from the National DFFE. Three separate BAs had been undertaken for the proposed electrical infrastructure associated with each WEF in the Namakwa District Municipality, and the Karoo Hoogland Local Municipality, Northern Cape province with the grid infrastructure extending into the Western Cape province under the jurisdiction of the Central Karoo District Municipality and the Laingsburg Local Municipality.

The electricity produced by the three WEFs will be transmitted to the national grid via a 132 kV and a 400 kV powerline and associated electrical infrastructure, including the MTS. The farm portion which will be affected by the proposed relocation of the MTS and amendment to the co-ordinates of the 132kV and 400kV powerlines is Portion 7 of Farm Hamelkraal 16. It must be noted that the current authorised location of the MTS is within Portion 7 of the Farm Hamelkraal 16, the MTS is intended to be relocated further south within the same property as illustrated by Figure 1. The MTS site can be accessed using the service roads authorised for the powerline routes.

The following infrastructure was authorised following the BA process:

132kV Powerline	**Latitude**	**Longitude**
Starting point of activity	32°38'41.115"S	20°55'2.470"E
Middle point of activity	32°37'52.510"S	21°8'0.841"E
End point of activity	32°41'54.652"S	21°15'23.209"E
400kV Powerline	**Latitude**	**Longitude**
Starting point of activity	32°41'54.625"S	21°15'23.209"E
End point of activity	32°44'4.970"S	21°15'41.530"E
400kV Major Transmission Substation	**Latitude**	**Longitude**
Centre coordinates	32°41'51.998"S	21°15'18.445"E

Description of the MTS presented as per the Final Basic Assessment report by CSIR (2019):

The MTS will be constructed on Portion 7 of Hamelkraal Farm 16 to facilitate connection to the national grid. The proposed MTS is expected to extend approximately 400 m X 400 m (160 000 m^2) and includes an O&M building and laydown area for construction purposes. It is understood that the laydown area will be rehabilitated at the end of construction. The proposed O&M building is expected to extend approximately 120 m X 120 m (14 400 m^2) in area. The proposed laydown area is planned to cover an estimated area of 10 000 m^2 (1 ha). All non-linear components of the proposed project (i.e. MTS, O&M building and laydown area) will cover an area less than 20 ha. The proposed MTS, laydown area and O&M building will be fenced off temporarily during the construction phase. In addition, permanent security fencing will be provided during the operational phase for the proposed MTS and O&M building.

1.2 Potential Environmental Impacts as determined through the BA Process

From the specialist investigations undertaken within the BA process for the electrical grid infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEFs) (CSIR, 2019), the following environmental impacts relevant to this amendment application were identified:

- Impacts on fauna and flora (biodiversity);
- Impacts on heritage aspects;

» Impacts on surface hydrology; and
» Impacts of soil and agricultural potential.

Key conclusions and recommendations of the **original BA** pertinent to this application:
From the specialist investigations undertaken as part of the BA for the electrical grid infrastructure and specifically the MTS, it was concluded that the majority of impacts are of very low to moderate significance with the implementation of appropriate mitigation measures. No environmental fatal flaws were identified on the site. However, areas of sensitivity identified during the BA process included:

» **Fauna & Flora:**

The Terrestrial Ecology assessment undertaken by Simon Todd of 3Foxes Biodiversity Solutions (2019) indicated that the proposed power line, MTS and associated infrastructure are located in a potentially sensitive area which includes the Roggeveld Centre of Endemism as well as potential habitat of the Riverine Rabbit and several other listed fauna, some of which can be confirmed present. The footprint of the 132 kV section of the power line can however be reduced to a low level and sensitive habitats such as the major drainage systems along the route can also largely be avoided. The 400 kV section of the power line traverses the open gravelly plains of the Gamka Karoo to the connection point with the Eskom 400 kV power lines. The major sensitive feature along this section of the route is the drainage lines with associated floodplains which traverse this area. As the spans between pylons in this area would be large, there are no drainage lines that could not be spanned by the power line. As such, impact on these features can be reduced to a low acceptable level.

The site selected for the MTS was not particularly flat and would require a large amount of earth-moving to level the site and therefore was not considered to represent an ideal site for the MTS at the time. The area selected however consisted largely of moderate sensitivity and no particularly high value species or ecosystems were identified within the footprint and was considered acceptable and of **moderate local impact.** From a terrestrial ecological point of view, the power line routing and connection to the MTS were considered to be suitable and no fatal flaws were identified.

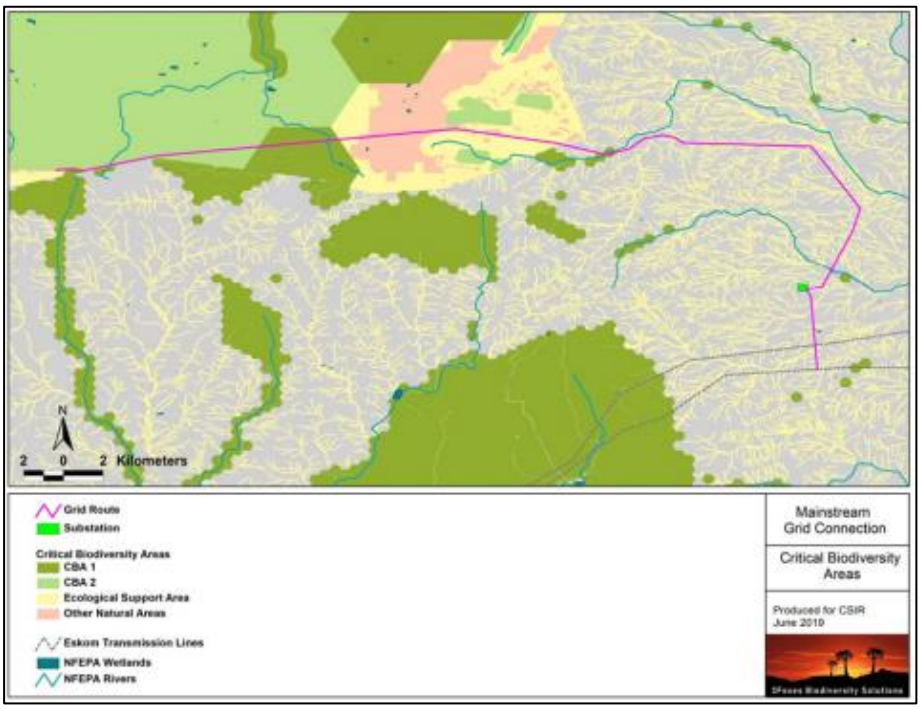

Figure 1.1. Critical Biodiversity Areas and Ecological Support Areas for the study area, which is based on the CBA map for the Northern Cape and the Western Cape BSP for the Laingsburg District.

» **Heritage:**

The Heritage Impact Assessment consisting of a heritage and palaeontological assessment undertaken during the BA process by Dr Jayson Orton of ASHA Consulting and Dr John Almond of Natura Viva (2019) explains that significant archaeological sites were identified on project maps and regarded as no-go zones with buffers of at least 30 m around all associated features. The reports indicated that relevant waypoints be avoided with buffers of at least 30 m around all associated features are noted below (from west to east). Note that this list only included those sites located within 500 m of the footprint area.

Figure 1.2. Overview of the heritage sites within 500 m of the power line route that should be protected and avoided.

Waypoint 1785 located closest to the MTS includes a dolomite slab with a historical engraving featuring a circle with dots in it, a "Q" and an "H". Age presumed to be historical. Although **not a site of high significance**, the engraving should be avoided (the lines may span over the site). No pylon should be placed within 30 m of the site and it should be fenced with a 30 m buffer during the construction phase.

In terms of the Palaeological impact no significant fossil remains were recorded at the MTS site. The overall palaeontological sensitivity of the Electrical Grid Infrastructure study area is rated as **low.**

» **Surface Water:**

The Freshwater Impact Assessment undertaken by Antonia Belcher and Dana Grobler of BlueScience (2019) undertaken for the grid connection and MTS during the basic assessment process notes that the western portion of the proposed project i.e. the 132kV powerline is located largely along the border between the Northern and Western Cape provinces on the higher-lying Komsberg Mountains that is the watershed between the northerly flowing Riet River tributary of the Orange River and the southerly flowing Dwars River tributaries of the Gouritz River. The eastern portion of the project is located within the upper reaches of the Vanwyks, Juk and Ouberg Tributaries of the Dwyka River, a tributary of the Gouritz River. This section of the transmission lines and the MTS are located within lower lying valleys and floodplain areas. Associated with the very upper reaches of the rivers on the hill tops are seep areas and vernal ponds while valley bottom and floodplain wetlands occur in the lower foothills and floodplain zones within the deeper valleys.

The study area is located largely within Upstream Freshwater Ecosystem Priority Areas (FEPA) Rivers that should not be impacted on such that they would result in degradation of more ecologically important downstream FEPA Rivers. There are several instream wetland areas within the channels of the larger watercourses that have been mapped as artificial FEPA Wetlands of which only two are located near the proposed works. A natural depression is the only mapped natural FEPA Wetland located in the wider study area but is at least 500 m south of the proposed line in the upper Riet River.

The rivers within the study area are still in a natural condition in their upper reaches with few modifications (some roads and very small dams). Downstream, in the middle reaches of the Vanwyks, Juk and Oubergs Rivers, the rivers become largely natural to moderately modified. The riparian habitat is slightly more degraded as a result of direct habitat modification from the surrounding farming activities.

The larger watercourses in the study area, the Riet, Vanwyks, Juk and Oubergs Rivers, have a high ecological importance and sensitivity while the smaller tributaries/drainage features are of a moderate ecological importance and sensitivity. The larger watercourses tend to be more ecologically important but less sensitive to impacts while the smaller tributaries are less ecologically important but more sensitive to flow, water quality and habitat modification.

The hillslope seeps and the vernal pools are in a natural ecological condition while the valley bottom wetlands have been slightly modified but are still in a largely natural ecological condition. The floodplains although still largely natural, are the most impacted by the activities within the valley floor. The wetland features are considered of **high ecological importance and sensitivity**.

The recommended ecological condition of the aquatic features within the study area indicated that they should be maintained in their current ecological condition and should not be allowed to degrade further. The recommended buffer areas as a development setback from the aquatic features to ensure these aquatic ecosystems are not impacted by the proposed activities, specifically the MTS indicate that a buffer of at least 32 m between the delineated aquatic ecosystems to the north of the substation footprint and the substation should be maintained.

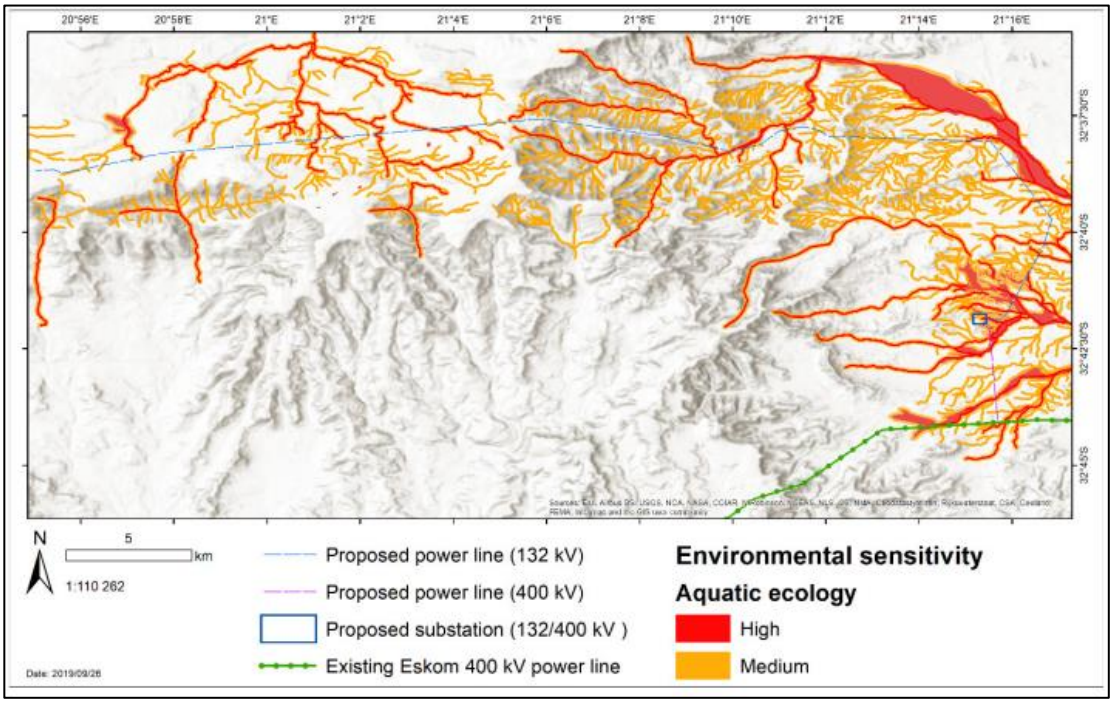

Figure 1.3. Environmental Sensitivities Map – Aquatic Ecology (CSIR, 2019).

» **Soil & Agricultural Potential:**

The soil and agricultural assessment was undertaken by Johann Lanz a Private Consultant (2019) indicated that the entire study area had extremely **low agricultural potential** and therefore **very low agricultural sensitivity** to development and consequent loss of agricultural land use. Agricultural potential and conditions were determined to be very uniform across the site, and the choice of placement of facility infrastructure therefore had a negligible influence on the significance of agricultural impacts. From an agricultural point of view, no parts of the site need to be avoided by the proposed development and no buffers are required. The proposed project infrastructure did not intersect with any no-go areas identified by the specialists, and where areas of high sensitivity will be traversed by the proposed project components, relevant mitigation measures have been recommended to reduce the significance of the potential impacts. No no-go areas or fatal flaws associated with the proposed project were identified from a soil and agricultural potential perspective.

It was noted by the specialist that should the preferred location of the MTS, O&M building and laydown area change, any alternative layout/location or revisions thereto occurring within the boundaries of the development envelope would not be regarded as a change to the scope of work or the findings of the impact assessments.

» **Summary of the original BA Findings:**

As part of the planning mitigation strategy, the applicant considered all the above-mentioned findings and sensitivities, and duly made the necessary amendments to the layout considered in the BA in order to reduce impacts to an acceptable level.

No environmental fatal flaws were identified to be associated with the electrical grid infrastructure associated with the Rietrug, Sutherland and Sutherland 2 WEFs. Impacts of **very low to moderate** significance were identified for the current authorised grid connection and MTS. Where impacts cannot be avoided, appropriate environmental management measures are required to be implemented to mitigate the impact. Environmental specifications for the management of potential impacts are detailed within the Environmental Management Programme (EMPr) submitted as part of the BA Report.

1.3 Amendments of the Environmental Authorisation

Following the issuing of the EA in 08 June 2020, no other amendments were made to the Environmental Authorisation (DEA Ref:. 14/12/16/3/3/1/2077).

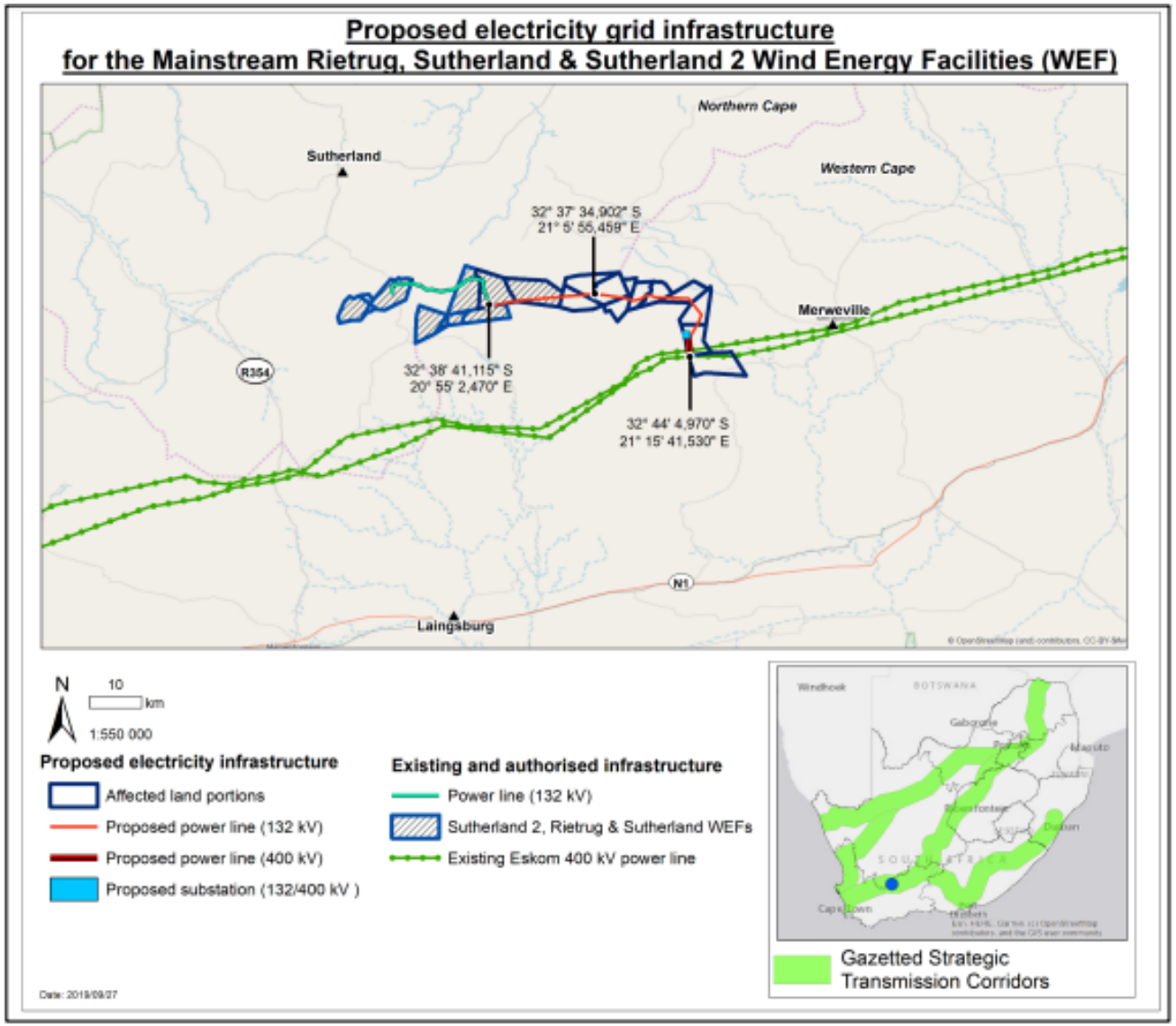

Figure 1.4: Electrical Grid Connection infrastructure previously assessed during the BA process undertaken for the project in 2019 (CSIR,2019)

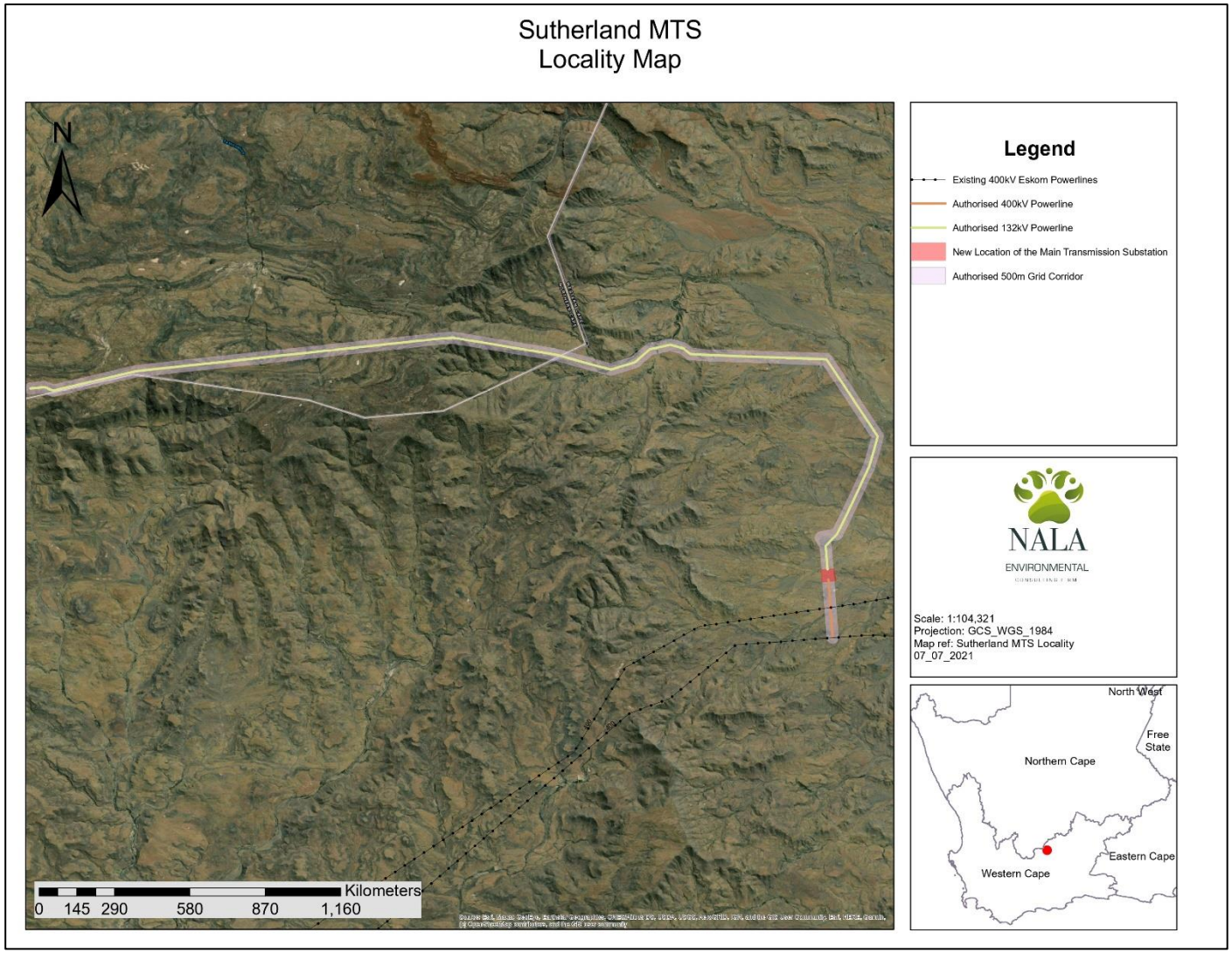

Figure 1.5: Locality map of the proposed new location of the MTS within the authorised grid corridor (2021) (A3 Map included in Appendix B)

DEFINITIONS

Activity (Development) – an action either planned or existing that may result in environmental impacts through pollution or resource use.

Alien vegetation - Alien vegetation is defined as undesirable plant growth (usually of foreign origin) which includes, but is not limited to all declared category 1 and 2 listed invader species as set out in the 1983 Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien are those plant species that show the potential to occupy in number any area within the defined construction area and which are declared undesirable.

Alternatives: – a possible course of action, in place of another, of achieving the same desired goal of the proposed project. Alternatives can refer to any of the following but are not limited to: site alternatives, site layout alternatives, design or technology alternatives, process alternatives or a no-go alternative. All reasonable alternatives must be rigorously explored and objectively evaluated.

Applicant – the project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

Biodiversity – the diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.

Commencement – The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Construction – means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

Cumulative impacts – impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities to produce a greater impact or different impacts.

Decommissioning – To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.

Direct impacts – impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.

'Do nothing' alternative – The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species – Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Emergency – An undesired/ unplanned event that results in a significant environmental impact and requires the notification of the relevant statutory body, such as a local authority.

Emissions – The release or discharge of a substance into the environment which generally refers to the release of gases or particulates into the air.

Environment – In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), "Environment" means the surroundings within which humans exist and that are made up of:
a) the land, water and atmosphere of the earth;
b) micro-organisms, plants and animal life;
c) any part or combination of (i) of (ii) and the interrelationships among and between them; and
d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Assessment – the generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.

Environmental Authorisation – an authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

Environmental Assessment Practitioner (EAP) – the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

Environmental impact – a change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.

Environmental management - ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme – A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. The EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

Fatal Flaw – issue or conflict (real or perceived) that could result in developments being rejected or stopped.

General Waste – household water, construction rubble, garden waste and certain dry industrial and commercial waste which does not pose an immediate threat to man or the environment.

Hazardous Waste – waste that may cause ill health or increase mortality in humans, flora and fauna.

Heritage – That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

Incident - An undesired event which may result in a significant environmental Impact but can be managed through internal response.

Indigenous – All biological organisms that occurred naturally within the study area prior to 1800.
Indirect impacts – indirect or induced changes that may occur as a result of the activity. These types if impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Method statement – A written submission to the ECO and the site manager (or engineer) by the EPC Contractor in collaboration with his/her EO.

Mitigate – the implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.

No-Go Option – in this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.

Open Space – environmentally sensitive areas which are not suitable for development and consist of watercourses, buffers, floodplains, steep slopes, sensitive biodiversity and/or areas of cultural or heritage significance.

Pollution – A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.

Pre-construction – The period prior to the commencement of construction, this may include activities which do not require Environmental Authorisation (e.g. geotechnical surveys).

Rare species: – Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red data species – Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Registered Interested and Affected Party – an interested and affected party whose name is recorded in the register opened for that application

Rehabilitation – a measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.

Significance – significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).

Stakeholder engagement – the process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.

Watercourse – means:
a) a river or spring;
b) a natural channel or depression in which water flows regularly or intermittently;
c) a wetland, lake or dam into which, or from which, water flows; and
d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse
as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

Wetland – means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

TABLE OF CONTENTS

APPENDIX LIST

Appendix A: Project Consulting Team CVs
Appendix B: Maps (A3)
Appendix C: Public Participation Process
Appendix C1: I&AP Database
Appendix C2: Site Notices and Newspaper Advertisements
Appendix C3: Organs of State Correspondence
Appendix C4: Stakeholder Correspondence
Appendix C5: Minutes of the Meeting
Appendix C6: Comments Received
Appendix C7: Issues Trail Report
Appendix C8: Public Participation Plan and Approval
Appendix D: Ecological Impact Assessment
Appendix E: Freshwater Impact Assessment
Appendix F: Heritage Impact Assessment & Palaeontological Assessment
Appendix G: Soil and Agricultural Impact Assessment
Appendix H: Specialist Declarations
Appendix I: Addendum to the EMPr
Appendix J: EAP Declaration of Independence and Affirmation
Appendix K: Screening Tool Report

SECTION 1- DETAILS OF THE AMENDMENTS APPLIED FOR

The amendment being applied for relates to the relocation of the authorised MTS within the authorised grid connection corridor to the site as detailed in the EA dated 08 June 2020. This requested amendment will improve feasibility and technical efficiency of the development.

This section of the report details the amendments considered within this report and by the specialist investigations (refer to **Appendix D – G**). The amendment request is detailed below as per the numbering in the Environmental Authorisation:

1. Amendment to description of the activites related to the MTS and powerlines

It is requested that the description of the MTS specifications within the table of activities on page 3 of the Environmental Authorisation be amended ***from:***

Listed Activities	Activity/ Project Description
GN R984 Item 9 The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	The proposed project will entail the construction and installation of an overhead 400kV power line, approximately 4km, which will transfer electricity to an existing Eskom 400kV power line. It will also entail the construction and installation of a MTS (400m x 400m , including an O&M Building and Laydown area) as well as associated infrastructure in order to facilitate connection to the national grid. The proposed project will take place outside an urban area.

To:

Listed Activities	Activity/ Project Description
GN R984 Item 9 The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	The proposed project will entail the construction and installation of an overhead 400kV power line, approximately 2.25km, which will transfer electricity to an existing Eskom 400kV power line. It will also entail the construction and installation of a MTS (480m x 558m, including an O&M Building and Laydown area) as well as associated infrastructure in order to facilitate connection to the national grid. The proposed project will take place outside an urban area.

1.4 Amendment to the location of the MTS and the start and end co-ordinates of the authorised 132kV and 400kV powerlines

a) It is requested that the co-ordinates of the MTS specifications on page 7 of the Environmental Authorisation be amended ***from***.

400kV Major Transmission Substation (MTS)	Latitude (S)	Longitude (E)
Centre Co-ordinates	31°41'.51.998"S	21°15'.18.445"E

To:

400kV Main Transmission Substation (MTS)- Corner Co-ordinates	**Latitude**	**Longitude**
Corner 1	32°42'37.11"S	21°15'24.19"E
Corner 2	32°42'35.96"S	21°15'43.59"E
Corner 3	32°42'50.36"S	21°15'46.77"E
Corner 4	32°42'52.48"S	21°15'25.50"E

b) It is requested that the start and end co-ordinates of the 132kV and 400kV powerline that terminate and start at the MTS on page 7 of the Environmental Authorisation be amended from:

132kV Power line	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32°38'41.115"S	20°55'2.470"E
Middle point of activity	32°37'52.510"S	21°8'0.841"E
End point of activity	32°41'54.652"S	21°15'23.209"E
400kV Powerline	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32°41'54.625"S	21°15'23.209"E
End point of activity	32°44'4.970"S	21°15'41.530"E

To

132kV Power line	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32°38'41.115"S	20°55'2.470"E
Middle point of activity	32°37'52.510"S	21°8'0.841"E
End point of activity	32°42'36.24"S	21°15'33.63"E
400kV Powerline	**Latitude (S)**	**Longitude (E)**
Starting point of activity	Starting point of activity	32°42'51.53"S
End point of activity	End point of activity	32°44'4.970"S

The amendment to the authorised MTS location and powerline co-ordinates specifications is in itself not a listed activity and will not trigger any new listed activities, as the MTS will remain within the authorised grid connection corridor. The grid corridor for powerline remains unchanged and falls within the originally authorised grid corridor footprint of the facility presented within the BA.

SECTION 2 - MOTIVATION FOR THE PROPOSED AMENDMENTS

2.1 Technical Motivation for Amendment to the Authorised location of the MTS

The Final Basic Assessment report submitted to DFFE in 2019 indicates that proposed 132kV powerline, MTS and 400kV powerline were assessed within a 500m corridor. At the time of the assessment it was indicated that the location of the MTS within this grid connection corridor was not considered to be acceptable but not ideal as a location for the MTS as it had been positioned in an area with hills and numerous small drainage lines leading off the slopes onto the adjacent plains. The assessment indicated that a significant amount of earth moving and levelling would be required to prepare the site. However, as no species of high conservation concern were observed within the development footprint, the authorised location was selected at the time. Following further surveys of the site it was determined that the authorised location of the MTS was unsuitable for construction works due to the steep nature of the site. It had also been determined that this MTS would be deemed as the connection hub for other renewable energy projects in the area should they be selected as preferred bidders in the upcoming bid windows. The steep nature of the MTS location would inhibit the connection of other projects in the future. It was determined the MTS could be relocated to a more suitable location to enable construction work and future connection opportunities to the national grid. The relocation of the MTS within the 500m grid corridor would enable the developer to determine the suitable location based on site sensitivities, terrain and elevation within this already assessed grid corridor.

As the 132kV powerline feeds into this MTS, the end co-ordinates authorised within the EA would need to be amended, and as the authorised 400kV powerline starts at the MTS, its start co-ordinates would need to be amended accordingly**. It was determined the 500m corridor that had been assessed for the electrical grid infrastructure would remain unchanged and not deviate from original assessed corridor.**

The impacts of the grid connection infrastructure to support the Rietrug, Sutherland and Sutherland 2 WEFs have been assessed within the BA for the development. The significance of impacts were determined to be very low to moderate significance after the implementation of mitigation measures with special buffer recommendations on areas of high sensitivity. The new location of the MTS take into consideration the areas of high sensitivity and buffer recommendations from an ecological, aquatic and heritage perspective.

Following considerations of the technical aspects of the project by the Developer regarding the relocation of the MTS for the development as part of the more detailed design of the facility, it has been concluded that the new location sited within the authorised grid corridor is considered as the most feasible location for the MTS.

In overview, the applicant is applying to amend the authorised location of the MTS and co-ordinates and related start and end co-ordinates of the 132kV and 400kV powerlines as it is the most feasible option from a technical perspective to allow for construction activities and connection to the nation grid for the Rietrug, Sutherland and Sutherland 2 WEFs as well other projects that may require connection to the nation grid in the future.

SECTION 3- CONSIDERATIONS IN TERMS OF THE REQUIREMENTS OF THE EIA REGULATIONS

In terms of Regulation 31 of the EIA Regulations 2014 (as amended on 07 April 2017 and 13 July 2018), an environmental authorisation may be amended by following the process in this Part (i.e. a Part 2 amendment) if it is expected that the amendment may result in an increased level or change in the nature of impact where such level or change in nature of impact was not:

a) Assessed and included in the initial application for environmental authorisation; or
b) Taken into consideration in the initial authorisation.

In this instance, the new location of the MTS and the updated powerline co-ordinates was not authorised in the initial authorisation but the grid corridor in which it has been sited has been assessed within the Basic Assessment. The change does not however, on its own, constitute a listed or specified activity. Therefore, the application is made in terms of Regulation 31(a).

SECTION 4- POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE EIA AS A RESULT OF THE PROPOSED AMENDMENT

Following communication, with the DFFE it was advised that this application is considered to be a Part 2 amendment as contemplated in terms of Regulation 32 of the EIA Regulations (2014, as amended on 07 April 2017 and 13 July 2018), as amended. In terms of Regulation 32(1)(a)(i), the following section provides an assessment of the impacts related to the proposed change. Understanding the nature of the proposed amendments and the impacts associated with the project (as assessed within the BA), the following has been considered:

- Impacts on surface hydrology;
- Impacts on biodiversity;
- Heritage impacts; and
- Impacts on Soil and Agricultural Potential

The change in location of the authorised MTS and respective powerline start and end co-ordinates access is expected to have **no effect** on the findings of the Avifaunal, Visual and Socio-Economic Specialist Assessments undertaken as it falls within the authorised 500m grid connection corridor had been assessed as part of the original BA process. Therefore, no Avifaunal, Visual or Socio- Economic assessments have been included as part of this motivation report.

The potential for change in the significance and/or nature of impacts based on the proposed amendments as described within this motivation report is discussed below, and detailed in the specialists' assessment addendum letters (as applicable) contained in **Appendix D-G**[1]. Additional mitigation measures were recommended as a result of the proposed amendments and have been included within the Addendum to the EMP (Appendix I) and Section 6 of this report. This section of the main report must be read together with the specialist reports contained in **Appendix D-G** in order for the reader to obtain a complete understanding of the proposed amendments and the implications thereof.

4.1. Impacts on Surface Hydrology

The surface water assessment (**Appendix A**) undertaken for the proposed amendments included the review and assessment of original reports and data, as well as the update of any previously assessed impacts and updated mitigation measures, where required.

The original Freshwater Specialist Study (Belcher et al. 2019) considered the construction of a major transmission substation (400 m x 400 m) that would be located within some smaller ephemeral tributaries of the Juk River, a tributary of the Dwyka River. The report notes that the MTS has been located in the now authorised location to try and avoid the watercourses as far as possible and indicated that only a few minor watercourses occur within the footprint. The loss of the watercourses within the footprint was not seen as a significant impact and if properly mitigated, particularly in terms of stormwater runoff from the developed area, was not determined to result in any degradation of the watercourses downstream of the site. The report indicated that the footprint should be located within the authorised footprint such that it avoids loss of the watercourses as far as possible. Allowance for a buffer of at least 32m should be sought from the watercourse to the north of the site. It was recommended that the existing access road to the site should preferably be utilised.

[1] It must be noted that the original specialists who undertook the BA studies have been used for these assessments as far as possible. However, where the original specialists were not available for whatever reason, suitably qualified and experienced specialists have been used to provide an assessment of the proposed amendments.

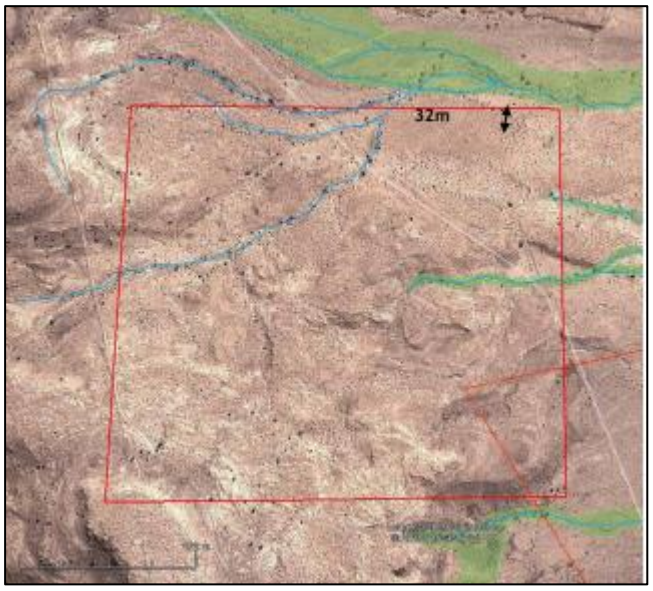

Figure 4.1: Authorised MTS location as per the Freshwater Assessment report (CSIR,2019)

The eastern portion of the project that encompasses the 132kV powerline, MTS and 400kV powerline is located within the upper reaches of the Vanwyks, Juk and Ouberg Tributaries of the Dwyka River, a tributary of the Gouritz River. This section of the transmission lines and MTS are located within lower lying valleys and floodplain areas. Associated with the very upper reaches of the rivers on the hill tops are seep areas and vernal ponds while valley bottom and floodplain wetlands occur in the lower foothills and floodplain zones within the deeper valleys. In summary, the waterbodies found within the study area were classified as follows:

1. Perennial drainage lines and water courses, with or without riparian fringes
2. Broad perennial alluvial channels with or without riparian systems.

The aquatic features within the study area consist of the upper reaches of the Riet River (Portugals Tributary, Salmonsloop Tributary and the Riet River) that flows northwards towards the Orange River; the upper reaches of the Buffels River (Beerfontein se Laagte Tributary) that flows southwards towards the Gouritz River; and the upper reaches of Dwyka River (Vanwyks and Juk Rivers) and the lesser, unnamed tributaries. The study area is located largely within Upstream Freshwater Ecosystem Priority Areas (FEPA) Rivers that should not be impacted on such that they would result in degradation of more ecologically important downstream FEPA Rivers. There are several instream wetland areas within the channels of the larger watercourses that have been mapped as artificial FEPA Wetlands of which only two are located near the proposed works. A natural depression is the only mapped natural FEPA Wetland located in the wider study area but is at least 500 m south of the proposed line in the upper Riet River.

The only aquatic CBA crossed by the transmission line is on the Vanwyks River downstream of the Western Cape Border which falls outside the vicinity of the new MTS location. The remainder of the watercourses are mapped as aquatic Ecological Support Areas (ESAs). Most of the terrestrial areas adjacent to the watercourses in the area are mapped as Other Natural Areas.

The rivers within the study area are still in a natural condition in their upper reaches with few modifications (some roads and very small dams). Downstream, in the middle reaches of the Vanwyks, Juk and Oubergs Rivers, the rivers become largely natural to moderately modified. The riparian habitat is slightly more degraded as a result of direct habitat modification from the surrounding farming activities.

The larger watercourses in the study area, the Riet, Vanwyks, Juk and Oubergs Rivers, have a high ecological importance and sensitivity while the smaller tributaries/drainage features are of a moderate ecological importance and sensitivity. The larger watercourses tend to be more ecologically

important but less sensitive to impacts while the smaller tributaries are less ecologically important but more sensitive to flow, water quality and habitat modification.

The hillslope seeps and the vernal pools are in a natural ecological condition while the valley bottom wetlands have been slightly modified but are still in a largely natural ecological condition. The floodplains although still largely natural, are the most impacted by the activities within the valley floor. The wetland features are considered of high ecological importance and sensitivity.

It was recommended ecological condition of the aquatic features within the study area should be maintained in their current ecological condition and should not be allowed to degrade further. The recommended buffer areas as a development setback from the aquatic features to ensure these aquatic ecosystems are not impacted by the proposed activities are as follows:

- Smaller streams and drainage lines, together with their seeps: at least 50 m from the centre of these streams or the delineated wetland edge (whichever is the furthest);
- The larger rivers within the valley floor, together with their valley bottom wetlands: at least 100 m, measured from the top of the bank of the river channels or the delineated wetland edge (whichever is the furthest), and 32 m for all other drainage lines;
- The vernal pool and other wetland areas: at least 50 m, measured from the top of bank of the river channels or the delineated wetland edge;
- A buffer of at least 32 m between the delineated aquatic ecosystems to the north of the substation footprint and the substation should be maintained; and
- For all project related components within the site, any aquatic features of high sensitivity (wetland areas and vernal pools) within the immediate area should be demarcated by the appointed Environmental Control Officer (ECO) prior to commencement of the construction activities and treated as no-go areas during the construction phase.

Activities during the construction phase of the project were anticipated to result in some disturbance of soil and vegetation cover for clearing and preparation of the project elements. Potential for some water quality impacts associated with the construction activities were identified. A localised impact could be expected that has a low overall significance in terms of its impact on the identified aquatic ecosystems in the area.

The risk assessment for the project determined that the proposed transmission line and substation posed a low risk of impacting aquatic habitat, water flow and water quality. With these findings of the risk assessment, the water use activities associated with the proposed project could potentially be authorised by means of the general authorisations for the Section 21(c) and (i) water uses. Based on the findings of the freshwater assessment undertaken during the original BA process, there was no reason from a freshwater perspective, why the proposed activity with implementation of mitigation measures should not be authorized.

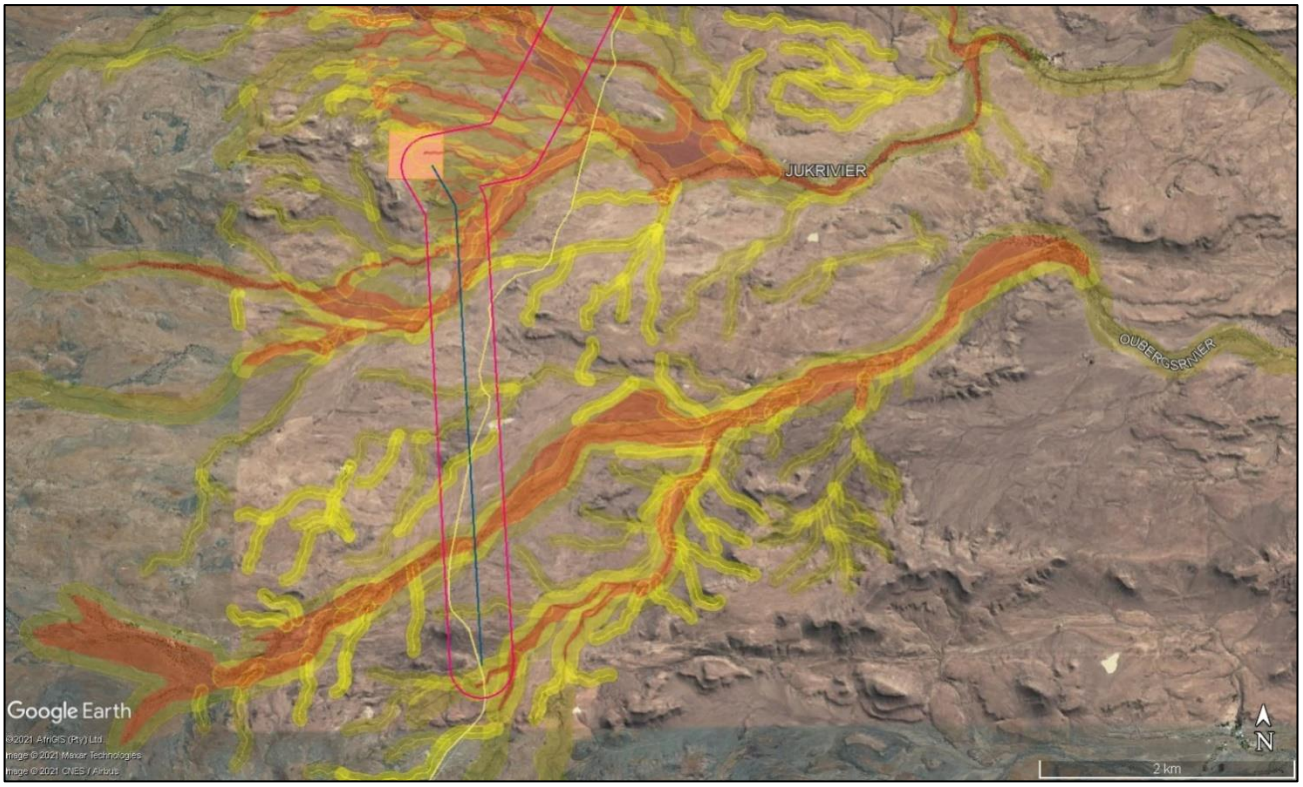

Figure 4.2: Aquatic EI&S (delineated wetland features and associated buffer areas). Yellow lines and polygons represent drainage features and buffers that are classified as Medium Sensitive, whilst the red lines and polygon represent those features that are classified as high sensitive for the authorised location of the MTS.

4.1.1. *Comparative Assessment*

The specialist Gerhard Botha undertook a review of the available satellite imagery and undertook a site-visit on the 20 June 2021 (**Appendix E)** and determined that it was very similar to those made by Belcher (2019) and no additional and/or important freshwater resource features were identified. The specialist indicated that the area is currently experiencing a prolonged drought period (7 years). The drought however did not have a significant impact on the findings and conclusions as provided by the specialist.

The current authorised location for the MTS contained a few minor ephemeral watercourses and associated drainage lines whilst no major watercourses and alluvial washes (floodplains) will be directly impacted if this location was selected, please refer to Figure 4.3 below for a comparison between the authorised MTS and the new proposed location of the MTS.

It was determined that the new location is regarded as even more preferable from an aquatic perspective, as no freshwater resource features are located within the proposed footprint. The closest freshwater resource feature is a moderately sized ephemeral wash with a fairly prominent alluvial floodplain, located approximately 24m to the north-west.

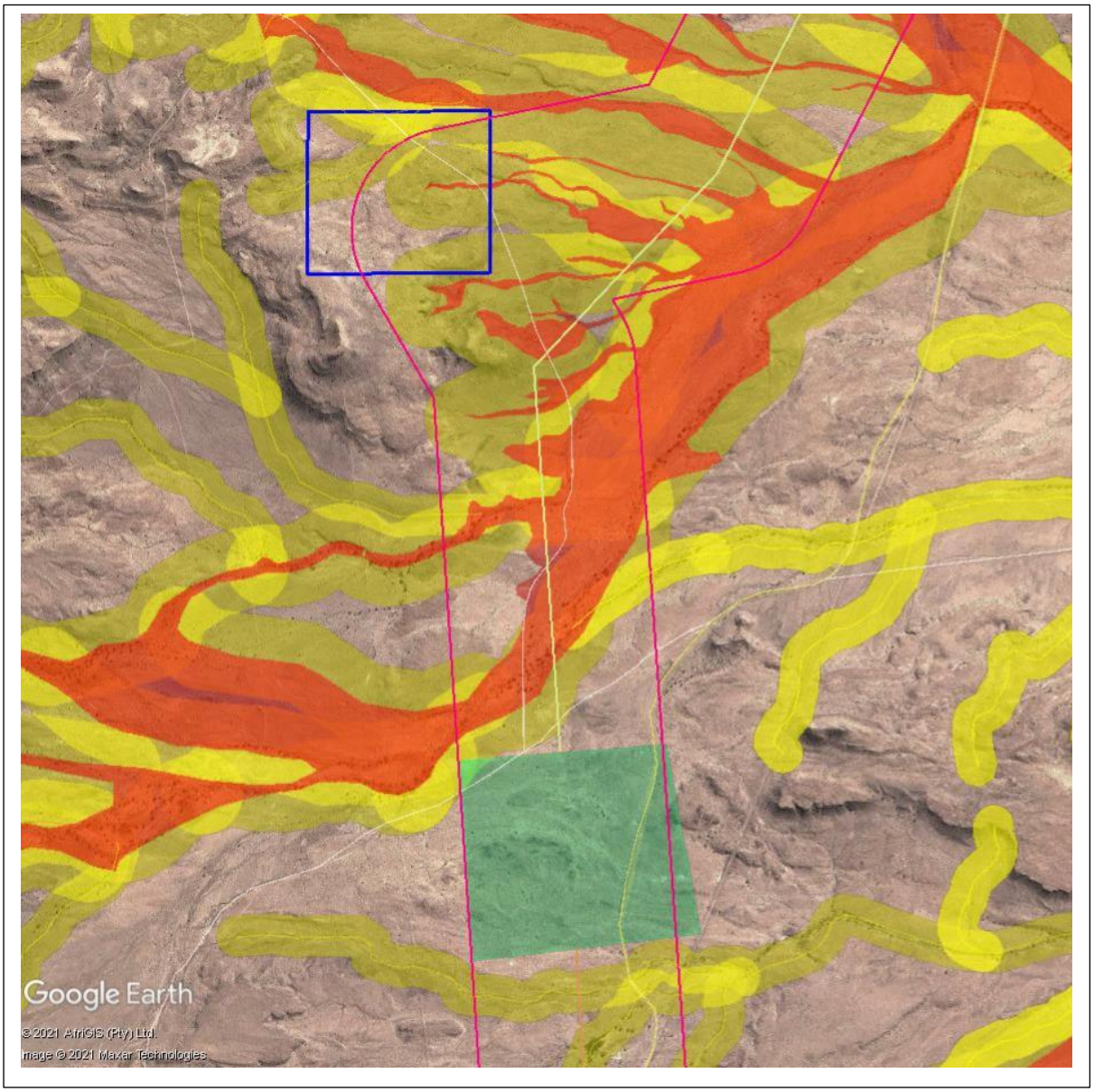

Figure 4.3. The new MTS location relative to delineated freshwater resource features as identified by Belcher (2019) and confirmed by within this assessment. Red polygon indicates freshwater resources features of high ecological importance and sensitivity whilst the yellow polygons indicates smaller freshwater resource features of moderate importance and sensitivity as well as aquatic buffers which are all classified as medium sensitive. The pink poly lines indicate the boundaries of the surveyed 500m grid corridor whilst the dark blue poly line indicates the location of the 400kV power line. The blue outlined polygon indicates the old MTS location.

The ephemeral wash and its associated riparian habitat and alluvial floodplain is still in a largely natural condition (PES: B) with limited impacts/changes to its habitats and biota, mainly as a result of agricultural activities (livestock grazing) and a few road crossings (mainly twin track and smaller gravel roads, which has resulted in local vegetation removal/transformation, and some local flow, bed and channel modifications.

According to Belcher (2019) the most significant impacts will arise during the construction phase as the construction of the substation will require a relatively high intensity disturbance of a limited surface area at the site. According to the layout plan of the MTS, most of the freshwater resource features will be located outside of the footprint apart from a few smaller features and a small portion of a more important and larger freshwater resource feature to the east. Activities associated with the construction phase will result in the local disturbance of soil and vegetation cover. There

is also the potential for some water quality impacts. Impacts were expected to be localised and of short duration and is expected to have a moderate to low overall significance (without the implementation of mitigation measures) in terms of its impact on the identified freshwater resource features.

Impacts on freshwater resource features during the operational phase were likely associated with an increase in runoff from the hard-standing surfaces, especially within the areas characterized with steeper gradients. This would lead to the formation and aggravation of erosion and sedimentation within downslope features. An impact on water quality was determined to be low as low quantities of potential toxic and hazardous materials will be present during the operational phase. Impacts associated with the operational phase were determined be localised, of a long duration and of a low overall significance post-mitigation. The impacts associated with the decommissioning phase were expected to be similar to that of the construction phase, although the potential for water quality and flow related risks will be lower (Belcher (2019).

Following the site visit of the new proposed MTS location, the following comments were made regarding the above-mentioned impacts (Botha, 2021):

- Due to the fact that there are no freshwater resource features located within the new footprint area, there will be no direct impacts on freshwater resource features and as such all potential direct impacts assessed within the original Freshwater Impact Assessment Report are **no longer applicable and are therefore not furthermore considered.**
- Due to the proximity of the new MTS location to freshwater resource features within the surrounding area, indirect impacts as listed within the original report still have relevance, however the extent, magnitude and potential significance of these impacts on freshwater features are regarded to be lower than originally assessed, mainly due the fact fewer freshwater resource features are located in close proximity to the new footprint and the more gradual gradient characterising the footprint (when compared to the more undulation area of the "old" location). As such these indirect impacts were re-assessed and determined to be lower than the impacts originally found for the current authorised MTS location.

CONSTRUCTION PHASE				
Impact Pathway: *Indirect Impacts: Altered runoff characteristics as a result of construction activities for the substation construction.*				
Nature: Modification to flow and water quality due to the proposed activities in or adjacent to aquatic ecosystems				
	Authorised		**Proposed amendment**	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	Local	Local	Local	Local
Duration	Short-term	Short-term	Short-term	Short-term
Consequence	Substantial - Moderate	Substantial - Moderate	Moderate - Slight	Slight
Probability	Likely	Likely	Unlikely	Very Unlikely
Significance	**Moderate to Low (3-4)**	**Low to Very Low (4-5)**	**Low to Very Low (4-5)**	**Very Low (5)**
Status	Negative	Negative	Negative	Negative
Reversibility	High	High	High	High
Irreplaceable loss of resources	Moderate	Moderate	Moderate	Low
Can impacts be mitigated?	Yes		Yes	

OPERATIONAL PHASE

Impact Pathway: *Indirect Impacts: Secondary impacts as a result of disturbance and removal of riparian vegetation due to the operation of the substation*				
Nature: Invasive alien plant growth in riparian zones and wetland areas and potential for erosion of watercourses due to the disturbance of aquatic habitat and modification of runoff characteristics.				
	Authorised		**Proposed amendment**	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term
Consequence	Substantial	Moderate	Substantial	Slight
Probability	Likely	Likely	Likely	Unlikely
Significance	**Moderate (3)**	**Low (4)**	**Moderate (3)**	**Very Low (5)**
Status	Negative	Negative	Negative	Negative
Reversibility	Medium to Low	High	Medium	High
Irreplaceable loss of resources	Moderate	Moderate	Moderate	Low
Can impacts be mitigated?	Yes		Yes	

DECOMMISSIONING PHASE				
Impact Pathway: *Indirect Impacts: Altered runoff characteristics as a result of decommissioning activities linked to infrastructure, such as the substation.*				
Nature: Modification to flow and water quality due to the disturbance activities in or adjacent to aquatic ecosystems.				
	Authorised		**Proposed amendment**	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	Local	Local	Local	Local
Duration	Short-term	Short-term	Short-term	Short-term
Consequence	Substantial-Moderate	Moderate-Slight	Slight	Slight
Probability	Likely to Unlikely	Unlikely	Likely to Unlikely	Unlikely
Significance	**Moderate to Low (3-4)**	**Low to Very Low (4-5)**	**Low to Very Low (4 - 5)**	**Very Low (5)**
Status	Negative	Negative	Negative	Negative
Reversibility	High	High	Medium	High
Irreplaceable loss of resources	Moderate	Moderate	Moderate	Low
Can impacts be mitigated?	Yes		Yes	

The mitigation measures relating to all indirect impacts as described above, as well as those relating to cumulative impacts, are still regarded as applicable and relevant. No additional mitigation measures were deemed necessary. In terms of the recommended 100m buffer around the freshwater

resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint (Figure 4.3). The exclusion of this small section from the buffer area is regarded as acceptable.

4.1.2. *Cumulative Impacts*

In terms of the cumulative impact of the proposed project on freshwater ecosystems, Belcher (2019) mentioned that a number of renewable energy projects have been approved within the region, and which were considered in the potential assessment of cumulative freshwater impacts on the watercourses in the area. The renewable energy projects that were considered, include; Mainstream Renewable Power Sutherland Wind Farms, Komsberg Wind Farm (Pty) Ltd and the Suurplaat Renewable Energy Projects. Belcher furthermore, mentioned the fact that Freshwater impact assessments were undertaken for these projects and that the nature of these projects allows them to have minimal impact on the surface water features, since the proposed project elements can be placed far enough away from the freshwater features so as to not impact on them. Typically, the recommended river buffers are 50 m for the upper reaches of the rivers, 100 m for the lower reaches and 32 m for all other drainage channels. The largest potential impact of these projects is as a result of the associated infrastructure which can be mitigated such that its impact on the aquatic ecosystems will be of a low significance. For the projects concerned, the road layouts have been revised in such a manner that all of the important wetland areas / rivers were avoided and where possible existing roads had been used.

Due to the small extent of the development and the fact that there are no freshwater resource features located within the new footprint area, the newly proposed MTS location will not result in a change in the significance of the potential cumulative impacts on the freshwater resource features within the region. As such the cumulative impacts were not considered furthermore (Botha, 2019).

4.1.3. *Conclusion*

The specialist concluded that the relocation of the MTS to the new proposed location will subsequently result in the avoidance of any direct impacts on freshwater resource features. Furthermore, due to the proximity of the new MTS location to freshwater resource features within the surrounding area, indirect impacts will be lower in terms of extent, consequence and potential significance. No additional mitigation measures were deemed necessary. In terms of the recommended 100m buffer around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint. The exclusion of this small section from the buffer area is regarded as acceptable.

Subsequently, from an aquatic perspective no objective or motives (identification of impacts of high ecological significance etc.) were identified which would hinder the proposed amendment. Therefore, it is the opinion of the specialist that the proposed amendment is acceptable and may be authorised, subject to the implementation of the recommended mitigation measures provided within the original Freshwater Impact Assessment (Belcher, 2019).

4.2. Impacts on biodiversity

In order to address any new potential impacts or change in impact associated with the amendment the specialist reviewed the original botanical and faunal studies conducted for the BA process for the electrical grid infrastructure to support the Rietrug, Sutherland and Sutherland 2 WEFs, as well as closely inspected the proposed new MTS location via a site assessment in order to assess whether there are any material differences in sensitive features or potential impacts associated with the new location (**Appendix D**).

The original fauna and flora assessment (Simon Todd of 3Foxes Biodiversity Solutions; 2019) undertaken for the electrical grid infrastructure indicated that the site was visited on the 17th of June 2019. During the site visit, the different biodiversity features, habitat, and landscape units present in the study area were identified, mapped and characterised in the field. Specific features visible on the satellite imagery of the site were also marked for field inspection and were verified and assessed during the site visit. Walk-through surveys were conducted within representative areas across the different habitat units identified and all plant and animal species observed were recorded. This included a full walk-through survey of the substation footprint area.

It was determined that the Grid Connection, substation and associated infrastructure is located in a potentially sensitive area which includes the Roggeveld Centre of Endemism as well as potential habitat of the Riverine Rabbit and several other listed fauna, some of which can be confirmed present.

The authorised substation site was considered acceptable but not ideal as a location for the substation as it is positioned in an area with low hills and numerous small drainage lines leading off the slopes onto the adjacent plains. A significant amount of earth moving and levelling would be required to prepare the site. However, the vegetation of the affected area is typical of the Gamka Karoo vegetation type and no species of high conservation concern were observed within the development footprint.

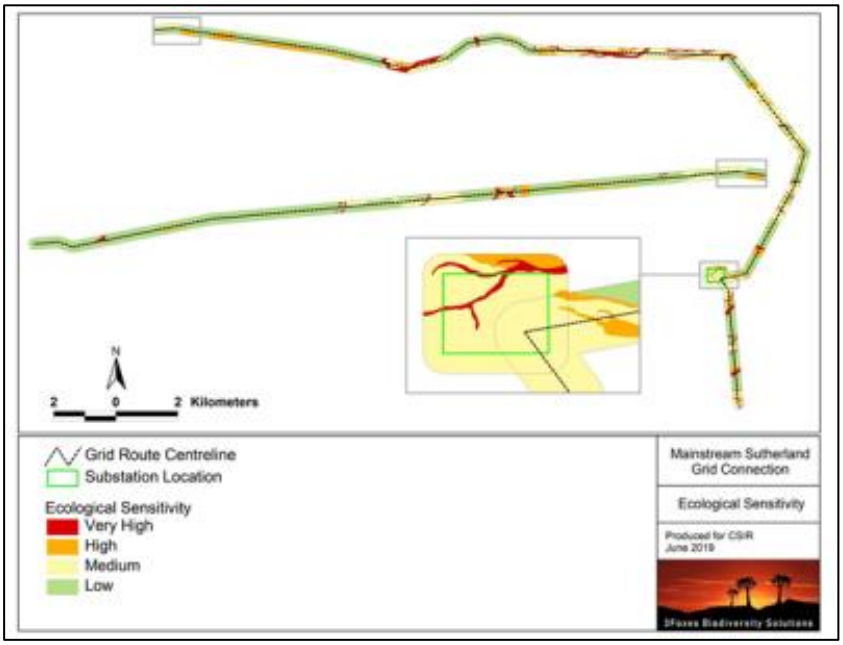

Figure 4.4. Ecological sensitivity map for the grid connection route and substation site (CSIR, 2019).

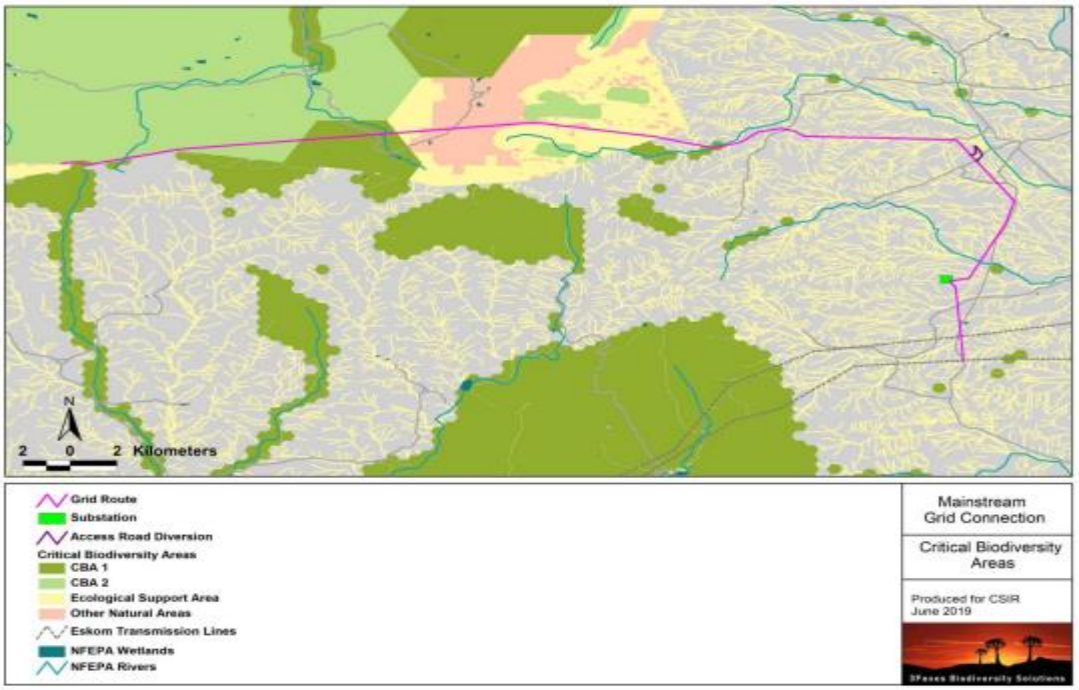

Figure 4.5. Critical Biodiversity Areas for the study area, which is based on the CBA map for the Northern Cape and the Western Cape BSP for the Laingsburg District.(CSIR, 2019)

The footprint of the project within the CBAs would however be low and the ecological functioning of the CBAs would not be compromised by the development. Overall the impact of the development on CBAs and broad-scale ecological processes would be low and no major impacts on ecological processes would occur.

It was determined that a clearing and translocation permit would be required from CapeNature before construction commences. A pre-construction walk-through would be required to inform the permit application. In addition, if there are any nationally protected trees within the development footprint a destruction permit from DAFF would also be required. No nationally protected trees were observed within the development footprint and the presence of any such trees in the area is highly unlikely. A pre-construction walk-through of the final approved power line corridor and development footprint was recommended in order to refine the final pylon locations and minimise impacts on SCC and sensitive habitats.

The substation and power line route is likely to have moderate to relatively high overall mammalian species richness given the range of habitats traversed by the line. The site falls within or near the edge of the distribution range of at least 44 terrestrial mammals. The Riverine Rabbit is a potential concern given the high level of conservation concern associated with this species. However, the substation site is not within suitable habitat, while the larger drainage lines along the 132kV section of the power line are potentially suitable as habitat, but the footprint within these areas would be minimal as the power line would be able to span these features and there are not likely to be any pylons within the drainage features themselves. As such, a significant impact on the Riverine Rabbit is not likely to occur as a result of the development as this is not considered to represent a major concern associated with the development. In terms of impacts of the development on reptiles, the major impact is likely to come from disturbance during the construction phase which would be transient and localised and consequently of low long-term consequence.

Although nine amphibians have been recorded from the area, the actual number present within the affected area is likely to be much lower as there is not natural perennial water along the power line route and substation site. All of the species recorded in the area are widespread.

The grid connection and substation were considered acceptable and would generate low post-mitigation impacts on fauna and flora. There were no specific long-term impacts that were identified likely to be associated with the development of the Grid Connection and substation that cannot be reduced to a low significance. The contribution of the power line and substation components to cumulative impact in the area would be low and is considered acceptable. As such, there were no fatal flaws associated with the development and no terrestrial ecological considerations that should prevent it from proceeding.

4.2.1. *Comparative Assessment*

The specialist reviewed the terrestrial ecology report undertaken for the electrical grid infrastructure associated with Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (2019) specifically in relation to the location of the authorised MTS and the proposed new location of the MTS. As identified in the 2019 assessment the relevant portion of the power line corridor (corridor area assessed for the Part II Amendment) is situated within Gamka Karoo vegetation type (SANBI, 2018) which is classified as Least Threatened and less than 1% has been transformed (Mucina & Rutherford, 2006 & SANBI, 2018). The vegetation type is however poorly protected as less than 2% falls within formal protected areas compared to the target of 16%. Gamka Karoo is characterised by irregular to slightly undulating plains covered in dwarf spiny shrubland dominated by karoo dwarf shrubs, with occasional low trees. Dense stands of perennial bunchgrasses cover broad sandy bottomlands.

In terms of National identified Features of Conservation Value (FCV), the currently authorised MTS location as well as the new proposed location is outside of any threatened ecosystems as identified/published within the List of Threatened Ecosystems (2016). Furthermore, both locations are located well outside of any SAPAD Conservation and Protected Areas (2020) as well as potential Focus Areas as identified within the National Protected Areas Expansion Strategy (2010).

In terms of Provincially identified FCV the original and authorised MTS location will infringe on some aquatic Ecological Support Areas (ESAs) associated with minor drainage systems, as identified within the Western Cape Biodiversity Spatial Plan (Laingsburg Local Municipality), 2017. Todd (2019) stated that: "the development footprint within the CBAs would however be low and the ecological functioning of the CBAs would not be compromised by the

development. Overall, the impact of the development on CBAs and broad-scale ecological processes would be low and no major impacts on ecological processes would occur".

This statement was determined to be accurate, however as the new proposed location will be located outside of any ESAs and CBAs impacts on these features will be completely avoided.

According to Todd (2019) the affected grid corridor, within which the MTS will be located, can be described highly undulating comprising of low hills and outcrops, gravel plains, open sandier plains and drainage systems. The drainage lines are typically fringed by trees such as Acacia karoo and *Searsia lancea*, fringed with grasses and tall shrubs such as *Stipagrostis namaquensis*, *Diospyros lycioides, Cenchrus ciliaris, Salsola aphylla* and *Lycium prunus-spinosa*. Dominant plant species recorded within the plains, outcrops and ridges include, *Stipagrostis ciliata, Eriocephalus ericoides, Eriocephalus eximus, Lycium prunus-spinosa, Gazania lichtensteinii, Searsia burchellii, Pentzia incana, Cenchrus ciliaris, Garuleum bipinantum, Zygophyllum retrofractum* and *Acanthopsis disperma*. In terms of Plant Species of Conservation Concern (SCC), Todd did not record any Red Data, Protected and/or Threatened plant species within this section of the grid corridor, during his sit visit, and stated that the potential for the occurrence/abundance of Plant SCC within these lower lying plains are regarded as low.

Todd's findings were confirmed to be accurate, with the authorised MTS located within an area that can be described as highly undulating, dominated by low hills, outcrops, gravel plains and a few drainage features to the north and east. Species diversity within this area was low, comprising a sparse coverage dominated by mostly low growing dwarf shrubs (*Eriocephalus ericioides, E. eximus, Pentzia incana, Rosenia humilis, Asparagus striatus*, and *Zygophyllum retrofractum*) and a few white wiry grass species such *Aristida diffusa* and *Stipagrostis ciliata*. A few larger shrubs such as, *Searsia burchellii, Gymnosporia buxifolia, G. szyszylowiczii* and *Asparagus mucronatus,* have also been recorded within the area.

- The new location for the MTS is much more homogenous and is dominated by mostly gravel and sandy plains with a few low outcrops.
- No drainage features are located within the proposed footprint. The vegetation structure and composition are more or less similar to that found within the old proposed footprint. *Stipagrostis ciliata,* is however much more prominent, especially within the sandier areas.
- No Plant SCC were recorded during the site visit (within the old and new MTS locations) and it is highly unlikely that the development will have a significant impact such species.

Within the original ecological assessment report (Todd, 2019), four mammals, and one reptile species of conservation concern was identified with a likelihood of occurring within the area. None of these species were however, confirmed within the affected corridor by Todd. Grey Rhebok – Palea capreolus (Near Threatened) were however, confirmed within the corridor for the 132kV grid line (higher lying plateau areas). Todd furthermore stated that there would be a small extent of habitat loss for these potential species at the site as a result of the development as well as some construction and operational phase disturbance. However, this would be a very small area that would not compromise the local population to any degree and a long-term significant impact is not likely. This statement was determined to be accurate/applicable for the old as well as the new MTS location. Due to a lack of preferential/suitable habitat, most of these species are unlikely to inhabit these locations, apart the Karoo Padloper – *Homopus boulengeri* (Near Threatened).

During the identification and assessment of sensitive (ecological) features within the affected portion of the grid corridor (including the old MTS location), Todd (2019) listed the following features as High Sensitive (refer to Figure 2 and 3):

- Ephemeral drainage features and associated floodplains; and
- Steep slopes (escarpment slopes of the southern and south-eastern portions).

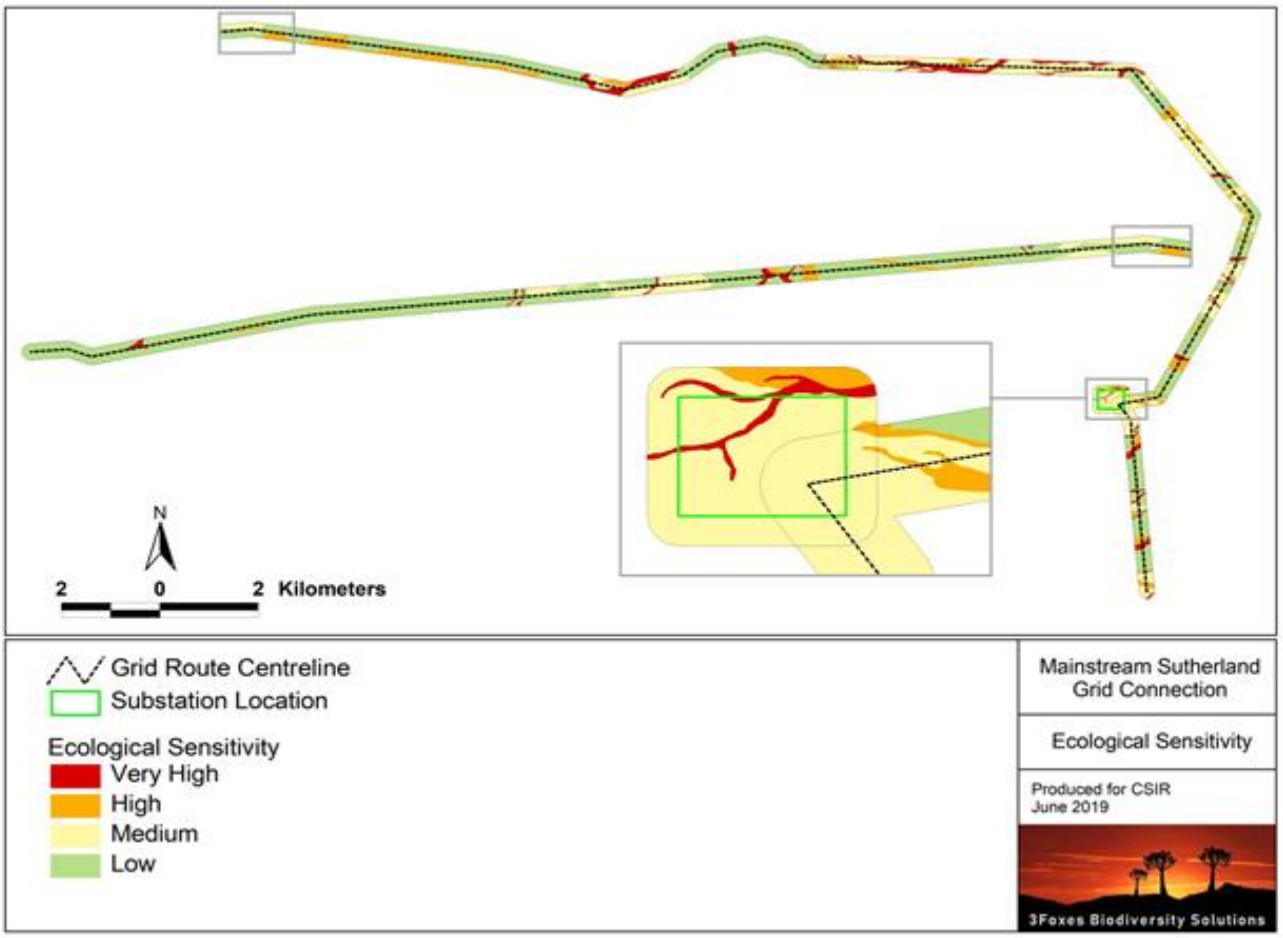

Figure.4.6. Ecological Sensitivity Map compiled by Todd (2019) indicating the "old" MTS position.

During the original impact assessment Todd did not assess the potential impacts associated with each individual aspects/features (400kV grid line, 135kV grid line, access roads, MTS etc.), but rather assessed the potential impacts and extent of impact (significance) the entire project (all combined aspects/infrastructure/features) will have on the terrestrial ecological character/integrity of the affected environment. As such, the MTS substation only contributes a small extent of the total area to be impacted by the entire development. Subsequently, even though the relocation/amendment of the MTS to a less sensitive location is regarded as a positive move, for all of the described impacts, this amendment will not result in a changed in significance of the assessed impacts.

As such there is no need to provide a summary, description or of comparison of impacts as all of the impacts assessed in the original report and their significance still remain relevant.

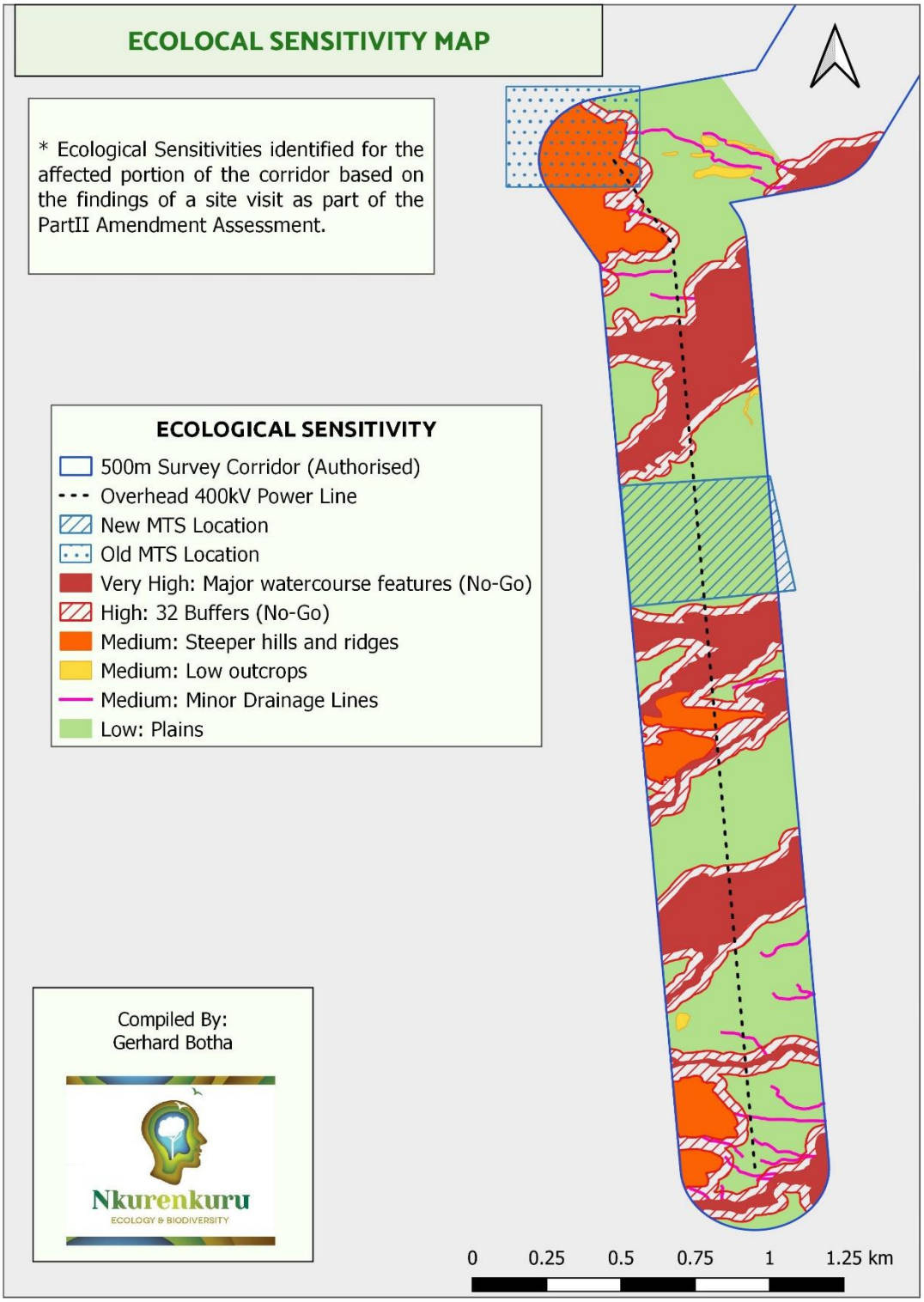

Figure 4.7. An ecological sensitivity map for the affected portion of the corridor, compiled following a site visit as part of the Part II Amendment Assessment (for comparison purposes). The sensitivities identified within this map is mostly similar to that compiled by Todd (2019) with some minor differences, including the inclusion of a 32m buffer area around the larger ephemeral watercourses. This map as well as Todd's map indicate that the new area earmarked for the MTS is by far, more preferable and will only impact low sensitive plains. The mitigation measures relating to all impacts, as described and assessed within the original terrestrial ecological assessment, are still regarded as applicable and relevant. No additional mitigation measures are deemed necessary.

4.2.2. *Cumulative Impacts*

Cumulative impacts would be expected to be low negative, and remain unchanged from the cumulative impacts identified within the Final Basic Assessment (2019) and is considered acceptable.

4.2.3. *Conclusion*

The specialist concluded that the proposed amendment to the location of the MTS is regarded, from a terrestrial ecological perspective, as a positive and beneficial amendment as the previously proposed location for the MTS were located within a slightly more sensitive area, whereas the newly proposed location is within a low sensitive area. The original impact assessment, took the entire project with all its aspects combined, into account. The MTS substation only contributes a small extent of the total area to be impacted by the entire development and subsequently, even though the relocation/amendment of the MTS to a less sensitive location is regarded as a positive move, for all of the described impacts, this amendment will not result in a changed in the significance of the assessed impacts. The mitigation measures provided within the original Terrestrial Ecological Impact Assessment Report are still regarded as applicable and relevant. No additional mitigation measures are deemed necessary.

From a terrestrial ecological perspective no objective or motives (identification of impacts of high ecological significance etc.) were identified which would hinder the proposed amendment. Therefore, it is the opinion that the proposed amendment is acceptable and may be authorised, subject to the implementation of the recommended mitigation measures provided within the original Terrestrial Ecological Impact Assessment (Todd, 2019).

4.3. Heritage Impact

In terms of the information that had been collected within the initial HIA undertaken as part of the BA, The HIA explained that archaeological remains are generally scarce but are found throughout the area. Isolated stone artefacts were remarkably rare, especially above the escarpment, but a few small scatters were recorded on the plains below the escarpment (Western Cape). The vast majority of archaeological remains found were historical and ranged from a ruined farm complex to small, isolated ruined structures and isolated individual artefacts. Several sites lie close to the alignment but the eastern part of it was devised by the present author to avoid these sites. Some graveyards and buildings are present in the wider area but all are located well away from the proposed power line alignments and MTS and no impacts are expected. The rural cultural landscape extends throughout the study area but, aside from fences and farm tracks, human interventions are generally very sparse. The site lies within the Komsberg REDZ and Central Power Corridor (that was gazetted in February 2018), which promotes Renewable Energy and Electricity Grid Infrastructure development within these strategic geographical areas. The escarpment, however, remains an aesthetically significant landscape for its remoteness, long views, rugged scenery and distinctive sense of place.

Overall, the above potential impacts identified in the HIA were rated as being of moderate to very low significance (without the implementation of mitigation measures) and low to very low significance (with the implementation of mitigation measures). No impacts were assessed as being of high significance after the implementation of mitigation.

The Palaeontology Impact Assessment noted that the study area of the proposed electrical infrastructure is entirely underlain by continental sediments of the Abrahamskraal Formation (Lower Beaufort Group) of Middle Permian age. Fossil material recorded from the Abrahamskraal Formation during a six-day field-based survey in 2017 of the broader study region between Sutherland and Merweville includes sparsely-scattered, and often highly weathered, bones of unidentified robust-bodied tetrapods (probably pareiasaurs and/or dinocephalians) with only one well-articulated post-cranial skeleton (that will not be impacted on by the proposed project). An extensive surface scatter of petrified wood blocks, some of which are well-preserved, was located in the western Koup, approximately 500 m from the proposed power line route on Farm Hamelkraal 16. With the exception of the articulated skeleton and petrified wood scatter, most of these fossil occurrences are of limited palaeontological value and lie well away from the electrical infrastructure footprint and do not warrant mitigation.

4.3.1. *Comparative Assessment*

Palaeontology

An illustrated account of previous palaeontological records in the vicinity of the authorised MTS site and the associated 132 kV grid corridor has been provided by Almond (2019). Fossils recorded from the Koornplaats Member on Farm 16 Hamel Kraal include extensive scatters of petrified wood, fragmentary postcranial remains of large-bodied tetrapods (pareiasaur reptiles and / or dinocephalian therapsids), isolated tusks, cylindrical sandstone casts of reedy plant stems (probably horsetails) and a limited range of invertebrate trace fossils associated with wave-rippled sandstone palaeosurfaces and koffieklip horizons. Much of this material appears to have weathered out of channel basal breccias but some may have been associated with calcretised palaeosol horizons.

No new fossil sites were recorded within the amended MTS project area during the recent site visit; this is probably due, to a large extent, to very poor levels of bedrock exposure here. New fossil sites recorded in the vicinity of the amended MTS site during the latest site visit are tabulated and mapped. A scatter of fragmentary, downwasted postcranial bones of a large tetrapod was recorded on lower hillslopes some 240 m east of the MTS project area. Ferruginised moulds of plant axes (stems or roots) within channel sandstone float blocks are associated with cross-bedded Koornplaats Member sandstones with well-developed basal breccio-conglomerates about 200 m east of the project area.

The construction phase of the proposed MTS will entail excavations into the superficial sediment cover (soils, surface gravels etc) and also into the underlying, potentially fossiliferous Beaufort Group bedrocks. The development may adversely affect potential legally protected and scientifically important fossil heritage within the study area by destroying, damaging, disturbing or permanently sealing-in fossils that are then no longer available for scientific research or other public good.

The significance of anticipated impacts on fossil heritage resources in the amended MTS project area as a consequence of the proposed substation development is assessed for the Construction Phase indicated that the proposed development will have a NEGATIVE LOW impact significance without mitigation, decreasing but still remaining NEGATIVE LOW following full implementation of the proposed mitigation measures. Negative residual impacts during the construction phase will be partially offset by an improved palaeontological data base and fossil collections due to mitigation (positive impacts). Confidence levels for this assessment are Medium, given the very low bedrock exposure levels encountered in the project area.

Once constructed, the Operational and De-commissioning Phases of the MTS will not involve further adverse impacts on palaeontological heritage, so these are not assessed here.

Heritage:

A site survey undertaken in June 2021 revealed a number of Stone Age and historical archaeological resources:

Waypoint	Co-ordinates	Description	Grade
495	S32º 42' 48.6" E21º 15' 51.2"	Isolated, fine-grained sandstone flake in association with koffieklip blocks to the east of the existing gravel road.	NCW
496	S32º 42' 37.6" E21º 15' 54.3"	Several crudely flaked sandstone clasts at the foot of a small hill to the E of the existing gravel road.	NCW
497	S32º 42' 43.2" E21º 15' 30.4"	Rock engraving on a koffieklip boulder on a small rise in the middle of the western half of the study area. The engraving consists of two converging lines of pecked marks. Recorded by Orton (2019) as waypoint 1783.	IIIB
498	S32º 42' 43.0" E21º 15' 31.4"	Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 499 and 500. The engraving consists of scratched lines which partly cross over each other and pecked marks within three rounded shapes.	IIIB
499	S32º 42' 43.2" E21º 15' 31.3"	Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 498 and 500. The engraving consists of a scratched irregular triangle with a line through the middle.	IIIB
500	S32º 42' 43.1" E21º 15' 31.2"	Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 498 and 499. The engraving consists of 2 sets of roughly parallel lines of peck marks which diverge slightly.	IIIB
501	S32º 42' 43.0" E21º 15' 31.7"	Rock engraving on koffieklip in a different cluster of boulders on the same small rise as 497 to 500. The engraving consists of a scratched diamond shape. The outline of three of the four sides is made up of multiple lines rather than a single outline. Recorded by Orton (2019) as waypoint 1784.	IIIB
502	S32º 42' 43.6" E21º 15' 34.1"	Rock engraving on a koffieklip boulder at the eastern extremity of the small rise with the previous engravings. The engraving consists of scratched lines, a scratched circle and pecked marks within a semi-circular shape. Recorded by Orton (2019) as waypoint 1785.	IIIB
503	S32º 42' 48.2" E21º 15' 35.9"	Stone feature of koffieklip boulders, approximately 40cm x 70cm, situated within the sandstone and koffieklip gravels on the alluvium in the low-lying area close to the southern boundary of the study area. This could possibly indicate a burial. No artefacts in association with it.	NCW but IIIA if a grave
504	S32º 42' 48.7" E21º 15' 40.0"	Irregularly spaced arrangement of koffieklip boulders in two adjoining semicircles on the alluvium in the south-eastern corner of the study area. Each semi-circle is approximately 1.5 x 2m. No artefacts were seen in association with them.	NCW
505	S32º 42' 49.6" E21º 15' 42.5"	Isolated flaked quartzite cobble.	NCW
506	S32º 42' 41.4" E21º 15' 44.7"	Rock engraving situated in the western-most cluster of koffieklip boulders on the higher rocky area between the eastern boundary of the study area and the gravel road. It lies just within the study area. The engraving is obviously of colonial age as it consists of scratched letters – WICKUS DE WEE…	IIIB

507	S32º 42' 42.1" E21º 15' 47.0"	Small scatter of LSA flakes, chunks and cores with one snapped MSA blade at the base of the higher rocky area with waypoints 508 to 513. Artefacts possibly made of fine-grained sandstone, hornfels and perhaps even weathered and patinated Matjiesfontein chert.	IIIC
508 - 512	Concentrations of MSA and LSA artefacts amongst the 'koffie klip' boulders on the higher rocky area between the E boundary of the study area and the existing gravel road. The waypoints give the areas of greatest concentration, with a few scattered artefacts spreading a short distance beyond them. Gaps between the concentrations are mostly devoid of artefacts.		
508	S32º 42' 40.8" E21º 15' 46.1"	Scatter of weathered and patinated fine-grained sandstone, hornfels and possibly Matjiesfontein chert MSA and LSA artefacts, including blades and points.	IIIC
510	S32º 42' 41.3" E21º 15' 46.4"	Spatially discrete scatter of MSA and LSA artefacts in an area of approximately 10 x 18 m. The greatest concentration of stone artefacts is in an area of about 2 to 3 m² where there are probably 30-40 artefacts per m². The artefacts are made of fine-grained sandstone, hornfels and Matjiesfontein chert and consist of flakes, blades, points, cores. Also a few more crudely-flaked sandstone artefacts. The scatter tapers off in density quite quickly.	IIIC
511	S32º 42' 40.4" E21º 15' 47.2"	Small cluster of several fine-grained sandstone flakes and chunks, one LSA flake possibly of Matjiesfontein chert.	IIIC
512	S32º 42' 41.7" E21º 15' 47.5"	Small cluster of several fine-grained sandstone flakes, blades and bladelet core, with one patinated hornfels blade.	IIIC
513	S32º 42' 40.9" E21º 15' 46.7"	Areas apparently cleared of koffieklip boulders. The boulders are heaped to one side forming a semi-circle to the west of the 3-4 cleared areas. These may be possible sleeping hollows. Fewer than 30 LSA artefacts of fine-grained chert and quartz, as well as pieces of OES occur in association with these areas.	IIIC

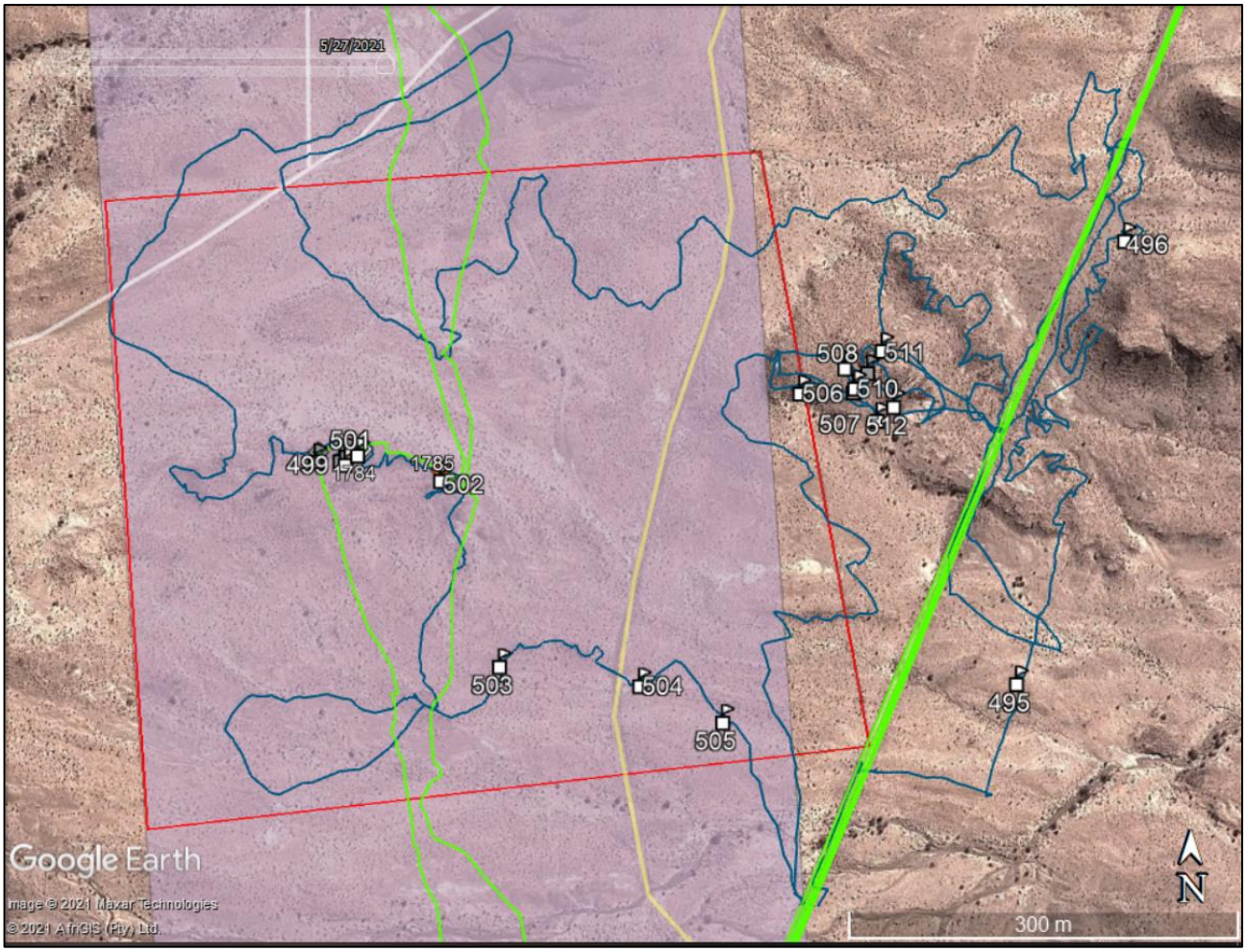

Figure 4.6. Aerial view of the study area (red polygon) showing the authorised transmission corridor (purple shading), the 2019 and 2021 survey tracks (blue and green lines respectively).

Most important within the study area are a number of engravings that are all assumed to be historical. None of them seems represent recognisable imagery and the markings at waypoint 497 may even simply be chop marks from somebody using the rock to chop firewood on. The remainder are all obviously deliberately incised and pecked though. Interestingly, the engravings have varying degrees of weathering suggesting variable age (but still all historical). These engravings lie along a low ridge capped with koffieflip rocks and slabs and it is on this koffieklip that the engravings are made. One further engraved rock was found right on the eastern edge of the study area. This one appeared to have the name "WICKUS DE WEE" incised on it. It is hard to know what these engraved rocks relate to and to know how important they are as heritage resources. Some stone features were also found, suggestive of a possible burial cairn. It is undoubtedly an anthropogenic feature but, although unlikely to be a grave, this cannot be ruled out. The other is a set of rocks on a level area of alluvium and that appear to form two conjoined semi-circular shapes. They have no obvious function and there were no artefacts in the area.

Figure 4.7. Mound of koffieklip stones.

A number of archaeological finds were made on a small raised rocky area just outside the eastern edge of the study area. Most of these were spatially related (waypoints 507 to 512). In this area there were many stone artefacts dating from both the MSA and LSA, but with the former strongly dominating. Blades and points (or fragments of these types) were quite common. The slightly elevated position of this area was obviously a favoured spot.

Aside from the engravings, no historical archaeological materials were found in the study area. Visible on aerial photography and already labelled as such on the 1972 topographic map is a ruin located some 250 m south of the southern edge of the MTS site adjacent to a farm dam. It is across the main gravel road and well away from harm. The earliest aerial photograph shows the structure to have already been present in 1939.

The earlier assessment considered the potential significance of impacts to archaeological resources as being moderate negative before mitigation. Given that the newly discovered heritage resources are of the same heritage grading and cultural significance, this assessment still stands. Mitigation would again result in the significance post-mitigation dropping to very low negative. There will thus be no change to the impact assessment ratings provided in the original assessment (Orton 2019).

In terms of the engravings discovered on the site, the previous MTS location would have been preferred because with only the powerline passing through the present site development would have easily been able to avoid the engravings. However, despite this disadvantage, mitigation can be easily effected in order to create a record of the engravings prior to construction.

4.3.2. *Cumulative Impacts*

Palaeontology

According to the DFFE Renewable Energy EIA Applications Database (REEA) for the first quarter of 2021, the only currently proposed or authorised renewable energy facilities within a 35 km radius of the MTS project area near Merweville are the authorised Komsberg East and Komsberg West WEFs, for which field-based PIAs were submitted by Almond (2015**, 2015**), and the authorised Suurplaat WEF for which only a desktop PIA is currently available (Almond 2010b).

Given the outstanding palaeontological heritage field data, Almond (2019) concluded that it is not yet feasible to meaningfully assess cumulative palaeontological impacts for proposed 132 kV grid line and associated MTS. However, pending the outcome of these and several other outstanding palaeontological field-based studies for the several WEF projects in the Sutherland – Merweville region, it is provisionally concluded (following Almond 2019) that the cumulative impact significance of the proposed new MTS and associated electrical grid infrastructure developments in the context of

other renewable energy and electrical infrastructure developments in the region is NEGATIVE MEDIUM without mitigation. This would fall to NEGATIVE LOW provided that the proposed monitoring and mitigation recommendations made for all these various renewable energy projects are fully implemented (which is doubtful).

These anticipated cumulative impacts following mitigation lie within acceptable limits. Unavoidable residual negative impacts may be partially offset by the improved understanding of Karoo palaeontology resulting from appropriate professional mitigation. This is regarded as a positive impact for Karoo palaeontological heritage.

Nature: Disturbance, damage or destruction of legally protected, scientifically valuable fossil heritage resources preserved at or beneath the ground surface through surface clearance and excavations within the project footprint		
	Without mitigation	**With mitigation**
Extent	Low (1)	Low (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Low (4)
Probability	Definite (5)	Probable (3)
Significance	**Medium (60)**	**Low (30)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Specialist palaeontological walk-downs of project footprints in the pre-construction phase in cases where no field-based palaeontological study has yet been conducted. On-going Construction Phase monitoring for fossils of surface clearance and excavations by ECO / ESO. Application of Chance Fossil Finds Protocol during construction phase with recording and collection of significant new finds by qualified palaeontologist.		
Residual Impacts: Small residual impacts may be off-set by improved palaeontological database following mitigation.		

Heritage:

There are no similar electrical developments of the scale of an MTS in the vicinity. However, a number of high voltage powerlines occur nearby and many renewable energy facilities have been proposed in the Roggeveld Mountains to the west and northwest of the study area. While powerlines traverse all parts of the landscape and might impact upon resources in various areas, the majority of infrastructure for the renewable energy facilities is proposed on exposed ridges and flat open areas where heritage resources are not typically found. Although many sites have been recorded, these are over large areas of land and the actual density of significant heritage resources (largely archaeological materials) on the landscape is low. Given this fairly low density and the fact that the most significant sites are generally the easiest seen and most likely to be found and avoided, the cumulative impacts through development of the MTS on this location are considered to be of **very low negative significance.**

4.3.3. Conclusion

Palaeontology:

The MTS project is not fatally flawed and there are no objections on palaeontological heritage grounds to authorisation of the proposed site amendment, provided that the recommended mitigation measures for the construction phase outlined are included in the EMPr for the development and are fully implemented.

Heritage:

There are no fatal flaws and because there are few heritage sites located within close proximity of the alignments, the potential impacts to all types of heritage resources are of generally moderate-low significance before mitigation and very low significance after mitigation. From a heritage point of view it is therefore suggested that the proposed amendment may be authorised.

4.4. Soil and Agricultural impact

The 2019 Soil and Agricultura Impact Assessment undertaken for the BA (2015) indicated that the proposed powerline infrastructure crosses several very similar Fc and Ib land types that are dominated by rock outcrops and shallow Mispah and Glenrosa soil forms on underlying rock. The powerline infrastructure crosses land classified with land capability evaluation values of 1 – 7. The land capability is limited by the very low climatic moisture availability, the rugged terrain, and the shallow, rocky soils. Due to the climate, terrain and soil limitations, the land is considered unsuitable for any agricultural purposes other than low intensity grazing.

Agricultural sensitivity of a particular development is also a function of the severity of the impact which that development poses to agriculture. In the case of transmission lines, the impact is negligible. This even further reduced the agricultural sensitivity of the study area for the proposed development.

The entire study area was determined to have extremely low agricultural potential and therefore very low agricultural sensitivity to development and consequent loss of agricultural land use. Agricultural potential and conditions are also very uniform across the site, and the choice of placement of facility infrastructure therefore has negligible influence on the significance of agricultural impacts. From an agricultural point of view, no parts of the site need to be avoided by the proposed development and no buffers were required.

4.4.1. *Comparative Assessment*

Following the report by Lanz, 2019 that was included in the Final Basic Assessment Report for the Proposed Construction and Operation of Electrical Grid Infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEF's) (CSIR, 2019), minimal soil and land degradation was identified as the only impact of the grid infrastructure during the construction and decommissioning phases. The soil and land degradation was attributed to erosion and topsoil loss with a pre-mitigation significance rating of Low and post-mitigation significance rating of Very Low. It was stated that the Operational phase will have zero impact while the cumulative impact of land occupation by multiple developments in the larger area as having very low significance.

Following the data analysis and impact assessment above, the proposed change in location of the MTS is considered an acceptable change in layout that will not increase the risk of soil quality degradation or result in more significant impacts on agricultural production.

The project assessment zone consists largely of shallow rocky soil with Very Low to Low land capability. The long-term grazing capacity of 36 ha/LSU (or 9ha/SSU) indicates that the grazing capacity is low and that large portions of land are required for long-term sustainable livestock farming. The area assessed (25ha) can support two to three sheep while the actual development footprint (approximately 16ha) can feed one to two sheep.
According to the report by Lanz (2019), the area previously authorised for the MTS, has similar terrain and the same soil forms than that of the new MTS area. Both areas have no rainfed or irrigated crop production. From the perspective of soil and agricultural potential conservation, there will be no disadvantages to the relocation of the MTS. There will also be no advantages from the study field perspective. While the significance rating of the soil erosion risk during the construction phase is considered similar for the new location of the MTS, soil pollution has been identified as an additional risk during the construction of the MTS.

Impact: Soil pollution

Nature: During the construction phase, construction workers will access the land for the preparation of the terrain and the construction of the MTS. Both potential spills and leaks from construction vehicles and equipment as well as waste generation on site, can result in soil pollution.		
	Without mitigation	**With mitigation**
Extent	Local (1)	Local (1)
Duration	Short-term (2)	Very short (1)
Magnitude	Moderate (6)	Low (4)
Probability	Low (4)	Improbable (2)
Significance	**Medium (36)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	N/A
Mitigation: • Maintenance must be undertaken regularly on all vehicles and construction/maintenance machinery to prevent hydrocarbon spills; • Any waste generated during construction, must be stored into designated containers and removed from the site by the construction teams. • Any left-over construction materials must be removed from site.		
Residual Impacts: The residual impact from the construction and operation of the proposed project will be low to negligible.		
Cumulative Impacts: Any additional infrastructure that will be constructed to strengthen and support the operation of the Sutherland MTS and where waste is not removed to designated waste sites, will increase the cumulative impacts associated with soil pollution in the area.		

It is anticipated that in addition to the impacts of soil erosion and topsoil loss, the construction phase will may also cause soil pollution that can be mitigated to an impact of low significance. No additional impacts are anticipated for the operational phase. It is not foreseen that there will be a decommissioning phase.

Considering that the new MTS be placed in close proximity to an existing gravel road and away from cattle watering facilities confirm that all reasonable measures have been taken to avoid or minimize fragmentation and disturbance of agricultural activities, provided that the mitigation measures provided in this report are implemented.

4.4.2. *Cumulative Impacts*

The cumulative impact identified the decrease in areas available for livestock farming for the project in isolation as Low within the significance of impacts for the project and other projects in the area as Medium.

Nature: Decrease in areas with suitable land capability for livestock farming.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Regional (2)
Duration	Short duration - 2-5 years (2)	Long-term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly likely (4)	Highly likely (4)

Significance	**Low (28)**	**Medium (40)**
Status (positive/negative)	Negative	Negative
Reversibility	High	Low
Loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	No
Confidence in findings: High.		
Mitigation: The only mitigation measure for this impact is to keep the footprints of all renewable energy facilities and the supporting infrastructure, as small as possible and to manage the soil quality by avoiding far-reaching soil degradation such as erosion.		

The cumulative impacts associated with the increased risk to soil pollution was determined to be Low significance for the project in isolation with Medium significance for the project and other projects in the area.

Nature: Increase in areas susceptible to soil pollution		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Regional (2)
Duration	Very short (1)	Short-term (2)
Magnitude	Low (4)	Moderate (6)
Probability	Improbable (2)	Probable (3)
Significance	**Low (12)**	**Medium (30)**
Status (positive/negative)	Negative	Negative
Reversibility	High	Low
Loss of resources?	No	Yes
Can impacts be mitigated?	Yes	Yes
Confidence in findings: High.		
Mitigation: Each of the projects should adhere to the highest standards for soil pollution prevention and management		

4.4.3. Conclusion

Considering that the new MTS be placed in close proximity to an existing gravel road and away from cattle watering facilities confirm that all reasonable measures have been taken to avoid or minimize fragmentation and disturbance of agricultural activities, provided that the mitigation measures are implemented the specialist indicated that the Part 2 Amendment application be considered favourably, permitting that the mitigation measures are followed to prevent soil erosion (already stipulated in the authorised application) and soil pollution and to minimise impacts on the veld quality of the farm portion that will be affected.

SECTION 5- ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS

In terms of Regulation 32(1)(a)(ii), this section provides details of the advantages and disadvantages of the proposed amendment.

Advantages of the amendment	Disadvantages of the amendment
General	
The new MTS location is more suitable than the current authorised MTS location as it is not located on a steep hill and therefore will enable construction activities and prevent excessive earthworks as previously anticipated and therefore decreases the overall negative environmental impacts on the surrounding environment.	None
Heritage	
The historical engravings are only of moderate cultural significance and can be dealt with via archaeological mitigation. Because other sites of equal or higher cultural significance occur in other parts of the authorised electrical corridor, no changes to the impact significance are expected.	The amended location of the MTS found that a number of historical engravings occur within the proposed MTS footprint.
Biodiversity	
The proposed amendment will not change the significance rating and the biodiversity impacts will remain the same, no additional mitigation measures were identified for the relocation of the MTS.	None
The new location for the MTS is much more homogenous and is dominated by mostly gravel and sandy plains with a few low outcrops. No drainage features are located within the proposed footprint. The vegetation structure and composition are more or less similar to that found within the old proposed footprint.	None
It was confirmed that the old MTS location is not ideal, however the newly proposed location was found to be much more suitable of the construction of a MTS and would be situated entirely within a low sensitive plain, avoiding any impacts on highly sensitive features.	None
Aquatic	
The relocation of the MTS to the new proposed location will subsequently result in the avoidance of any direct impacts on freshwater resource features. Furthermore, due to the proximity of the new MTS location to freshwater resource features within the surrounding area, indirect impacts will be lower in terms of extent, consequence and potential significance.	None
The proposed amendment to the location of the MTS is regarded, from an aquatic perspective, positive and beneficial amendment as the previously proposed location for the MTS contained a few minor ephemeral watercourses and associated drainage lines which would have been directly impacted, whereas the new location is regarded as even more preferable from an aquatic perspective, as no freshwater resource features are located within the proposed footprint.	None

Advantages of the amendment	Disadvantages of the amendment
Soil and Agricultural Potential	
The proposed amendment will not increase the risk of soil quality degradation or result in more significant impacts on agricultural production.	One additional mitigation measure entailing soil pollution that was not identified during the initial assessment was identified for the construction phase of the MTS. The significance of the impact had been calculated at low with the implementation of mitigation measures.

Based on the above, it can be concluded that the advantages of the proposed change outweigh the disadvantages from an environmental and technical perspective. Based on the latest information available for the area, the new proposed MTS location within the authorised grid corridor is considered to be the preferred Alternative from the specialist investigation undertaken.

SECTION 6- REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENTS

As required in terms of Regulation 32(1)(a)(iii), consideration was given to the requirement for additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed change. From the specialist inputs provided into this amendment motivation, it is concluded that the following additional mitigation measures further to those proposed within the Basic Assessment process would be required to manage potential impacts within acceptable levels. The following mitigation measures have been included within the Addendum to the EMPr (Appendix I):

Specialist Study	Additional Mitigation Measures
Heritage Impact Assessment	• The MTS site should be included within the preconstruction survey for the already authorised powerlines in order to check for any further significant resources, especially engravings; • The engravings should be photographed and traced as necessary to produce a clear record. This should include moving the stones in order to achieve the best light for photography; • The potential grave cairn should be unpacked and the ground tested to determine the status of the feature during the pre-construction survey; • The cluster of Stone Age materials located just outside the eastern edge of the site should be avoided and protected from harm throughout the construction phase; and • If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.
Palaeontological Assessment	• Implementation of Chance Find Procedure as per Appendix 2 of the Paleaontological Assessment
Soil & Agricultural Potential	• Maintenance must be undertaken regularly on all vehicles and construction/maintenance machinery to prevent hydrocarbon spills; • Any waste generated during construction, must be stored into designated containers and removed from the site by the construction teams. • Any left-over construction materials must be removed from site.
Surface Water	• In terms of the recommended 100m buffer around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint.

SECTION 7- PUBLIC PARTICIPATION

A public participation process is being conducted in support of a Part Two application for amendment of the Environmental Authorisation for the Electrical Grid Infrastructure to support the Rietrug, Sutherland and Sutherland 2 WEF, Northern Cape and Western Cape Provinces. This public participation has been undertaken in accordance with the approved Public Participation plan (Appendix C8) for the project and includes:

- Placement of site notices at the site on **25 June 2021** (refer to **Appendix E4**).
- Placement of process notices at the Total filling station and the Karoo Hoogland Local Municipality on the **25 June 2020**. (refer to **Appendix E4**).
- The draft motivation report being made available for public review on https://nalaenvironmental.co.za/projects/ . from **12 July 2021 to 12 August 2021.**
- A process notification to I&AP's and stakeholders announcing the amendment process and registration was distributed on the **01 July 2021.**
- Written notification to registered I&APs regarding the availability of the amendment motivation report was distributed on **12 July 2020** (refer to **Appendix E2**).
- Placement of advertisements in the Cape Times newspaper on **08 July 2021** (refer to **Appendix E4**)
- All project documentation was also uploaded onto Nala Environmental website which allows for I&AP's and stakeholders to access project information (https://nalaenvironmental.co.za/projects/).

Comments received during the public review period will be included in the final submission to the DFFE for consideration in the decision-making process. Comments received following the announcement of the amendment, have been responded to in the Issues Trail Report (**Appendix C7**). Public participation carried out in line with the Public Participation Plan during the 30 day review period will be included within the final Motivation report submitted to DFFE. Proof of attempts made to obtain comments from relevant Organs of State and key stakeholders have been included in **Appendix E3**.

SECTION 8- CONCLUSION

Based on the specialist findings, it is concluded that the proposed amendment for the relocation of the MTS within the authorised grid corridor that is associated with the electrical grid infrastructure for the authorised Rietrug, Sutherland and Sutherland 2 WEF is not expected to result in an increase to the significance ratings (i.e. very low- moderate) for the identified potential impacts within the Basic Assessment. No new impacts have been identified under the current amendment other than the additional impact of soil pollution anticipated to have a significance of low with the implementation of additional mitigation measures which have been included within the Addendum to the EMPr (Appendix I). All other impact ratings remain the same, if not of lower significance than the impact rating originally identified. Based on the latest information available for the area, and proposed new location of the MTS within the authorised grid corridor is considered to be the preferred Alternative from the specialist investigation undertaken. There are no impacts associated with the amendment to the start and end co-ordinates of the authorised 132kV powerline and 400kV powerline as they do not deviate from their original authorised route within the grid corridor.

In terms of aspects relating to biodiversity, heritage, palaeontology , surface hydrology and soil and agricultural potential the proposed changes to the EA will not increase the significance of impacts originally identified in the Basic Assessment report, additional impacts of soil pollution can be mitigated to an acceptable level of low significance.

The amendment in itself does not constitute a listed activity. The mitigation measures described in the original Basic Assessment document are adequate to manage the expected impacts for the project and additional mitigation measures proposed by the specialists for the new location of the MTS have been included within the Addendum to the EMPr (Appendix I).

Given the above, it is requested that the location of the MTS in the Environmental Authorisation be amended to the new proposed location further south and still within the authorised grid corridor as the preferred alternative and that the start and end co-ordinates of the authorised 132kV powerline and 400kV powerline amended accordingly to accommodate for the new MTS location.

Taking into consideration the conclusions of the studies undertaken for the proposed amendment associated, with the new MTS location (as detailed in **Appendix D – G), it is concluded that this amendment is considered acceptable from an environmental perspective, provided that the original mitigation measures stipulated in the EMPr and additional mitigation measures in the Addendum to the EMPr are implemented.**

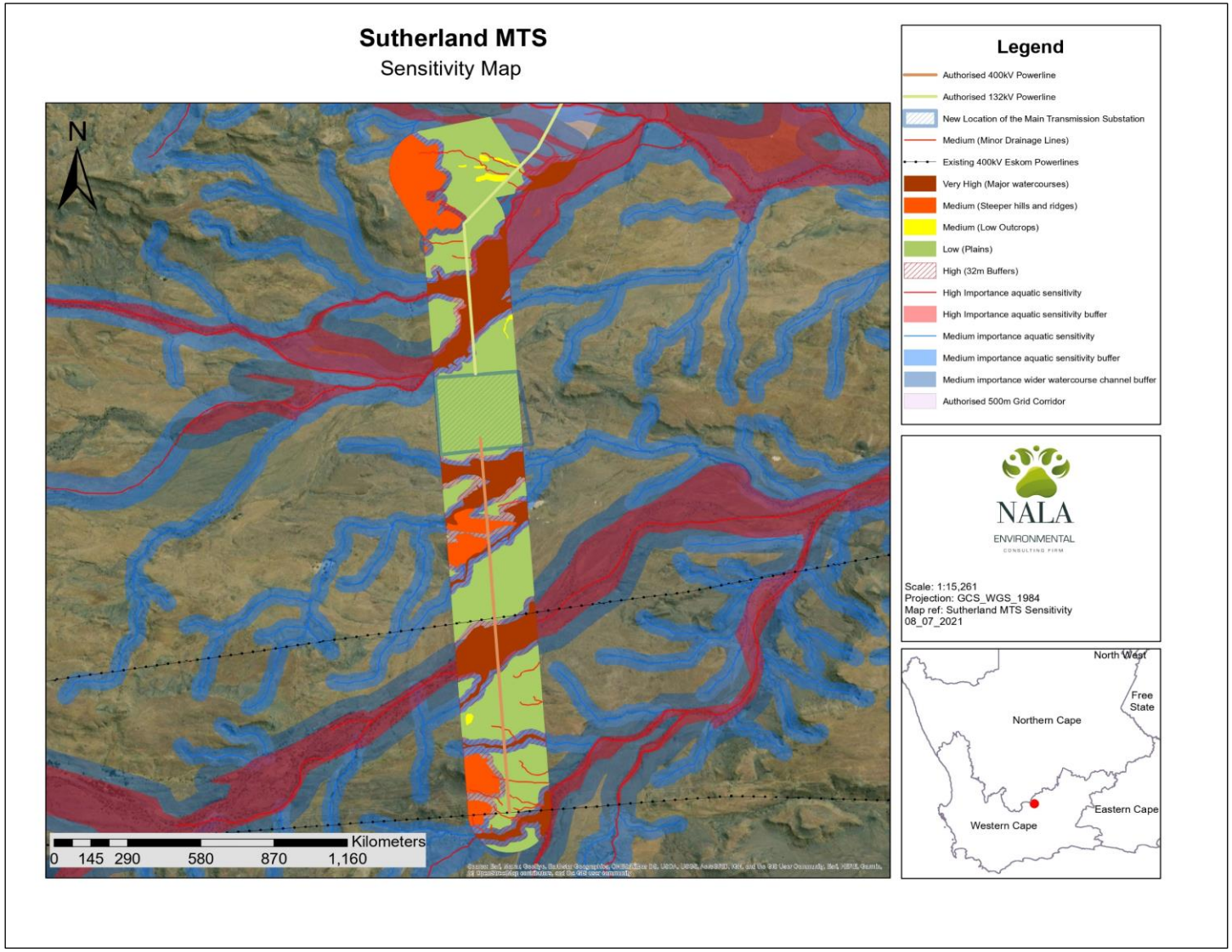

Figure 5. Electrical grid infrastructure consisting of the new MTS location, authorised 132kV and 400kV powerlines layout with specialist environmental sensitivities (A3 Map included in **Appendix B**)