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AGRICULTURAL IMPACT ASSESSMENT
FOR PROPOSED GAMMA KAPPA 765 KV TRANSMISSION POWERLINE
WESTERN CAPE & NORTHERN CAPE PROVINCES

EIA PHASE REPORT

Report by
Johann Lanz

August 2017

Johann Lanz
Professional profile

Education

• M.Sc. (Environmental Geochemistry)	University of Cape Town	1996 - June 1997
• B.Sc. Agriculture (Soil Science, Chemistry)	University of Stellenbosch	1992 - 1995
• BA (English, Environmental & Geographical Science)	University of Cape Town	1989 - 1991
• Matric Exemption	Wynberg Boy's High School	1983

Professional work experience

I am registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science, registration number 400268/12, and am a member of the Soil Science Society of South Africa.

- **Soil Science Consultant Self employed 2002 - present**

  I run a soil science consulting business, servicing clients in both the environmental and agricultural industries. Typical consulting projects involve:

- Soil specialist study inputs to EIA's, SEA's and EMPR's. These have focused on impact assessments and rehabilitation on agricultural land, rehabilitation and re-vegetation of mining and industrially disturbed and contaminated soils, as well as more general aspects of soil resource management. Recent clients include: CSIR; SRK Consulting; Aurecon; Mainstream Renewable Power; SiVEST; Savannah Environmental; Subsolar; Red Cap Investments; MBB Consulting Engineers; Enviroworks; Sharples Environmental Services; Haw & Inglis; BioTherm Energy; Tiptrans.
- Soil resource evaluations and mapping for agricultural land use planning and management. Recent clients include: Cederberg Wines; Unit for Technical Assistance - Western Cape Department of Agriculture; Wedderwill Estate; Goedgedacht Olives; Zewenwacht Wine Estate, Lourensford Fruit Company; Kaarsten Boerdery; Thelema Mountain Vineyards; Rudera Wines; Flagstone Wines; Solms Delta Wines; Dornier Wines.
- I have conducted several recent research projects focused on conservation farming, soil health and carbon sequestration.
- I have project managed the development of soil nutrition software for Farmsecure Agri Science.

- **Soil Science Consultant Agricultural Consultors International (Tinie du Preez) 1998 - end 2001**

  Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

- **Contracting Soil Scientist De Beers Namaqualand Mines July 1997 - Jan 1998**

  Completed a contract to make recommendations on soil rehabilitation and re-vegetation of mined areas.

Publications

- Lanz, J. 2012. Soil health: sustaining Stellenbosch's roots. In: M Swilling, B Sebitosi & R Loots (eds). *Sustainable Stellenbosch: opening dialogues*. Stellenbosch: SunMedia.
- Lanz, J. 2010. Soil health indicators: physical and chemical. *South African Fruit Journal*, April / May 2010 issue.
- Lanz, J. 2009. Soil health constraints. *South African Fruit Journal*, August / September 2009 issue.
- Lanz, J. 2009. Soil carbon research. *AgriProbe*, Department of Agriculture.
- Lanz, J. 2005. Special Report: Soils and wine quality. *Wineland Magazine.*

I am a reviewing scientist for the *South African Journal of Plant and Soil*.

Specialist Declaration

I, Johann Lanz, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Name of company: Johann Lanz – Soil Scientist

Professional Registration (including number): SACNASP Reg. no. 400268/12

Date: 31 August 2017

EXECUTIVE SUMMARY

The key findings of this study are:

- There are two factors that influence the significance of all agricultural impacts. The first is that the proposed development is almost entirely on land of extremely limited agricultural potential, that is only suitable as non-arable, low potential grazing land. The second is that the actual footprint of disturbance of the power line is very small in relation to available, surrounding land.
- Because of these factors, there will be negligible impact of the development on agricultural production and livelihoods.
- The dominant soils in the study area are soils with minimal development, usually shallow, on hard or weathering rock. The dominant soil forms are Glenrosa and Mispah. These shallow soils are a major limitation to agriculture in the study area.
- The other major limitation is the aridity and lack of access to water.
- Agricultural land use throughout the study area is overwhelmingly grazing of sheep. There is negligible impact of the development on any cultivated land.
- Four potential negative impacts of the development on agricultural resources and productivity were identified as:

    - Loss of agricultural land use caused by direct occupation of land by the footprint of the power line infrastructure (medium-high significance during construction phase; low-medium significance during operational phase; no mitigation possible).
    - Soil Erosion caused by alteration of the surface run-off characteristics (during construction phase - low-medium significance without mitigation and low with; during operational phase - medium-high significance without mitigation and low with).
    - Loss of topsoil in disturbed areas, causing a decline in soil fertility (low significance without mitigation and very low with; only occurs in construction phase).
    - Degradation of surrounding veld due to vehicle trampling (low significance without mitigation and very low with; only occurs in construction phase).

- The most important agricultural parameters for assessing impacts in the context of the study area are slope steepness, land capability, grazing capacity, agricultural land use, and the occurrence of any agriculturally sensitive areas. A comparison of these parameters along the three proposed alternative routes shows negligible difference between them. Therefore, from an agricultural impact point of view, there is no preferred alternative for the power line route.
- There are no agriculturally sensitive areas that need to be avoided by the development.
- Because of the low agricultural potential of the site, and the consequent low agricultural impact, there are no restrictions relating to agriculture which should preclude authorisation of the proposed development. This includes cumulative agricultural impact.

TABLE OF CONTENTS

1 INTRODUCTION

Eskom is proposing the construction of a new +/-370km-long 765kv transmission power line across the Karoo from Gamma Substation near Hutchinson to Kappa Substation near Touwsrivier (see Figure 1). The development will include auxiliary works such as upgrade of substations, access roads, construction camps and equipment or material storage sites along the proposed power line servitude.

The development is currently in the Environmental Impact Assessment phase and this report identifies and assesses the potential impacts that the development may have on agricultural resources and production. Johann Lanz was appointed by Nzumbululo Heritage Solutions as an independent specialist to conduct this Agricultural Impact Assessment.

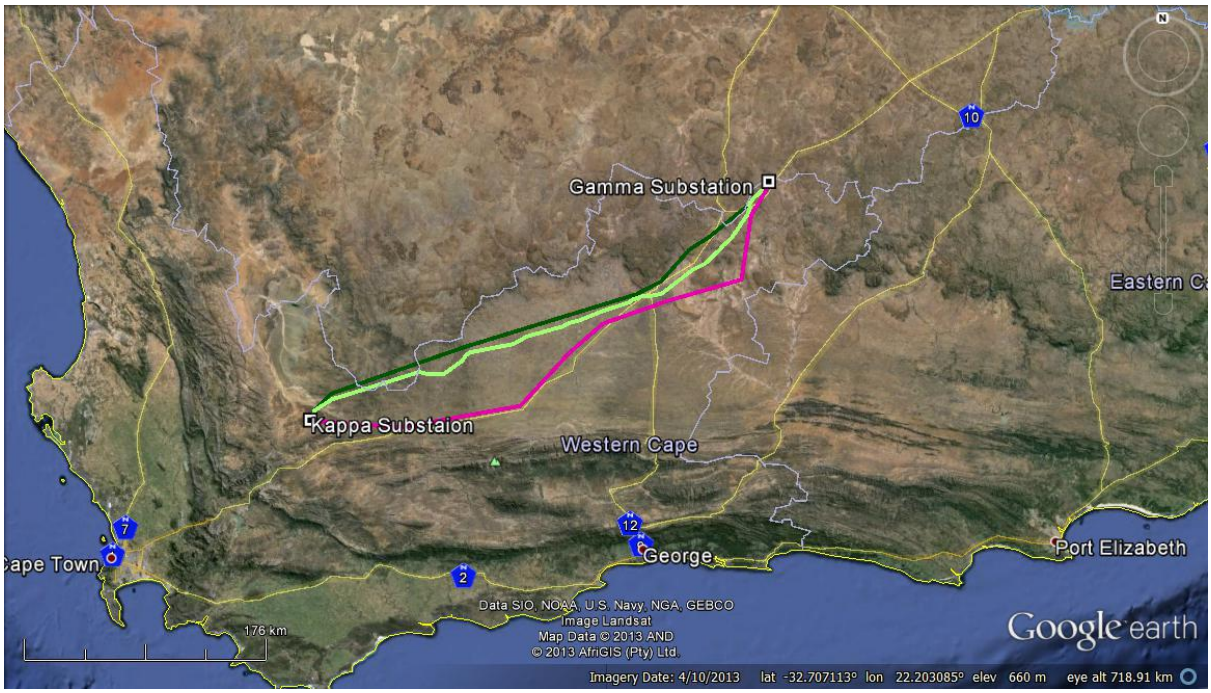

Figure 1. Location map of the proposed power line showing the 3 alternative routes.

2 TERMS OF REFERENCE

The terms of reference for this study are:

- Describe and map the receiving environment in terms of agricultural parameters including climate, soils, land capability and land use.
- Identify and assess all potential impacts (direct, indirect and cumulative) of the proposed development on agricultural resources (including soils) and agricultural production.
- Provide recommended mitigation measures, monitoring requirements, and rehabilitation guidelines for all identified impacts.
- Identify, in terms of agricultural impact, the preferred one of the 3 alternative power line routes.

The report also fulfils the requirements of Appendix 6 of the 2014 EIA Regulations as amended in 2017 (See Table 1).

Table 1. Compliance with the Appendix 6 of the 2014 EIA Regulations

Requirements of Appendix 6 – GN R982	**Addressed in the Specialist Report**
A specialist report prepared in terms of these Regulations must contain details of-	
the specialist who prepared the report; and	Title page
the expertise of that specialist to compile a specialist report including a curriculum vita;	CV within report
a declaration that the specialist is independent in a form as may be specified by the competent authority;	At beginning of report
an indication of the scope of, and the purpose for which, the report was prepared;	Section 1 and 2
an indication of the quality and age of base data used for the specialist report;	Section 3.1
a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 6.3
the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	not applicable – desktop study
a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 5.5 and Figures 2 - 6
an identification of any areas to be avoided, including buffers;	Section 5.5
a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figures 2 - 6
a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 4
a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;	Sections 6 and 8
any mitigation measures for inclusion in the EMPr;	Section 6
any conditions for inclusion in the environmental authorisation;	Section 8
any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 7
a reasoned opinion-	
as to whether the proposed activity or portions thereof should be authorised;	Section 8
regarding the acceptability of the proposed activity or activities; and	Section 8
if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 6 and 7
a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 3.1

Requirements of Appendix 6 – GN R982	Addressed in the Specialist Report
a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not applicable
any other information requested by the competent authority.	Not applicable

3 METHODOLOGY OF STUDY

3.1 Methodology for assessing soils and agricultural potential

The assessment was a desk top one based on existing soil and agricultural potential data for the study area. The source of this data was the online Agricultural Geo-Referenced Information System (AGIS), produced by the Institute of Soil, Climate and Water (Agricultural Research Council, undated). Soil data on AGIS originates from the land type survey that was conducted from the 1970's until 2002. It is the most reliable and comprehensive national database of soil information in South Africa and although the data was collected some time ago, it is still entirely relevant as the soil characteristics included in the land type data do not change within time scales of hundreds of years. Satellite imagery of the study area was also used, particularly to evaluate current land use. Furthermore the soil scientist applied his knowledge and previous experience of agricultural conditions in the area.

No field-based ground-truthing was undertaken as it was decided that this would not meaningfully contribute to the aims of this study. To undertake any form of soil ground-truthing that would meaningfully improve on the existing data (that is increase the resolution of mapping), would be extremely costly and time consuming and even then, would be highly unlikely to add any data that would significantly influence the results of this study in achieving its aim.

No consultation was done as part of the study.

3.2 Methodology for determining impact significance

All potential impacts were assessed and rated in terms of criteria used uniformly for all the specialist studies done as part of this EIA. Details of the criteria are given in chapter 10, Environmental impact assessment methodologies, of the scoping report.

4 CONSTRAINTS AND LIMITATIONS OF STUDY

Data on the spatial distribution of soil types is dependent on the resolution of sampling points. Investigations for different purposes will use different resolutions. These will record the degree of soil variation that occurs, at different levels of accuracy. The accuracy level of the land type data used in this study is considered completely adequate for achieving this study's aims. A more detailed soil investigation is not considered likely to have added anything significant for determining the impact of the development on agricultural resources and productivity.

The assessment rating of impacts is not an absolute measure. It is based on the subjective considerations and experience of the specialist, but is done with due regard and as accurately as possible within these constraints.

There are no other specific constraints, uncertainties and gaps in knowledge for this study.

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Climate and water availability

The study area is situated entirely within the Karoo region. The dominant agricultural limitation of this area is the low rainfall and lack of access to water. The most important climate parameter for agriculture in this context is moisture availability, which is the ratio of rainfall to evapotranspiration, and is classified into 6 categories across South Africa. Almost all of the project falls within the lowest category of moisture availability, which is described as a *very severe* limitation for agriculture (see Figure 2). Only a small section of the project, within the vicinity of the Kappa Substation, falls within the next category, which is termed a *severe* limitation.

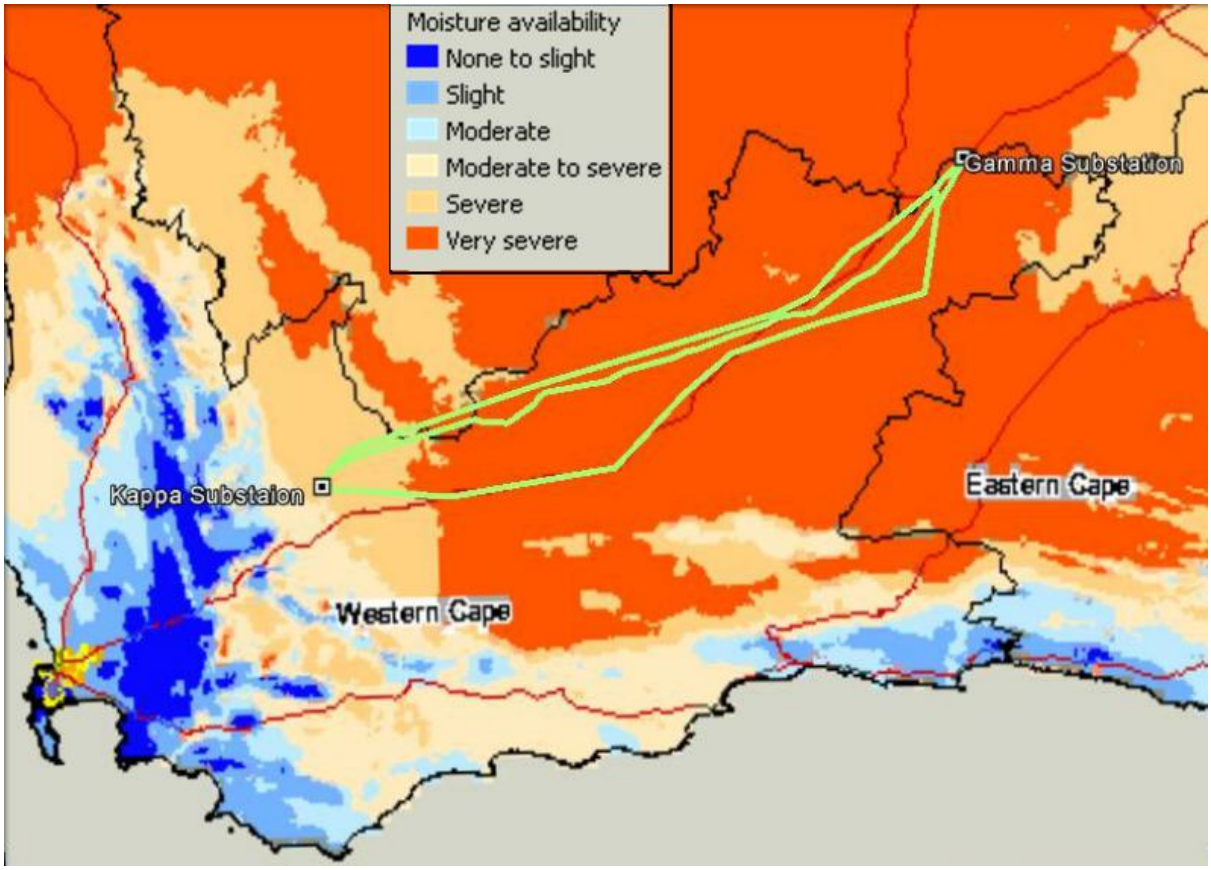

Figure 2. Moisture availability limitation (ratio of rainfall to evapotranspiration) across the study area, with the 3 alternative power line route options indicated in light green.

5.2 Terrain and soils

The proposed power line traverses the Karoo, crossing a variety of terrain units from level plains to low mountains with fairly steep slopes. The variety of terrain and slopes is illustrated in Figure 3. The geology of the study area is predominantly shale and mudstone of the Beaufort Group of the Karoo Supergroup, with frequent dolerite intrusions. At the very south western extreme of the power line it crosses into the Ecca and Dwyka Groups of the Karoo and then quartzitic sandstone of the Witteberg formation of the Cape Supergroup.

A simplified soil map of the study area is presented in Figure 4. The dominant soils are described as soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime is generally present in part or most of the landscape. The dominant soil forms in this category are Glenrosa and Mispah soil forms. Details of all the soil types traversed by the power line options are given in Table 2.

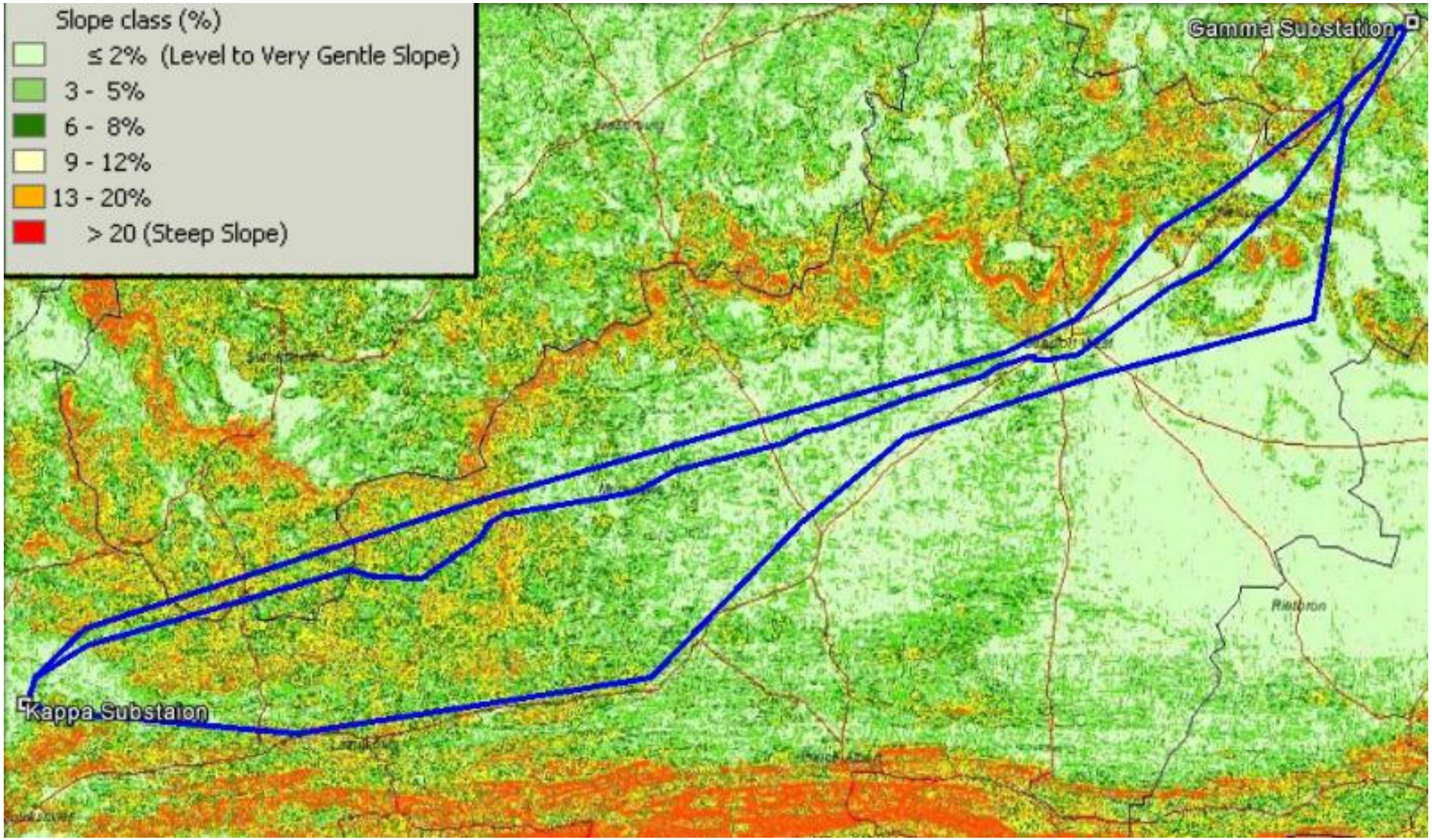

Figure 3. Slope steepness along the 3 alternative power line routes. There is a negligible difference between the routes in terms of the steepness of slopes along them.

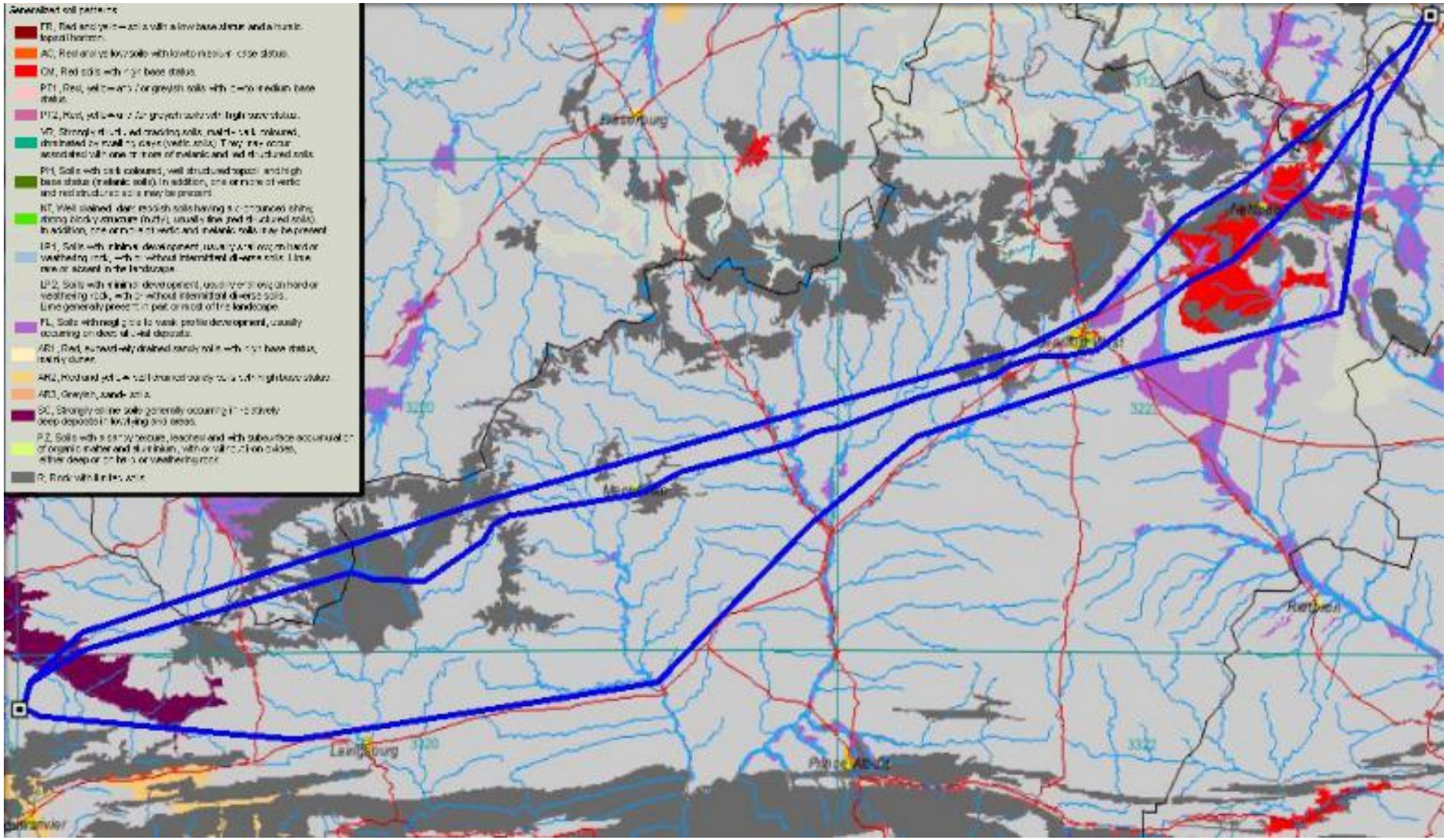

Figure 4. Soil types (Generalised Soil Patterns from AGIS) of the study area. Details of soil types are given in Table 2.

Table 2. Soil types (Generalised Soil Patterns from AGIS) of the study area. Soil types are listed in descending order of their surface coverage of the power line routes.

Label	Description	Dominant soil forms in land types	Land types	Soil limitations	Land capability class
LP2	Soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape	Glenrosa Mispah	Fb Fc	Soil depth rockiness	7
R	Rock with limited soils	Mispah	Ib	Soil depth rockiness	8
CM	Red, apedal, freely drained soils with high base status and >30cm depth	Hutton Oakleaf	Ae	Soil depth	7
FL	Soils with negligible to weak profile development, usually occurring on deep alluvial deposits	Oakleaf Dundee	Ia	Low clay content	7
SC	Strongly saline soils generally occurring in relatively deep deposits in low lying arid areas	Oakleaf Glenrosa	Ia	Salinity soil depth	7
PL1	Soils with a marked clay accumulation, strongly structured and a reddish colour. Prismacutanic and/or pedocutanic diagnostic horizons dominant	Swartland Mispah Valsrivier	Da	Soil depth	7

5.3 Land capability and agricultural potential

Land capability is the combination of soil suitability and climate factors and is an indication of agricultural potential. All the soil types except one in Figure 4 and in Table 2 have a land capability classification, on the 8 category scale, of class 7 – non-arable, low potential grazing land. The rock dominated mountainous lands have an even lower land capability of class 8 – non-utilisable wilderness land.

Grazing capacity is another important indicator of agricultural potential in this context. The study area has a low grazing capacity, the distribution of which is shown in Figure 5. The majority of the power line traverses land with a grazing capacity of >41 hectares per animal unit. At each end of the power line routes there is land with a slightly higher grazing capacity.

5.4 Land use and agricultural development

The entire study site is within a sheep farming agricultural region, and the vast majority of it is used only for grazing of sheep. There are some small, isolated patches of cultivation which are restricted to a few river valleys in the study area. There are only three points at which one of the power line options crosses cultivated land. These are shown in Figure 6. In all cases the

length of cultivated land that is crossed is short enough to be spanned between pylons and there is therefore no necessity to construct pylons within any cultivated land.

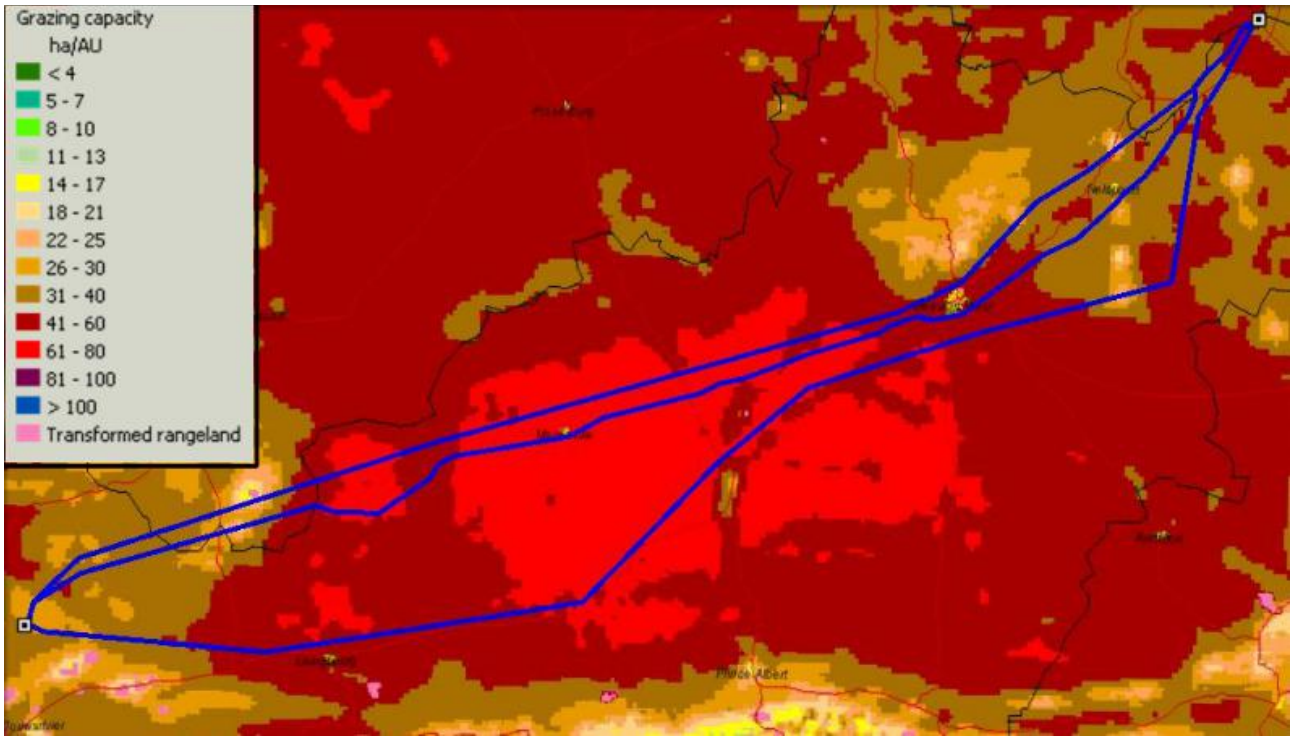

Figure 5. Grazing capacity along the 3 alternative power line routes. There is a negligible difference between the routes in terms of the grazing capacity along them.

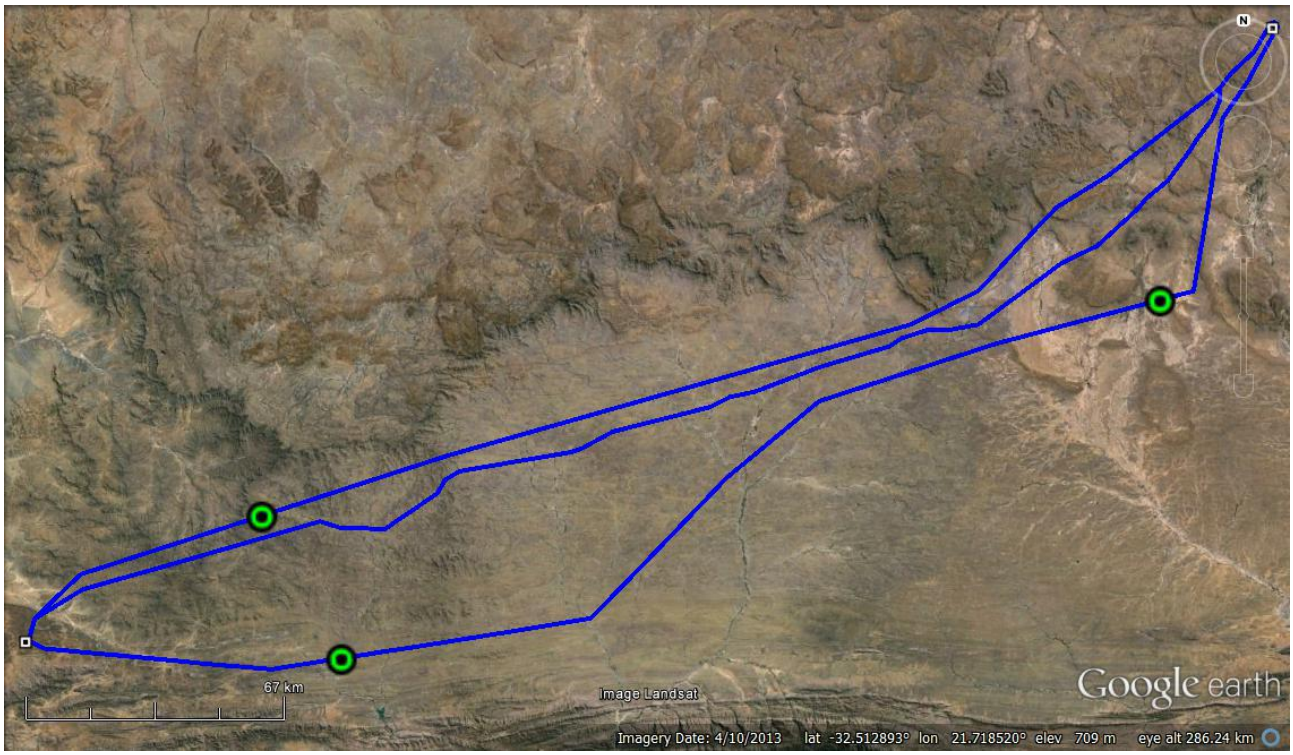

Figure 6. Points at which any of the proposed power line alternatives cross cultivated land. The co-ordinates of these 3 points are S32.82079 E20.67478; S32.32610 E23.11131; S33.14986 E20.88427

5.5 Agricultural sensitivity

Because of the low agricultural potential of the study area, it has a low sensitivity to development. No agriculturally sensitive areas occur within the study area. From an agricultural point of view, no parts of the study area need to be avoided by the development and there are no required buffers.

6 IDENTIFICATION AND ASSESSMENT OF IMPACTS ON AGRICULTURE

The components of the project that can impact on agricultural resources and productivity are:

- Occupation of the land by the footprint of the development, which includes pylon bases, access roads, and during the construction phase, construction and storage camps.
- Construction activities that disturb the soil profile and vegetation, for example for excavations, levelling, bush clearing, etc.

The following are identified as potential impacts of the development on agricultural resources and productivity, and assessed in the table formats below. There are two factors that influence the significance of all agricultural impacts. The first is that the proposed development is almost entirely on land of extremely limited agricultural potential that is only suitable as non-arable, low potential grazing land. The second is that the actual footprint of disturbance of the power line is very small in relation to available, surrounding land.

6.1 Impacts associated with the construction phase of the development

Impact **no. 1**	Loss of agricultural land use, caused by direct occupation of land by footprint of power line infrastructure, and having the effect of taking affected portions of land out of agricultural production.		
Comments	The footprint is larger during the construction phase because of construction camps, and it may also lead to a loss of grazing beyond the immediate footprint due to disturbance to fences and consequent restricted use of whole camps during construction activities.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	3	
	Spatial scope	3	
	Duration	2	
Likelihood	Frequency of activity	5	
	Frequency of impact	5	
Significance		80 Medium-high	not applicable
Confidence	High		
Mitigation	None possible		
Reversibility	Low		
Irreplaceable loss of resources?	No		

Impact **no. 2**	Soil Erosion caused by alteration of run-off characteristics due to vegetation removal and surface disturbance and compaction, particularly on access roads and construction camps.		
Comments	Risk of erosion is directly related to slope steepness.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	4	2
	Spatial scope	3	3
	Duration	3	3
Likelihood	Frequency of activity	3	2
	Frequency of impact	4	2
Significance		70 Low-medium	32 Low
Confidence	High		
Mitigation	Implement, wherever it is required, an effective system of run-off control which collects and safely disseminates run-off water from hardened and cleared surfaces including roads, and prevents potential down stream erosion.		
Reversibility	Low		
Irreplaceable loss of resources?	No		

Impact **no. 3**	Loss of topsoil caused by poor topsoil management (burial, erosion, etc) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) and having the effect of loss of soil fertility on disturbed areas after rehabilitation.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	2	1
	Spatial scope	1	1
	Duration	2	2
Likelihood	Frequency of activity	3	2
	Frequency of impact	4	2
Significance		35 Low	16 Very low
Confidence	High		
Mitigation	1. Strip and stockpile topsoil from all areas where soil will be disturbed. 2. Protect and conserve topsoil stockpiles. 3. After cessation of disturbance, re-spread topsoil over the surface. 4. Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land, or where they can be effectively covered with topsoil.		
Reversibility	Low		
Irreplaceable loss of resources?	No		

Impact **no. 4**	Degradation of veld vegetation surrounding construction activities, caused by trampling due to vehicle passage.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	2	1
	Spatial scope	1	1
	Duration	2	2
Likelihood	Frequency of activity	3	2
	Frequency of impact	4	2
Significance		35 Low	16 Very low
Confidence	High		
Mitigation	Minimize road footprint outside of construction sites and confine vehicle access on roads only.		
Reversibility	Medium		
Irreplaceable loss of resources?	No		

6.2 Impacts associated with the operational phase of the development

Impact **no. 1**	Loss of agricultural land use, caused by direct occupation of land by footprint of power line infrastructure, and having the effect of taking affected portions of land out of agricultural production.		
Comments	The footprint is significantly reduced after construction and comprises only the pylon bases and the access roads. All agricultural activities in the study area (predominantly grazing) will be able to continue unaffected everywhere else but on this footprint.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	1	
	Spatial scope	1	
	Duration	4	
Likelihood	Frequency of activity	5	
	Frequency of impact	5	
Significance		60 Low-medium	Not applicable
Confidence	High		
Mitigation	None possible		
Reversibility	Low		
Irreplaceable loss of resources?	No		

Impact **no. 2**	Soil Erosion caused by alteration of run-off characteristics due to vegetation removal and surface disturbance and compaction on access roads.		
Comments	Risk of erosion is directly related to slope steepness.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	4	2
	Spatial scope	3	3
	Duration	4	4
Likelihood	Frequency of activity	3	2
	Frequency of impact	4	2
Significance		77 Medium-high	36 Low
Confidence	High		
Mitigation	Implement, wherever it is required, an effective system of run-off control which collects and safely disseminates run-off water from hardened and cleared surfaces including roads, and prevents potential down stream erosion.		
Reversibility	Low		
Irreplaceable loss of resources?	No		

6.3 Cumulative impacts

Land across the study are has been impacted by development infrastructure such as roads, power lines etc as well as land use impacts such as grazing, which in some cases might include over grazing. But the vast majority of the surface area of the study site is available as viable grazing land. Cumulative impacts refers to the impact of the total number of developments in the region. Agricultural grazing land in the study site and Karoo region generally, is not a scarce resource. The cumulative impact of development that leads to loss of agricultural grazing land in this region is well within levels of acceptable change. The cumulative impact is assessed according to the methodology prescribed in table format below. The determined significance rating is medium high. However the rating calculation is considered an over estimation of the significance. This is because of the high likelihood (definite) and the permanent duration. But the fact remains that the impact is of negligible severity and even if it is definite and long term, it is still negligible.

Cumulative Impact	Loss of agricultural land use, caused by direct occupation of land by footprint of the development infrastructure of all developments in the surrounding area.		
Status	Negative		
		Without mitigation	With mitigation
Consequence	Severity	1	
	Spatial scope	4	
	Duration	5	
Likelihood	Frequency of activity	5	
	Frequency of impact	5	
Significance		100 medium-high	Not applicable
Confidence	High		
Mitigation	None possible.		
Reversibility	Low		
Irreplaceable loss of resources?	No		

6.4 Comparative assessment of alternatives

The 'do nothing' alternative has zero impact on agriculture, compared to the low to medium-high impact for the development.

The most important agricultural parameters for assessing impacts in the context of the study area are slope steepness, land capability, grazing capacity, agricultural land use, and the occurrence of any agriculturally sensitive areas. A comparison of these parameters along the three proposed alternative routes shows negligible difference between them. Therefore, from an agricultural impact point of view, there is no preferred alternative for the power line route.

7 MONITORING OF MITIGATION

Impact 2: Erosion

Mitigation: Target / Objective	To have no erosion on and downstream of the site as a result of run-off from the site.
Monitoring	Include periodical site inspection in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records occurrence or not of any erosion on site or downstream.

Impact 3: Loss of topsoil

Mitigation: Target / Objective	Ensure effective topsoil covering on all disturbed areas after rehabilitation.
Monitoring	Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below. Record the GPS coordinates of each area. Record the date of topsoil stripping. Record the GPS coordinates of where the topsoil is stockpiled. Record the date of cessation of constructional (or operational) activities at the particular site. Photograph the area on cessation of constructional activities. Record date and depth of re-spreading of topsoil. Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.

Impact 4: Disturbance of surrounding veld vegetation

Mitigation: Target / Objective	To have no vehicular trampling of veld vegetation beyond road footprint.
Monitoring	Include periodical site inspection in environmental performance reporting that specifically records occurrence or not of off-road vehicle tracks in specific areas.

8 CONCLUSIONS

The significance of all agricultural impacts is kept low by two important factors. The first is that the actual footprint of disturbance of the electricity grid infrastructure is very small in relation to the available grazing land, and all agricultural activities in the study area can continue unaffected under power lines. The second is the fact that the proposed site is on land of extremely limited agricultural potential that is only viable for low intensity grazing. These factors also mean that cumulative regional effects as a result of other surrounding developments, also have low significance.

There are no agriculturally sensitive areas that need to be avoided by the development. There are no conditions resulting from this assessment that need to be included in the environmental authorisation.

Because of the low agricultural potential of the site, and the consequent low agricultural impact, there are no restrictions relating to agriculture which should preclude authorisation of the proposed development. This includes cumulative agricultural impact.

There is no difference and therefore no preference between the proposed alternatives, in terms of agricultural impacts.

No additional investigation of agricultural issues is required for the Environmental Impact Assessment of the proposed development.

9 REFERENCES

Agricultural Research Council. Undated. AGIS Agricultural Geo-Referenced Information System available at http://www.agis.agric.za/.