



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

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SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

AGRICULTURAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE IMPALA ZIRCON TEMPORARY BY-PASS 132KV POWERLINE AND MAINTENANCE OF THE EXISTING IMPALA ZIRCON 132KV MAIN POWERLINE WITHIN UMHLATHUZE LOCAL MUNICIPALITY, KWAZULU-NATAL PROVINCE, SOUTH AFRICA

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
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3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with 'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020', where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	AGRICULTURAL IMPACT ASSESSMENT
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Specialist Identity Number	8904126183081
Specialist Qualifications:	Bachelor of Environmental Sciences
Professional affiliation/registration:	SACNASP NO: 132731, WISA REG NO :39885, IAIAsa: Membership no: 7837, IIAV Member No. 3163
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SPECIALIST DECLARATION FORM – AUGUST 2023

2. DECLARATION BY THE SPECIALIST

I, KHUMBELO GIVEN MARABE declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority; and;
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.



Signature of the Specialist

KMG ENVIRONMENTAL SOLUTIONS SERVICES (PTY) LTD

Name of Company:

04/06/2026

Date

SPECIALIST DECLARATION FORM – AUGUST 2023

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, KHUMBELO GIVEN MARABE , swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

KMG ENVIRONMENTAL SOLUTIONS SERVICES (PTY) LTD

Name of Company

04/06/2026

Date

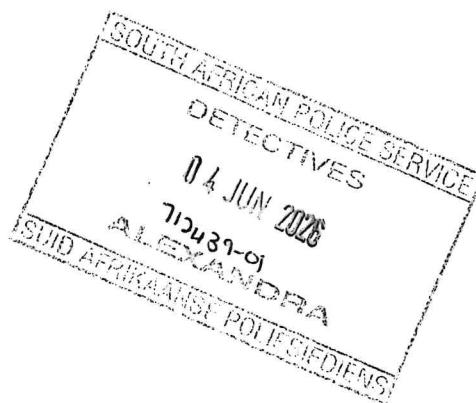
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Signature of the Commissioner of Oaths

04/06/26

Click or tap to enter a date.

Date





KMG
Environmental
Solutions Services

**AGRICULTURAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED
CONSTRUCTION OF THE IMPALA ZIRCON TEMPORARY BY-PASS 132KV
POWERLINE AND MAINTENANCE OF THE EXISTING IMPALA ZIRCON 132KV
MAIN POWERLINE WITHIN UMHLATHUZE LOCAL
MUNICIPALITY, KWAZULU-NATAL PROVINCE, SOUTH AFRICA**

PREPARED FOR:

Selahle Consultancy and Projects (Pty) Ltd

DATE OF SUBMISSION:

March 2026

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SACNASP NO: 132731
WISA REG NO :39885
IAIAsa: Membership no: 7837
IIAV Member No. 3163

AGRICULTURAL IMPACT ASSESSMENT REPORT

PROJECT TITLE: Proposed Construction of the Impala Zircon Temporary By-Pass
132kV Powerline and Maintenance of the Existing Impala Zircon 132kV Main
Powerline

PROJECT LOCATION: uMhlathuze Local Municipality, KwaZulu-Natal Province,
South Africa

PROJECT COMPONENTS

Temporary 132kV By-Pass Powerline (~6.01 km)

Maintenance and Refurbishment of Existing 132kV Main Powerline

APPLICANT: Eskom Holdings SOC Ltd

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) : Selahle
Consultancy and Projects (Pty) Ltd

AGRICULTURAL SPECIALIST: KMG Environmental Solutions Services (Pty)
Ltd

REPORT TYPE: Agricultural Impact Assessment Report (Basic Assessment, MMP &
WULA Process)

SITE VISIT DATE: 16 March 2026

REPORT DATE: March 2026

PREPARED BY

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DOCUMENT INFORMATION

Project Title	Proposed Construction of the Impala Zircon Temporary By-Pass 132kV Powerline and Maintenance of the Existing Impala Zircon 132kV Main Powerline
Report Type	Agricultural Impact Assessment Report
Project Location	uMhlathuze Local Municipality, KwaZulu-Natal Province
Client / Applicant	Eskom Holdings SOC Ltd
Environmental Assessment Practitioner (EAP)	Selahle Consultancy and Projects (Pty) Ltd
Agricultural Specialist	KMG Environmental Solutions Services (Pty) Ltd
Project Phase	Basic Assessment (BA), Maintenance Management Plan (MMP), and Water Use Licence Application (WULA)
Site Visit Date	16 March 2026
Report Status	Final Report
Prepared By	KMG Environmental Solutions Services (Pty) Ltd
Reviewed by	Tshiamo Setsipane
Company Registration No.	2020/100850/07
VAT No.	4100322694

DOCUMENT CONTROL

Version	Date	Prepared By	Reviewed By	Approved By	Description
Draft 1	March 2026	KMG Environmental Solutions Services	Tshiamo Setsipane	Khumbelo Given Marabe	Initial Draft for Internal Review
Final	March 2026	KMG Environmental Solutions Services	Tshiamo Setsipane	Khumbelo Given Marabe	Final Agricultural Impact Assessment Report

DISCLAIMER AND LIMITATION OF LIABILITY

This Agricultural Impact Assessment Report (“the Report”) has been prepared by **KMG Environmental Solutions Services (Pty) Ltd** (“KMG”) on behalf of **Selahle Consultancy and Projects (Pty) Ltd**, acting as the appointed Environmental Assessment Practitioner (EAP), for the project applicant, **Eskom Holdings SOC Ltd**, in support of the proposed construction of the Impala Zircon Temporary By-Pass 132kV Powerline and the maintenance of the existing Impala Zircon 132kV Main Powerline within the uMhlathuze Local Municipality, KwaZulu-Natal Province.

This Report has been compiled solely for the purpose of supporting the Basic Assessment (BA), Maintenance Management Plan (MMP), and Water Use Licence Application (WULA) processes in accordance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the Environmental Impact Assessment Regulations, 2014 (as amended), the National Water Act, 1998 (Act No. 36 of 1998), and other applicable environmental and agricultural legislation. The Report is intended for submission to the relevant competent authorities, including the Department of Forestry, Fisheries and the Environment (DFFE) and the Department of Water and Sanitation (DWS), and may not be used for any other purpose without prior written consent from KMG Environmental Solutions Services (Pty) Ltd.

The findings, conclusions, and recommendations contained in this Report are based on information made available at the time of the study, including project documentation, the Background Information Document, and data supplied by the client and Environmental Assessment Practitioner. The assessment further incorporates a desktop review of available spatial, environmental, and agricultural datasets, as well as a site inspection conducted on 16 March 2026. While reasonable efforts have been made to verify the accuracy of the information used, KMG does not warrant or guarantee the completeness or accuracy of information provided by third parties.

This assessment reflects the conditions observed at the time of the site visit, and it is acknowledged that environmental and agricultural conditions may change over time due to seasonal variations, land use changes, climatic factors, or unforeseen disturbances. The study is based on accessible areas within the site, and any areas that were inaccessible at the time of assessment may not have been fully evaluated. No detailed soil laboratory analyses,

geotechnical investigations, or long-term agricultural productivity studies were undertaken unless explicitly stated. Accordingly, the agricultural sensitivity, soil capability, and land use interpretations presented in this Report are based on professional judgement informed by field observations and available data, and should be regarded as indicative rather than definitive.

The conclusions and impact significance ratings presented in this Report are based on accepted environmental and agricultural assessment methodologies, as well as the professional expertise and experience of the appointed specialist. However, environmental systems are inherently complex and dynamic, and it is not possible to predict all potential impacts with absolute certainty. The significance of identified impacts may vary depending on factors such as project implementation methods, effectiveness of mitigation measures, and changes in environmental conditions over time.

KMG Environmental Solutions Services (Pty) Ltd confirms that this assessment has been conducted in an independent, objective, and unbiased manner, and that no undue influence was exerted by the client or any other interested or affected party. The findings and recommendations presented herein represent the professional opinion of the specialist based on the information available at the time of reporting.

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SPECIALISTS DECLARATION

I, **Khumbelo Given Marabe** declare that:

- I act as the independent specialist in this application.
- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- All the particulars furnished by me in this form are true and correct; and
- I am aware that it is an offence in terms of Regulation 48 to provide incorrect or misleading information and that a person convicted of such an offence is liable to the penalties as contemplated in section 49B(2) of the National Environmental Management Act, 1998 (Act 107 of 1998).
- I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.


Signature

Khumbelo Given Marabe

SACNASP NO: 132731

WISA REG NO :39885

IAIAA: Membership no: 7837

IIAV Member No. 3163

I, **Tshiamo Setsipane** declare that:

- I act as the independent specialist in this application.
- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
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- I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.

Tshiamo Setsipane

Signature

Tshiamo Setsipane (M.Sc)

SACNASP NO: 114882

ACRONYMS AND DEFINITIONS

Acronym	Description
AIA	Agricultural Impact Assessment
BA	Basic Assessment
BAR	Basic Assessment Report
BID	Background Information Document
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs (now DFFE)
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
GIS	Geographic Information System
GN	Government Notice
HGM	Hydrogeomorphic
I&APs	Interested and Affected Parties
IWMP	Integrated Waste Management Plan
KML	Keyhole Markup Language
KZN	KwaZulu-Natal
LUMS	Land Use Management System
MMP	Maintenance Management Plan
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
NAAQS	National Ambient Air Quality Standards
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NWA	National Water Act (Act No. 36 of 1998)
PDAL	Preservation and Development of Agricultural Land Act (Act No. 39 of 2024)

PPP	Public Participation Process
SANS	South African National Standards
SCP	Selahle Consultancy and Projects (Pty) Ltd
SoER	State of Environment Report
WULA	Water Use Licence Application
WUL	Water Use Licence

TERMS AND DEFINITIONS

Term	Definition
Agricultural Land	Land suitable for cultivation, grazing, or other forms of agricultural production.
Agricultural Potential	The inherent capability of land to support agricultural activities based on soil, climate, and terrain characteristics.
Agricultural Sensitivity	The degree to which agricultural land may be affected by external disturbances such as development activities.
Arable Land	Land capable of being ploughed and used for crop production.
Basic Assessment	A streamlined Environmental Impact Assessment process applicable to activities with low to moderate environmental impacts.
Biodiversity	The variety of plant and animal life in a particular habitat or ecosystem.
Cumulative Impact	The combined effect of multiple activities over time on the environment or agricultural systems.
Cultivated Land	Land that is actively used for crop production or farming activities.
Environmental Impact	Any change to the environment, whether adverse or beneficial, resulting from a development activity.
Environmental Sensitivity	The susceptibility of an environment to damage from external influences.
Erosion	The process by which soil is removed or displaced by wind, water, or human activity.
Impact Significance	A measure of the importance or severity of an environmental or agricultural impact.
Land Capability	The potential of land to support a range of uses without degradation.

Land Use	The manner in which land is utilised, such as agriculture, residential, or industrial purposes.
Mitigation Measures	Actions taken to reduce, avoid, or manage negative impacts.
Powerline Servitude	A legally designated corridor within which a powerline is constructed and maintained.
Riparian Zone	The interface between land and a river or stream, often characterised by unique vegetation and soils.
Soil Fertility	The ability of soil to support plant growth by providing essential nutrients.
Soil Structure	The arrangement of soil particles and pore spaces, influencing water movement and root growth.
Soil Compaction	The compression of soil, reducing its porosity and ability to support plant growth.
Specialist Study	A focused investigation conducted by a qualified expert to assess specific environmental aspects.
Sustainable Development	Development that meets present needs without compromising the ability of future generations to meet their own needs.
Temporary Infrastructure	Infrastructure intended for short-term use and removal after project completion.
Watercourse	A natural or artificial channel through which water flows, including rivers, streams, and wetlands.

EXECUTIVE SUMMARY

KMG Environmental Solutions Services (Pty) Ltd was appointed to undertake an Agricultural Impact Assessment (AIA) **for** the proposed Impala Zircon 132kV temporary by-pass powerline and associated infrastructure. The purpose of this study was to evaluate the potential impacts of the proposed development on agricultural resources, soil quality, and land capability within the study area.

The study area is characterised by a mixed land use landscape, comprising predominantly commercial sugarcane farming, interspersed with rural residential settlements, localized industrial activities, and farm access routes. The area is therefore considered partially transformed, although it remains agriculturally active and economically productive.

A detailed field survey and verification was undertaken, during which four (4) representative soil samples were collected across the study area. Sampling focused on capturing variability across cultivated sugarcane fields, transitional zones, and disturbed areas. Field observations confirmed that the soils are generally sandy to sandy-loam in texture, with moderate structure and clear evidence of ongoing agricultural utilisation.

Laboratory analysis of the soil samples revealed that the soils are moderately to strongly acidic, with pH values ranging between 4.64 and 5.49, which is typical of sugarcane-growing regions but requires management intervention (e.g. liming) to optimise productivity. Nutrient analysis indicated variable levels of phosphorus and potassium, with some areas showing deficiencies that may limit crop yields if not supplemented. Exchangeable cations (calcium and magnesium) also varied significantly across the site, reflecting differences in soil development and agricultural management practices.

Based on the field assessment and laboratory results, the soils within the study area are classified as having moderate agricultural potential, corresponding broadly to Land Capability Classes II to IV under South African agricultural classification systems. While these soils are currently productive under commercial farming, they require ongoing management inputs to sustain optimal yields.

The impact assessment identified several potential impacts associated with the proposed development. These include the localised loss of agricultural land, disturbance of topsoil, potential reduction in soil fertility, temporary disruption of farming activities, and minor fragmentation of cultivated land. The most significant impacts are expected during the construction phase, particularly in areas where infrastructure intersects with actively cultivated sugarcane fields.

Without mitigation, the significance of impacts is assessed as moderate to high, particularly in relation to soil disturbance and agricultural land loss. However, with the implementation of appropriate mitigation measures, including topsoil stripping and replacement, soil conservation practices, liming and fertilisation, and rehabilitation of disturbed areas, the residual impacts can be reduced to low to moderate significance.

Importantly, the study confirms that the development footprint is relatively limited and occurs within an already transformed and actively managed agricultural landscape. As such, the proposed development is not expected to result in a significant or irreversible loss of agricultural potential at a regional scale.

The assessment further concludes that cumulative impacts are low to moderate, given the existing mixed land use context and the ability of agricultural activities to continue alongside the proposed infrastructure.

From an agricultural perspective, the proposed development is therefore considered acceptable, provided that all recommended mitigation and management measures are strictly implemented. These include the development and implementation of a Soil Management Plan, protection and reinstatement of topsoil, restoration of soil fertility, and ongoing monitoring of rehabilitated areas.

In conclusion, the Agricultural Impact Assessment demonstrates that while the proposed development will result in localised and manageable impacts on agricultural resources, these impacts can be effectively mitigated. The development will not compromise the overall agricultural viability of the study area and can proceed without resulting in unacceptable loss of agricultural land or productivity.

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1. INTRODUCTION

1.1 Background to the Study

KMG Environmental Solutions Services (Pty) Ltd was appointed by Selahle Consultancy and Projects (Pty) Ltd, the appointed Environmental Assessment Practitioner (EAP), to undertake an Agricultural Impact Assessment for the proposed construction of the Impala Zircon Temporary By-Pass 132kV Powerline and the maintenance and refurbishment of the existing Impala Zircon 132kV Main Powerline within the uMhlathuze Local Municipality, KwaZulu-Natal Province.

The assessment forms part of a broader environmental authorisation process that includes a Basic Assessment, Maintenance Management Plan, and Water Use Licence Application in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the National Water Act, 1998 (Act No. 36 of 1998). The inclusion of an Agricultural Impact Assessment is essential due to the presence of actively cultivated land within the project area, requiring an evaluation of potential impacts on agricultural productivity and sustainability.

1.2 Project Background and Rationale

The existing Impala Zircon 132kV powerline forms a critical component of the local electricity distribution network, supplying power to residential areas, municipal infrastructure, and industrial operations within the Empangeni and Richards Bay region. The infrastructure has, however, been subjected to long-term exposure to coastal climatic conditions and industrial pollutants, resulting in corrosion and deterioration of structural components.

In order to facilitate the necessary maintenance and refurbishment of the existing powerline while ensuring uninterrupted electricity supply, a temporary bypass powerline is proposed. The bypass line will serve as an interim solution, allowing maintenance activities to be undertaken without compromising service delivery to end-users.

1.3 Description of the Proposed Development

The proposed development involves the construction of a temporary 132kV bypass powerline of approximately 6.01 km in length. The bypass will be supported by wooden pole structures

and is intended for use over a period of approximately three years. The alignment of the temporary powerline will run parallel to the existing main powerline within the established servitude, with an approximate offset of 15 metres.

The project also includes the maintenance and refurbishment of the existing 132kV main powerline, which extends across the study area. The alignment of both the temporary and existing powerlines traverses predominantly agricultural land, including areas under commercial sugarcane cultivation, and crosses the uMhlathuze River.

1.4 Study Area Context

The study area is located within the uMhlathuze Local Municipality in KwaZulu-Natal, in proximity to the towns of Empangeni and Richards Bay. The area is characterised by a combination of agricultural land uses, natural features, and infrastructure associated with electricity transmission.

Agricultural activities within the study area are dominated by commercial sugarcane farming, which represents an important economic activity in the region. The landscape is generally gently undulating, supporting mechanised farming practices, and includes established access routes and infrastructure associated with existing powerline servitudes.

The presence of agricultural land, coupled with environmentally sensitive features such as the uMhlathuze River and associated riparian zones, highlights the need for a balanced approach to development that considers both infrastructure requirements and the protection of agricultural resources.

1.5 Purpose and Objectives of the Assessment

The purpose of this Agricultural Impact Assessment is to evaluate the potential impacts of the proposed development on agricultural resources within the study area and to determine the extent to which these impacts may affect current and future land use.

The key objectives of the assessment are to:

- Characterise the baseline agricultural environment and existing land use

- Assess the potential impacts of the proposed development on soil resources, land capability, and agricultural productivity
- Determine the significance of identified impacts using recognised assessment criteria
- Recommend mitigation measures to minimise adverse impacts and support rehabilitation
- Provide input into the overall environmental authorisation process to support informed decision-making

1.6 Approach to the Assessment

The assessment has been undertaken using a combination of desktop review and field verification. A site visit was conducted on 16 March 2026 to verify baseline conditions, assess agricultural activities, and identify areas of sensitivity within the study area.

The methodology applied in this assessment is consistent with accepted professional practices for agricultural impact assessment and incorporates:

- Review of project documentation and spatial data
- Field observations of land use, soil conditions, and terrain
- Identification and evaluation of potential impacts
- Development of mitigation measures based on site-specific conditions

The findings presented in this report are based on the information available at the time of the assessment and the professional judgement of the specialist.

2. LEGISLATIVE AND POLICY FRAMEWORK

2.1 Introduction

The Agricultural Impact Assessment has been undertaken within the context of applicable South African legislation, policies, and guidelines governing environmental management, land use planning, and the protection of agricultural resources. The legislative framework provides the basis for assessing potential impacts associated with the proposed development and ensures that agricultural land is utilised in a sustainable and responsible manner.

The proposed development triggers a number of regulatory processes, including a Basic Assessment, Maintenance Management Plan, and Water Use Licence Application, which require compliance with both environmental and water legislation. In addition, the presence of cultivated agricultural land necessitates consideration of legislation aimed at protecting high-potential agricultural land and promoting sustainable land use practices.

2.2 Applicable Legislation and Policies

The key pieces of legislation and policy relevant to this Agricultural Impact Assessment are outlined below.

Table 1: Summative Table of Applicable Legislation

Legislation / Policy	Description	Relevance to the Project
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Provides the overarching framework for environmental management in South Africa, including principles of sustainable development and environmental protection.	The proposed development is subject to a Basic Assessment process in terms of NEMA. The Act requires the identification and mitigation of environmental impacts, including impacts on agricultural land.
Environmental Impact Assessment Regulations, 2014 (as amended)	Regulations promulgated under NEMA that govern the process for environmental authorisation of listed activities.	The project triggers listed activities requiring a Basic Assessment. The Agricultural Impact Assessment forms part of the specialist input required for the environmental authorisation process.
National Water Act, 1998 (Act No. 36 of 1998)	Regulates the use, protection, and management of water resources in South Africa.	The project involves activities such as crossing a watercourse, which triggers the need for a Water Use Licence Application. Agricultural land adjacent to water resources may be affected by these activities.

Preservation and Development of Agricultural Land Act, 2024 (Act No. 39 of 2024)	Provides for the protection and sustainable use of agricultural land, particularly high-potential agricultural land.	The project traverses cultivated agricultural land, requiring assessment of impacts on land capability and compliance with the protection of agricultural resources.
Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)	Provides a framework for spatial planning and land use management in South Africa.	Ensures that land use changes associated with the project are aligned with municipal planning frameworks and do not compromise agricultural land use.
KwaZulu-Natal Planning and Development Act	Provincial legislation guiding spatial planning and land development within KwaZulu-Natal.	Relevant for land use planning considerations within the uMhlathuze Local Municipality, particularly where agricultural land is affected.
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Promotes the conservation of soil, water, and vegetation resources and prevents land degradation.	Relevant to soil conservation, erosion control, and protection of agricultural resources during construction and maintenance activities.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Provides for the management and conservation of South Africa's biodiversity.	Relevant where agricultural land interfaces with natural habitats, including riparian zones along the uMhlathuze River.
National Development Plan (NDP) 2030	Provides a long-term vision for sustainable development in South Africa.	Promotes sustainable land use and protection of agricultural resources, which must be considered in development planning.

uMhlathuze Local Municipality Spatial Development Framework (SDF)	Local planning framework guiding land use and development within the municipality.	Provides guidance on land use priorities and the protection of agricultural land within the study area.
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2.4 Key Legislative Considerations for Agricultural Resources

The legislative framework emphasises the need to:

- Protect high-potential agricultural land from unnecessary transformation
- Promote sustainable land use practices and prevent land degradation
- Ensure that development activities do not compromise long-term agricultural productivity
- Implement appropriate mitigation measures to minimise impacts on soil and land capability

In particular, the Conservation of Agricultural Resources Act places specific obligations on land users to prevent soil erosion, manage vegetation sustainably, and protect the productive capacity of land. Similarly, the Preservation and Development of Agricultural Land Act reinforces the importance of safeguarding agricultural land as a strategic national resource.

2.5 Compliance Implications

The findings of this Agricultural Impact Assessment must be considered alongside the requirements of the above legislation to ensure that:

- The proposed development is environmentally acceptable
- Impacts on agricultural land are minimised and effectively managed
- Appropriate mitigation and rehabilitation measures are implemented
- The project aligns with national, provincial, and local planning frameworks

3. METHODOLOGY

3.1 Introduction

This section outlines the methodology adopted to undertake the Agricultural Impact Assessment for the proposed development. The approach integrates both desktop analysis and field verification to ensure a comprehensive understanding of the agricultural environment and the potential impacts associated with the proposed activities.

The assessment methodology is aligned with accepted professional practices for agricultural specialist studies and is designed to provide a systematic and objective evaluation of potential impacts on agricultural resources.

3.2 Approach to the Study

The assessment was conducted in a phased manner, incorporating the following key components:

- Review of project documentation, including the Background Information Document and spatial data
- Identification of the study area and agricultural context
- Field verification through a site visit conducted on 16 March 2026
- Assessment of baseline agricultural conditions
- Identification and evaluation of potential impacts
- Development of mitigation measures
- Determination of impact significance

This integrated approach ensures that both site-specific conditions and broader environmental considerations are adequately addressed.

3.3 Desktop Assessment

The desktop component of the study involved the review and analysis of available information relevant to the project area. This included:

- Project description and layout information
- Aerial imagery and spatial datasets

- Land use and agricultural activity patterns
- Relevant legislation and policy frameworks
- Existing environmental reports and background documentation

The desktop assessment provided a baseline understanding of the agricultural setting and informed the planning of the field assessment.

3.4 Field Assessment

A site visit was conducted on 16 March 2026 to verify baseline conditions and assess agricultural characteristics within the study area. The field assessment focused on:

- Identification of current land use and agricultural activities
- Visual assessment of soil conditions and terrain
- Evaluation of agricultural productivity and land capability
- Identification of sensitive areas, including cultivated land and riparian zones
- Assessment of existing disturbances and infrastructure

Field observations were used to validate desktop findings and to provide site-specific insights into potential impacts.

3.5 Impact Identification

Potential impacts associated with the proposed development were identified based on:

- The nature and extent of the proposed activities
- The characteristics of the receiving agricultural environment
- The interaction between project activities and agricultural resources

Impacts were considered across all relevant project phases, including:

- Construction phase
- Operational phase
- Decommissioning phase

Both direct and indirect impacts on agricultural land were assessed.

3.6 Impact Assessment Criteria

The significance of identified impacts was evaluated using a qualitative assessment framework that considers the following criteria:

- Nature of the impact (positive or negative)
- Extent (local, regional, or broader scale)
- Duration (short-term, medium-term, long-term, or permanent)
- Intensity (low, medium, or high severity)
- Probability (likelihood of occurrence)
- Reversibility (ability of the impact to be mitigated or reversed)

These criteria collectively inform the overall significance rating of each impact.

3.7 Impact Significance Rating

Impact significance was determined by considering the combined effect of the above criteria. The following qualitative scale was applied:

Table 2: Impact Significance Rating

Significance Rating	Description
Low	Impact is minimal, localised, and easily mitigated with negligible long-term effects
Low to Moderate	Impact is noticeable but manageable with mitigation measures
Moderate	Impact is of concern and requires effective mitigation to reduce significance
Moderate to High	Impact may result in substantial effects if not properly mitigated
High	Impact is significant and may result in irreversible or long-term effects

3.8 Assumptions and Limitations

The methodology applied in this assessment is subject to the following assumptions and limitations:

- The assessment is based on conditions observed at the time of the site visit
- Available data and project information are assumed to be accurate and representative
- No detailed soil sampling or laboratory analysis was undertaken unless specified
- The assessment focuses on the agricultural component and does not replace other specialist studies

Despite these limitations, the methodology provides a reliable and defensible basis for assessing potential agricultural impacts.

3.9 Mitigation Approach

Mitigation measures were developed based on:

- Avoidance of sensitive agricultural areas where possible
- Minimisation of disturbance to cultivated land
- Rehabilitation of disturbed areas
- Implementation of best practice soil and land management measures

The aim of mitigation is to reduce the significance of impacts to acceptable levels and to ensure the sustainable use of agricultural resources.

4. BASELINE AGRICULTURAL ENVIRONMENT

4.1 Introduction

This section presents a detailed description of the baseline agricultural conditions within the study area and its surrounding environment. The baseline has been established through a combination of desktop analysis and field verification, with particular emphasis on land capability, soil characteristics, land use patterns, and environmental constraints that influence agricultural productivity.

The purpose of this section is to provide a comprehensive understanding of the existing agricultural resource base, which forms the foundation for the subsequent impact assessment.

4.2 Regional Context

The study area is located within a predominantly agricultural and peri-urban landscape near Empangeni and Richards Bay in the KwaZulu-Natal Province. The broader region is characterised by intensive agricultural activities, including commercial cultivation and subsistence farming, supported by favourable climatic conditions and relatively fertile soils.

The presence of established infrastructure, including major transport routes and powerline servitudes, indicates a landscape that is already influenced by both agricultural and industrial activities. Additionally, proximity to water bodies, including lakes and estuarine systems, contributes to both agricultural opportunities and environmental sensitivities.

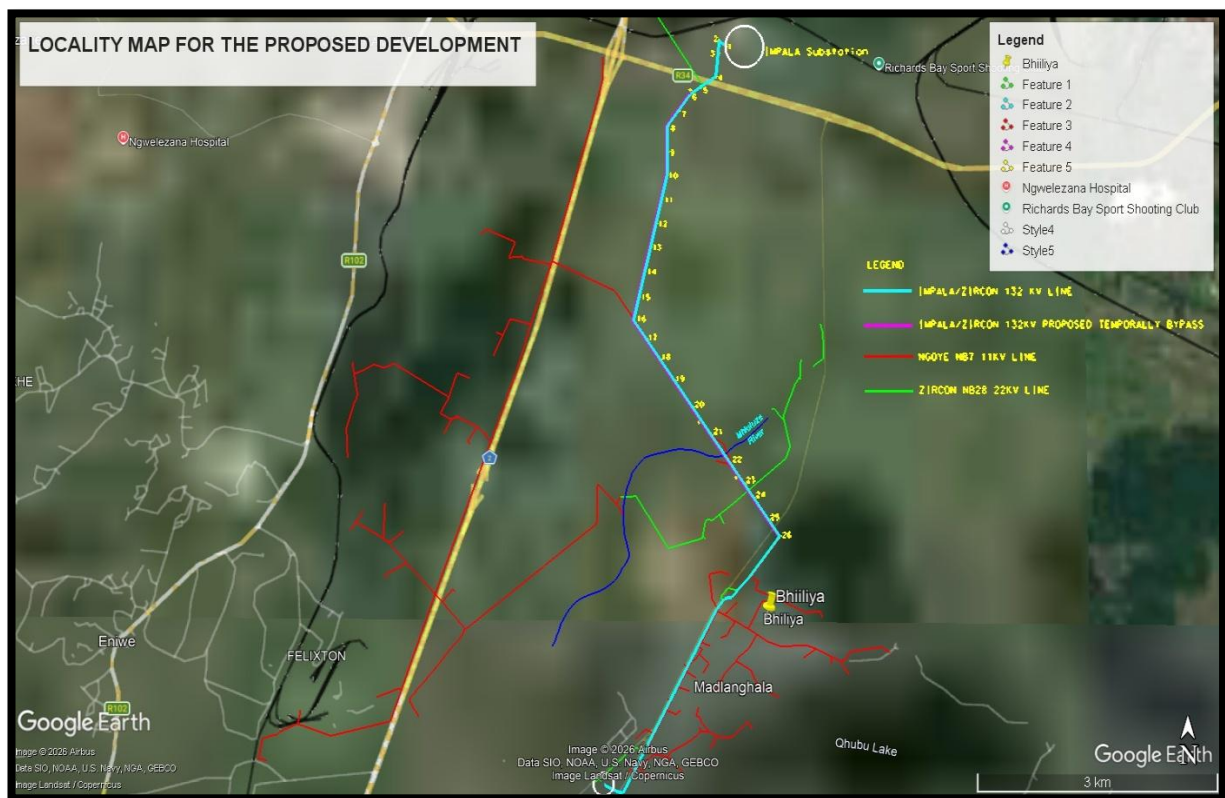


Figure 1 : Locality Map of the Study Area

4.3 Land Use Characteristics

The desktop assessment, supported by aerial imagery, indicates that the study area is dominated by cultivated agricultural fields, with clear evidence of organised farming patterns such as centre pivot irrigation and field demarcation.

Land use within and surrounding the study area includes:

- Commercial crop production
- Subsistence agriculture within nearby settlements
- Scattered rural settlements and infrastructure
- Natural and semi-natural vegetation patches
- Wetlands and water bodies

The agricultural landscape is therefore considered to be actively utilised and economically important.

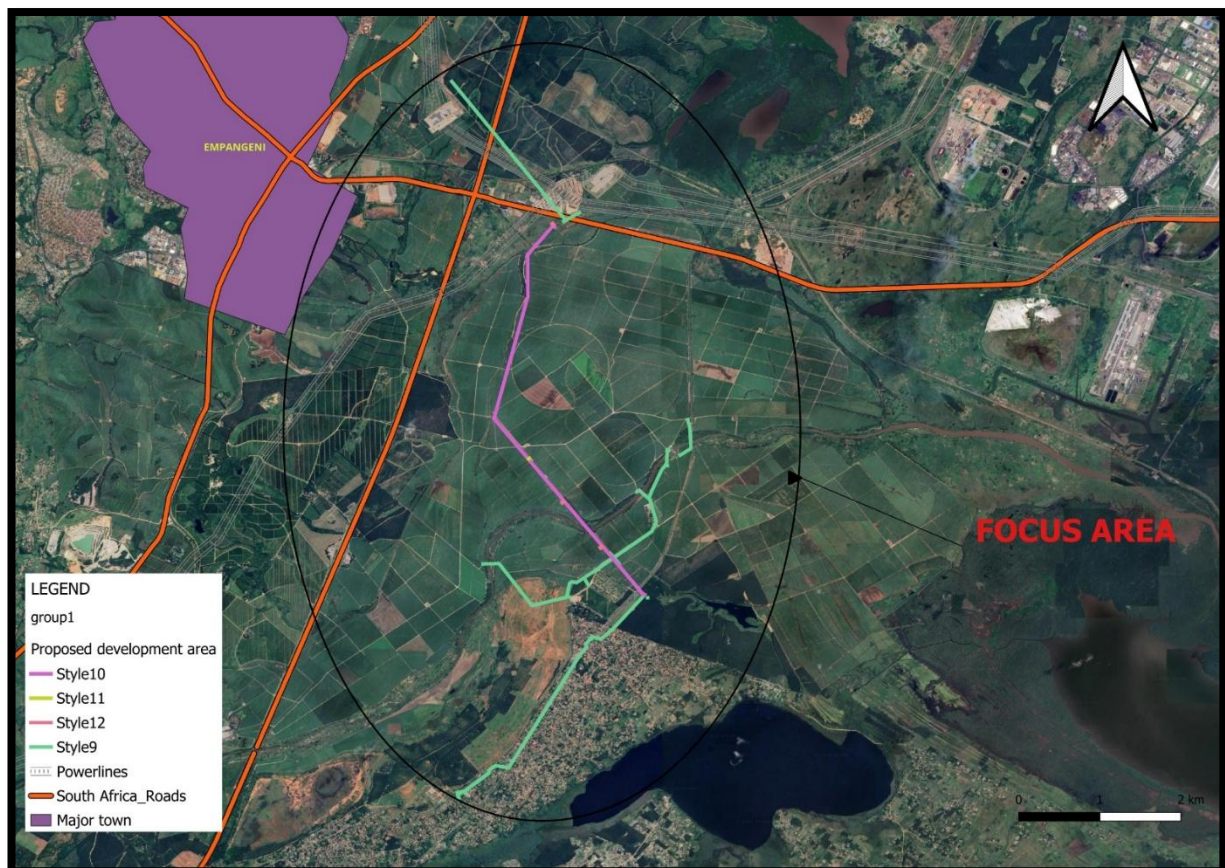


Figure 2: Aerial Imagery Showing Land Use within the Focus Area

Table 3: Summary of Land Use within the Study Area

Land Use Type	Description	Extent within Study Area	Relevance
Commercial Agriculture	Large-scale cultivated fields (likely irrigated crops)	Dominant	High
Subsistence Agriculture	Small-scale farming near settlements	Localised	Moderate
Settlements	Residential areas (e.g., Bhiliya, Madlanghala)	Localised	Moderate
Natural Vegetation	Remaining patches of indigenous vegetation	Limited	High
Wetlands/Water Bodies	Rivers, pans, and estuarine systems	Present	High
Infrastructure	Roads, powerlines, and associated servitudes	Present	Moderate

4.4 Land Capability

Land capability mapping indicates that the study area comprises a mixture of moderate to high agricultural potential soils, interspersed with areas of lower capability and environmental constraints.

The land capability classification shows:

- Areas of moderate to high arable potential
- Localised zones of marginal or non-arable land
- Presence of environmentally sensitive areas such as wetlands

This distribution suggests that portions of the site are suitable for sustained agricultural production, while others are constrained by soil, hydrological, or ecological factors.

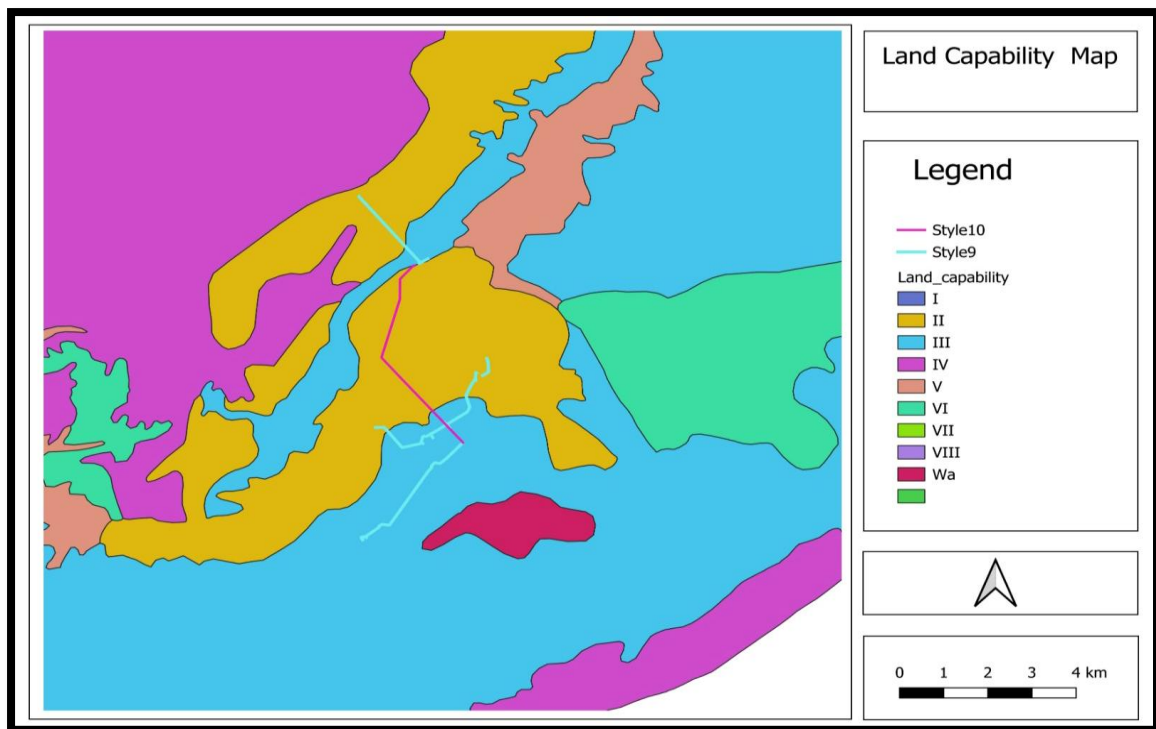


Figure 3: Land Capability Map

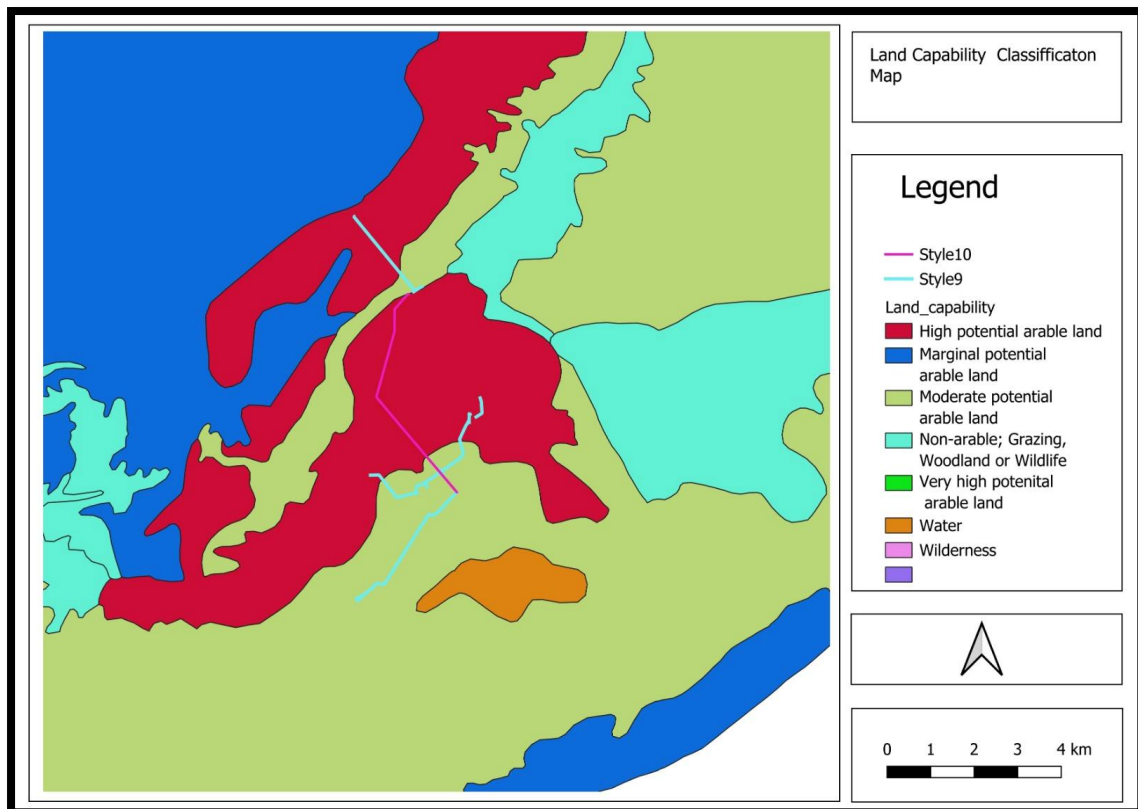


Figure 4: Land Capability Classification Map

Table 4: Land Capability Interpretation

Capability Class	Description	Agricultural Suitability	Relevance
High Potential	Deep, fertile soils with minimal limitations	Highly suitable	High
Moderate Potential	Some limitations (e.g., drainage, slope)	Suitable with management	High
Marginal Potential	Significant limitations	Limited use	Moderate
Non-Arable	Unsuitable for cultivation	Conservation/grazing	High
Water/Wetlands	Hydrologically sensitive areas	Not suitable	High

4.5 Soils and Geology

The soil distribution within the study area is influenced by underlying geology and depositional processes associated with the coastal and alluvial environment.

Soil mapping indicates:

- Presence of alluvial and coastal soils
- Variability in soil texture and structure
- Areas of hydromorphic soils associated with wetlands
- Moderately to highly productive soils in cultivated areas

Geological mapping reflects formations such as Berea Formation sands and other Quaternary deposits, which are typical of coastal regions and influence soil development and agricultural potential.

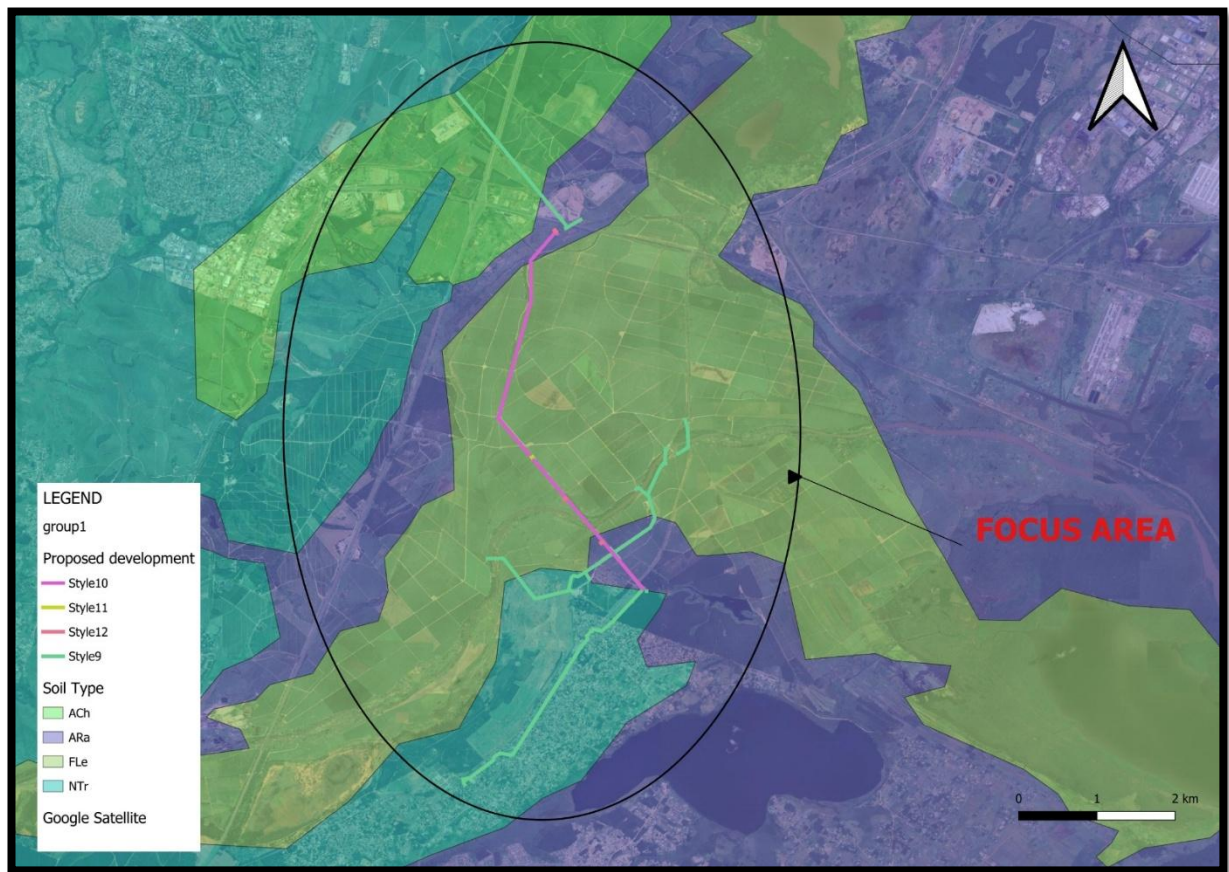


Figure 5: Soil Type Map

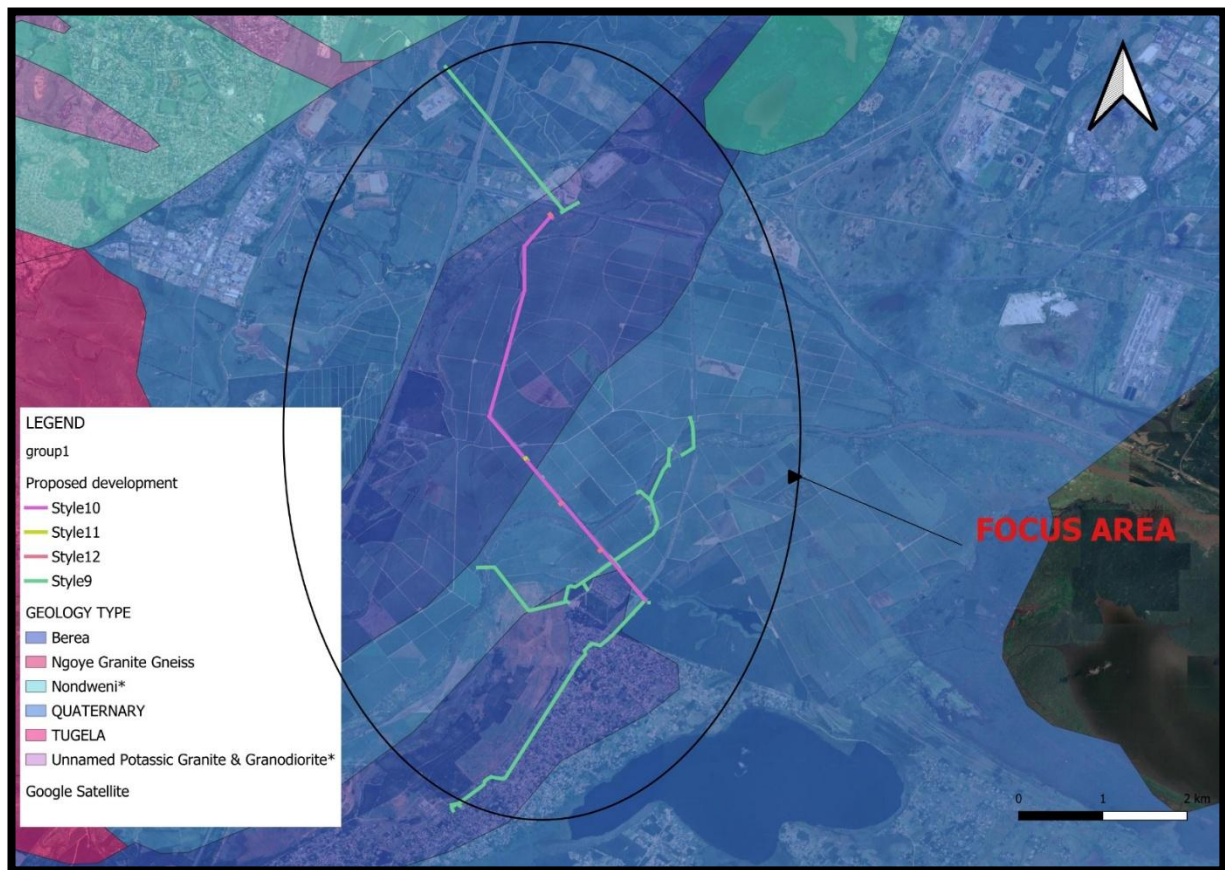


Figure 6: Geological Map

Table 5: Soil Characteristics Summary

Soil Type	Characteristics	Agricultural Potential	Constraints	Relevance
Alluvial Soils	Fertile, well-drained in places	High	Flood risk in low areas	High
Sandy Soils	Well-drained but low nutrient retention	Moderate	Requires fertilisation	Moderate
Hydromorphic	Waterlogged soils	Low	Drainage limitations	High
Clayey Soils	High nutrient retention	Moderate to High	Poor drainage	Moderate

4.6 Soil Chemical Properties (pH)

Soil pH mapping indicates variability across the study area, with dominant ranges reflecting moderately acidic to neutral conditions. These conditions are generally suitable for a range of agricultural activities, although site-specific soil management practices may be required.

Areas with lower pH may require liming to optimise agricultural productivity, while neutral conditions are generally favourable for crop growth

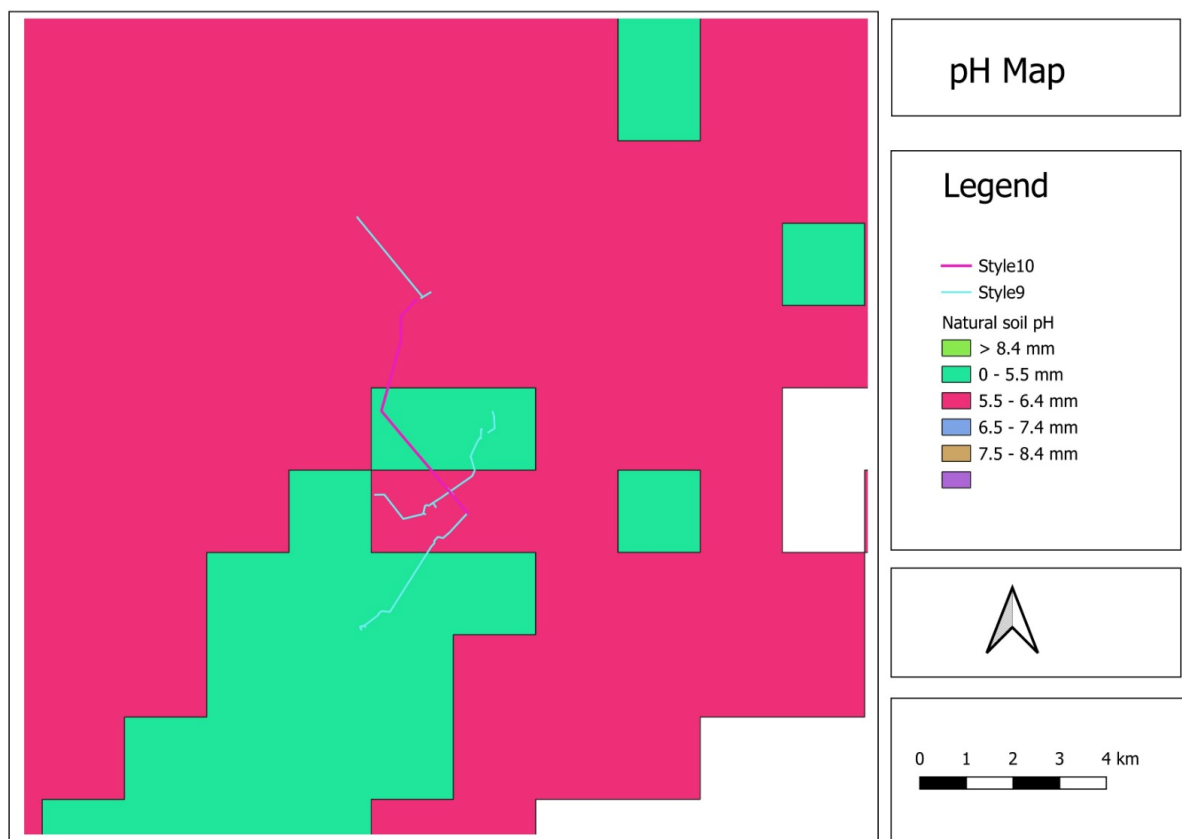


Figure 7: Soil pH Map

Table 6: Soil pH Interpretation

pH Range	Soil Condition	Agricultural Implication	Relevance
< 5.5	Strongly acidic	Limiting for many crops	High
5.5 – 6.5	Moderately acidic	Suitable with management	High
6.5 – 7.5	Neutral	Optimal for most crops	High
> 7.5	Alkaline	May limit nutrient availability	Moderate

4.7 Vegetation and Agricultural Context

Vegetation mapping indicates the presence of both natural and transformed landscapes, including:

- Mangrove and estuarine vegetation systems
- Coastal and alluvial vegetation types
- Agricultural lands replacing natural vegetation
- Wetland-associated vegetation

The transformation of natural vegetation into agricultural land highlights the importance of the area for food production, while remaining natural areas contribute to ecological stability.

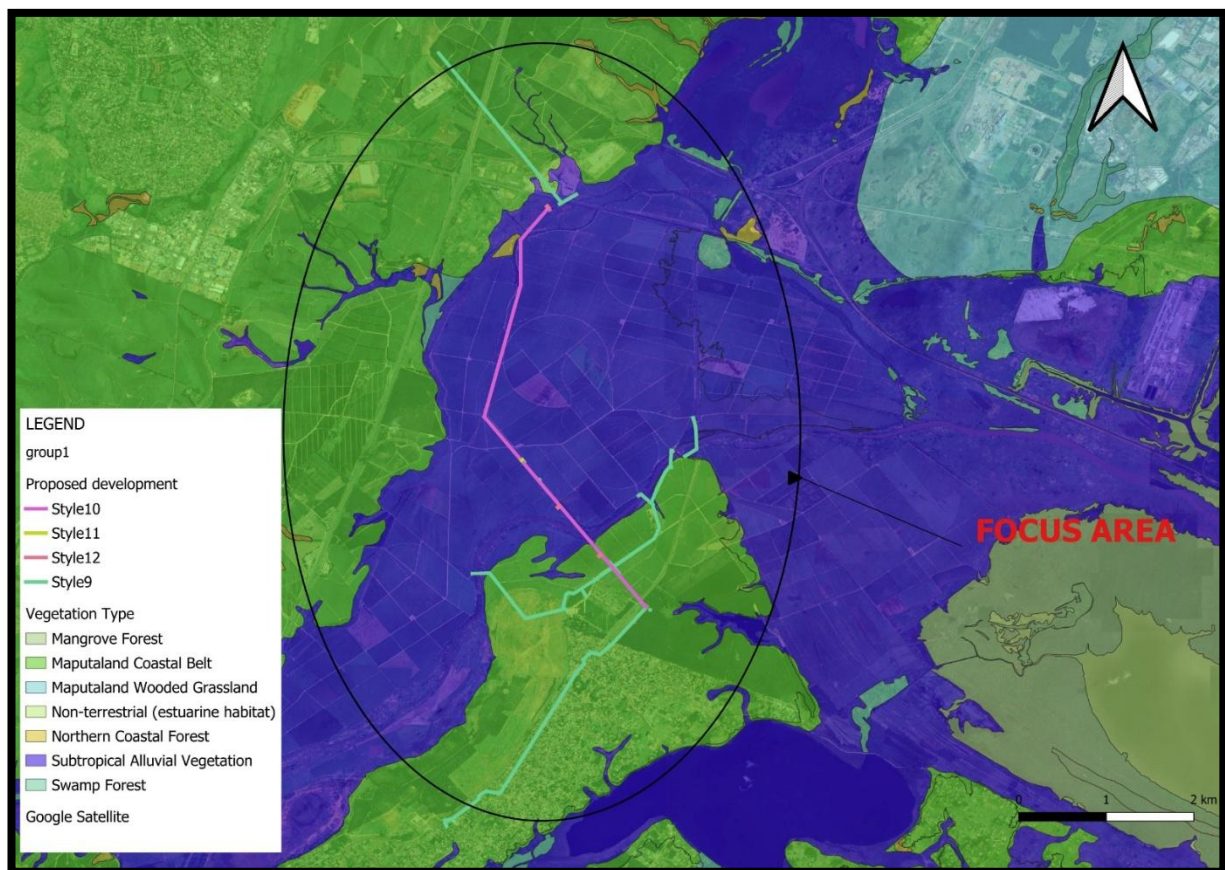


Figure 8: Vegetation Map

Table 7: Vegetation and Agricultural Relevance

Vegetation Type	Description	Agricultural Relevance	Sensitivity
Mangrove Forest	Estuarine vegetation	Not suitable	Very High

Coastal Belt Vegetation	Indigenous vegetation	Limited	High
Agricultural Land	Cultivated areas	Primary use	Low
Wetland Vegetation	Hydrophilic species	Not suitable	Very High

4.8 SOTER and Terrain Characteristics

The SOTER (Soil and Terrain) classification indicates variability in terrain units, reflecting differences in soil formation, slope, and landscape processes.

The terrain is generally:

- Gently undulating
- Locally influenced by river systems
- Associated with depositional and erosional features

These characteristics influence both agricultural suitability and sensitivity to disturbance.

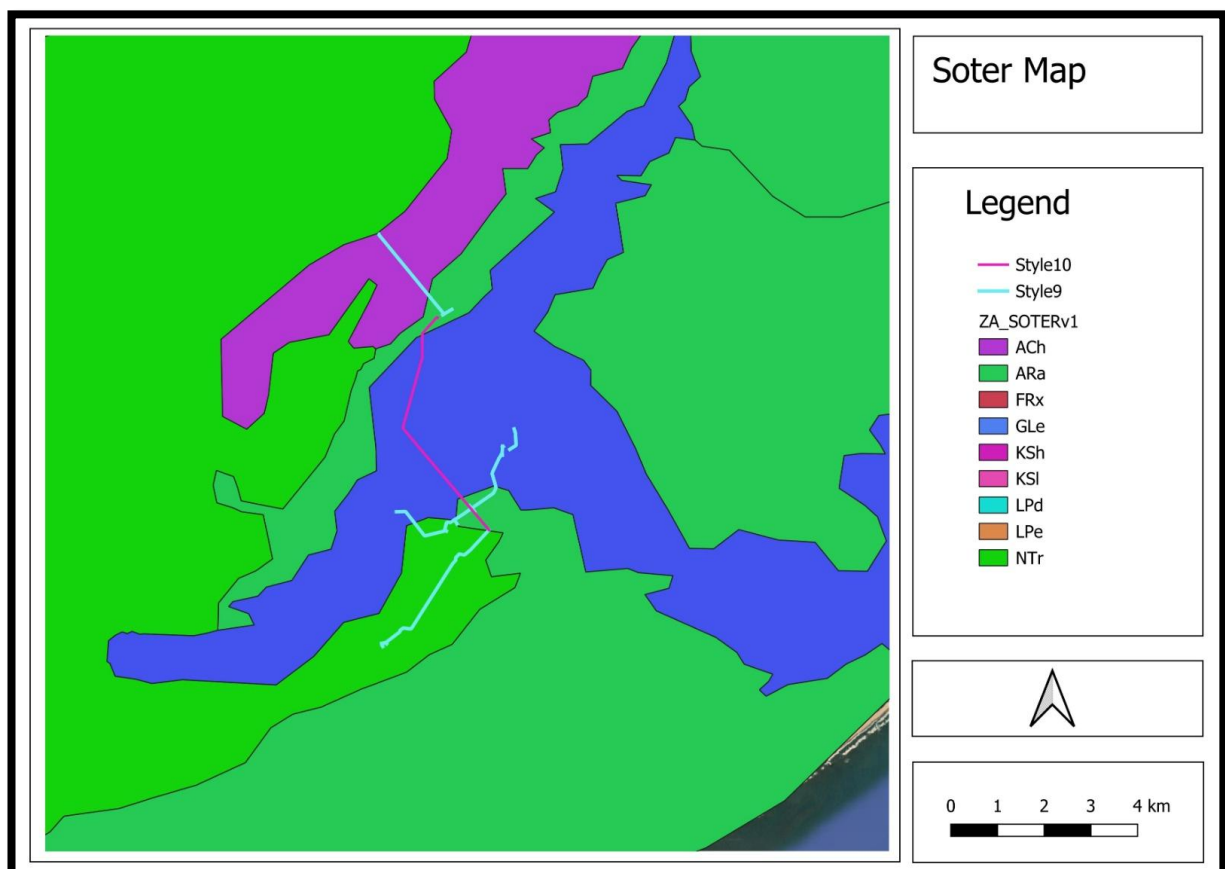


Figure 9: SOTER Map

Table 8: Terrain Characteristics

Terrain Type	Description	Agricultural Suitability	Constraints	Relevance
Flat Plains	Level terrain	Highly suitable	Flood risk	High
Undulating Land	Slight slopes	Suitable	Erosion risk	Moderate
River Valleys	Associated with drainage	Limited	Flooding	High

4.9 Topography

Topographical analysis indicates relatively low relief across the study area, with gentle slopes and minimal elevation variation. This terrain is generally favourable for agricultural activities, particularly mechanised farming.

However, proximity to watercourses and low-lying areas introduces potential risks related to flooding and waterlogging.

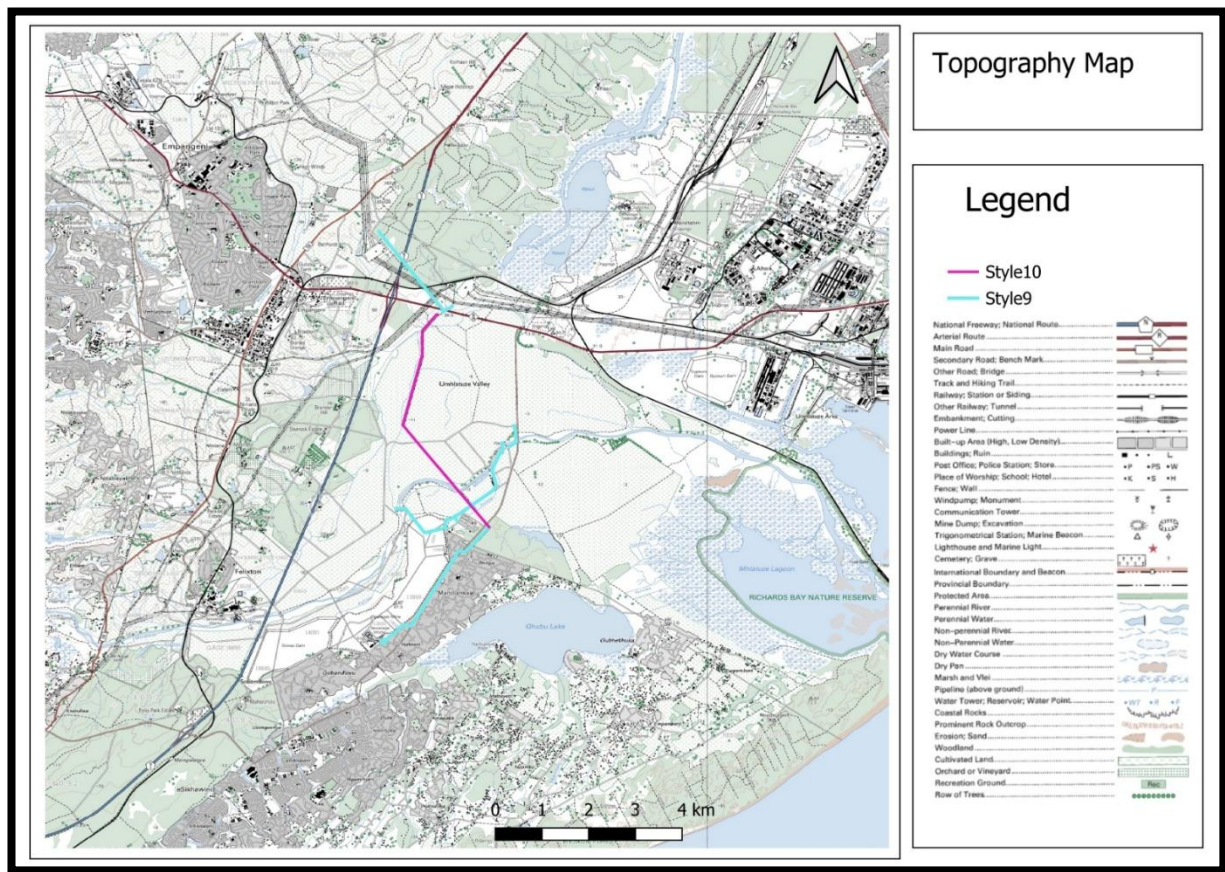


Figure 10: Topography Map

4.10 Summary of Baseline Agricultural Sensitivity

The baseline assessment indicates that the study area comprises a combination of:

- High-value agricultural land
- Moderately suitable soils requiring management
- Environmentally sensitive areas (wetlands and water bodies)
- Existing transformed agricultural landscape

Table 9: Overall Agricultural Sensitivity Summary

Component	Sensitivity Level	Motivation	Relevance
Land Capability	High	Presence of moderate to high potential soils	High

Soil Quality	Moderate to High	Variable but generally suitable for agriculture	High
Water Resources	High	Presence of wetlands and water bodies	High
Current Land Use	High	Active agricultural utilisation	High
Vegetation	High	Presence of sensitive ecosystems	High
Terrain	Moderate	Generally suitable but with localised constraints	Moderate

The study area is characterised by a productive agricultural landscape with significant portions of land exhibiting moderate to high agricultural potential. However, the presence of environmentally sensitive features such as wetlands and water bodies introduces important constraints that must be considered in the planning and development process.

The baseline conditions indicate that any proposed development has the potential to affect both agricultural productivity and environmental integrity, thereby necessitating a carefully managed approach to impact mitigation.

5. FIELD SURVEY, LAND CLASSIFICATION, AND SOIL CAPABILITY ASSESSMENT

5.1 Introduction

This section presents the land classification, field verification, and soil capability assessment for the study area in accordance with South African agricultural land evaluation standards, including alignment with the Department of Agriculture, Land Reform and Rural Development (DALRRD) requirements and the Preservation and Development of Agricultural Land Act (PDAL).

The assessment integrates:

- Field survey verification
- Soil laboratory analysis

- Land use characterisation
- Agricultural land capability classification

5.2 Field Survey and Verification

5.2.1 Site Context and Land Use

The study area is characterised by a mixed land use landscape, comprising:

- Commercial sugarcane farming (dominant land use)
- Residential areas within the study boundary
- Partially developed industrial zones
- Rural/agricultural setting with farm access routes

This indicates a transformed agricultural landscape, where high-value agriculture coexists with other land uses.

5.2.2 Terrain and Landscape

- Gently undulating terrain
- Well-established agricultural fields (sugarcane)
- Farm access roads traversing the site
- Modified landscape due to cultivation and infrastructure

5.2.3 Soil Observations

Field verification confirmed:

- Sandy to sandy-loam topsoil (typical for sugarcane regions)
- Moderate soil depth in cultivated areas
- Evidence of historical agricultural improvement (fertilisation & management)
- No major erosion or degradation observed

5.2.4 Agricultural Land Status (PDAL Context)

Based on field observations:

- Portions of the site are actively cultivated and fall within agricultural production systems
- These areas may qualify as “agricultural land” under PDAL (Act 39 of 2024)
- However, transformation (residential + industrial) reduces the extent of intact high-value agricultural land

5.3 Soil Sampling, Laboratory Analysis and Interpretation

5.3.1 Soil Sampling Methodology

A soil sampling campaign was undertaken across the study area to determine soil chemical properties and agricultural potential. A total of four (4) representative soil samples were collected from strategically selected locations covering the different land use zones, including:

- Commercial sugarcane fields
- Mixed rural/agricultural areas
- Transitional zones near residential and industrial interfaces

Sampling points were selected to ensure:

- Adequate spatial representation
- Coverage of cultivated and disturbed areas
- Representation of varying soil conditions across the site

Samples were collected from the topsoil horizon (0–30 cm) using a manual eger , which is critical for agricultural productivity.



Figure 11 : A field technician collecting a soil sample using a hand auger within a sugarcane cultivation area.

5.3.2 Soil Sampling Locations

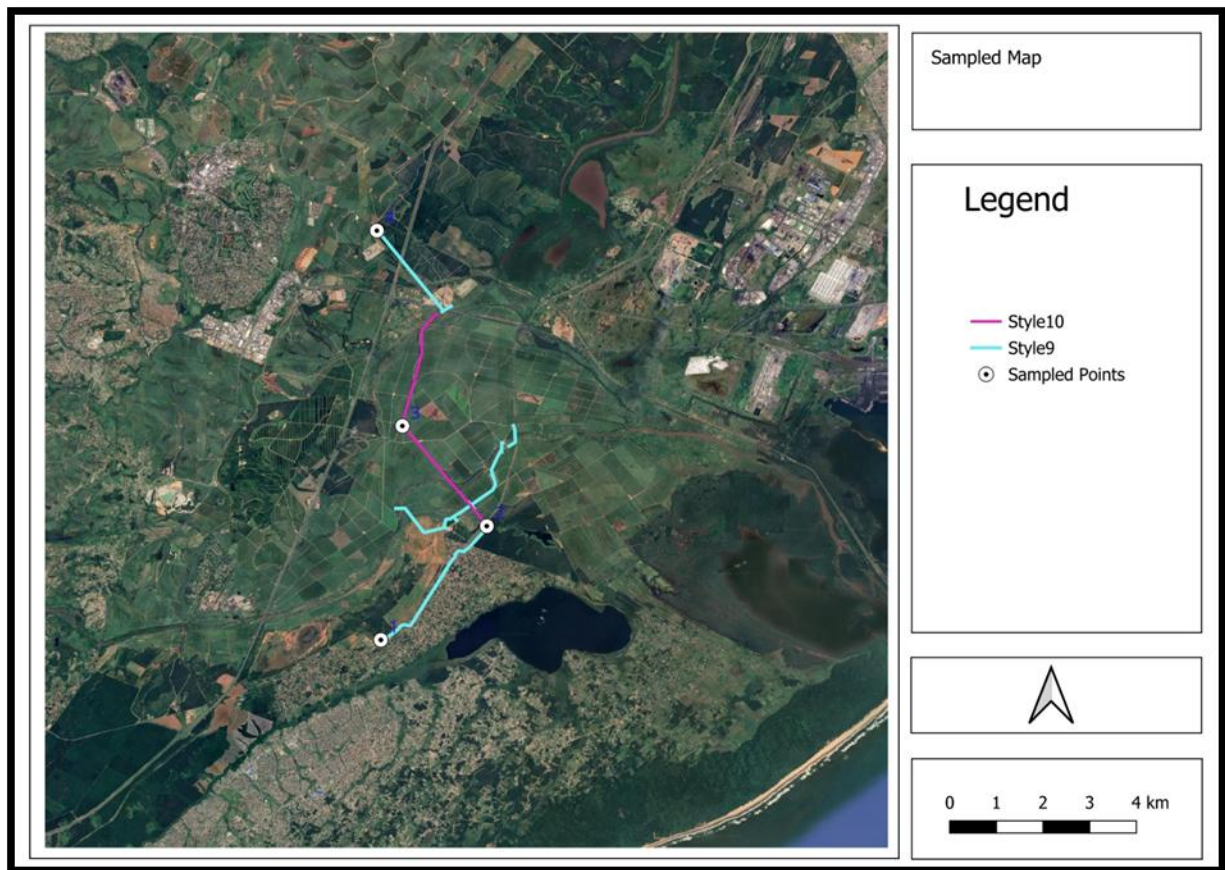


Figure 12: Soil Sampling Locations Map

The sampling map illustrates the distribution of the four sampling points across the study area, including alignment with farm access routes and cultivated fields. The sampling points are positioned to reflect variability in land use and soil conditions.

5.3.3 Soil Sampling Photographs

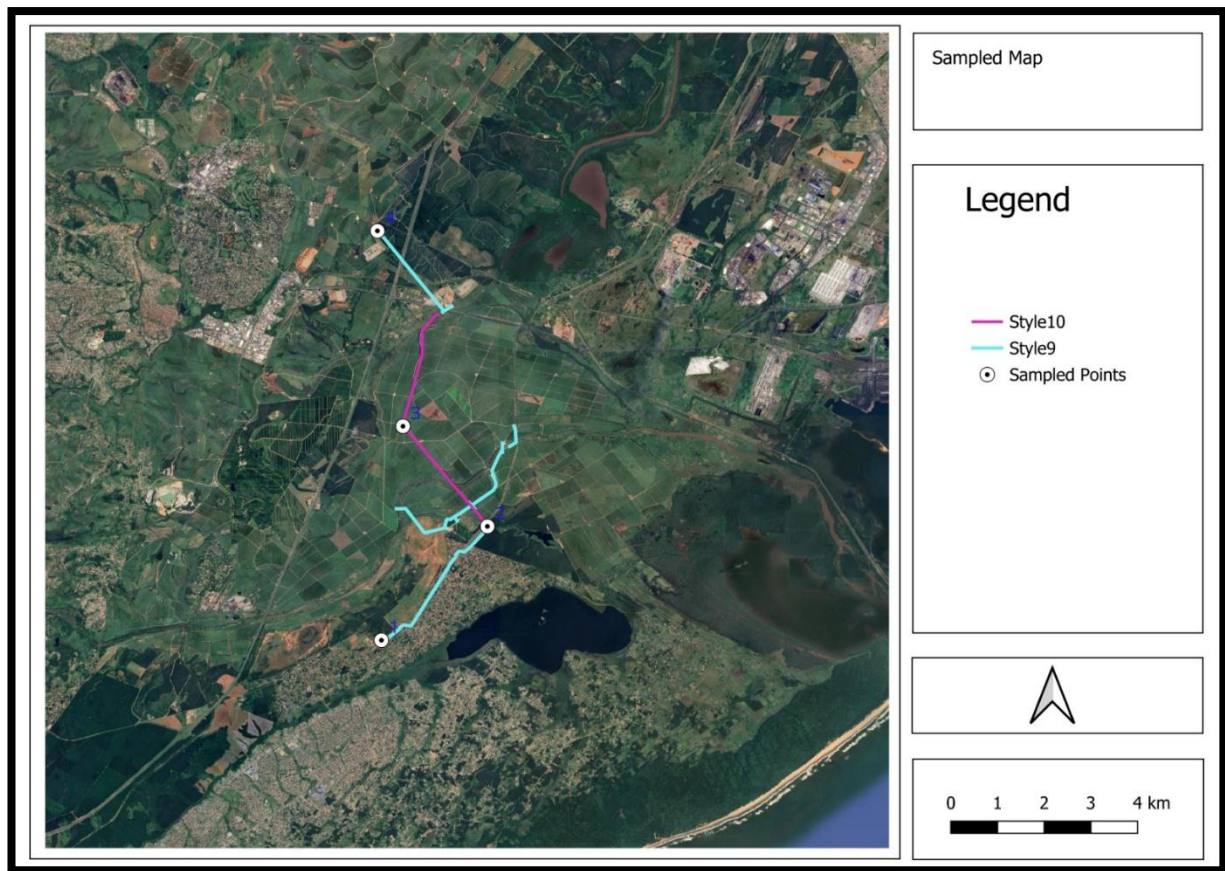


Figure 13 : Soil Sample Map



Figure 14 :Soil Sampling and Soil Profile Photographs

Photographic evidence from the field survey confirms:

- Sandy to sandy-loam textures
- Moderate soil structure
- Agricultural disturbance consistent with sugarcane cultivation

5.3.4 Laboratory Analysis

The collected soil samples were analysed by NviroTek Laboratories. The full Certificate of Analysis is attached in Appendix A (see).

The laboratory results include:

- Soil pH (KCl)

- Macronutrients (P, K, Ca, Mg)
- Exchangeable cations
- Soil fertility indicators (S-value, T-value)
- Soil density

Table 10: Detailed Soil Laboratory Results

Sam ple	pH (K Cl)	P (mg/ kg)	K (mg/ kg)	Na (mg/ kg)	Ca (mg/ kg)	Mg (mg/ kg)	Exch. Acidi ty (cmol /kg)	Ca (%)	M g (%)	K (%)	N a (%)	Ac id Sa t (%)	Ca: Mg	(Ca+M g)/K	Mg :K	S- Value (cmol /kg)	Na :K	T- Val ue	Den sity (g/m l)	S (mg/ kg)
Sam ple 1	5.4 9	23	108	43	4261	201	0.00	90. 99	7.0 3	1. 18	0. 80	0.0 0	12.9 4	83.32	5.9 8	23.42	0.6 8	23. 42	0.99	20.0 0
Sam ple 2	4.6 4	8	12	13	83	21	0.00	61. 57	25. 64	4. 56	8. 24	0.0 0	2.40	19.12	5.6 2	0.68	1.8 1	0.6 8	1.52	3.80
Sam ple 3	4.8 6	28	159	51	866	273	0.00	60. 14	31. 10	5. 66	3. 10	0.0 0	1.93	16.12	5.4 9	7.20	0.5 5	7.2 0	0.97	44.5 9
Sam ple 4	5.0 2	17	48	11	205	51	0.00	63. 62	25. 82	7. 58	2. 98	0.0 0	2.46	11.79	3.4 1	1.61	0.3 9	1.6 1	1.14	4.83

(Source: NviroTek Laboratory Results, 2026)

5.3.5 Soil Chemical Properties (Graphical Representation)

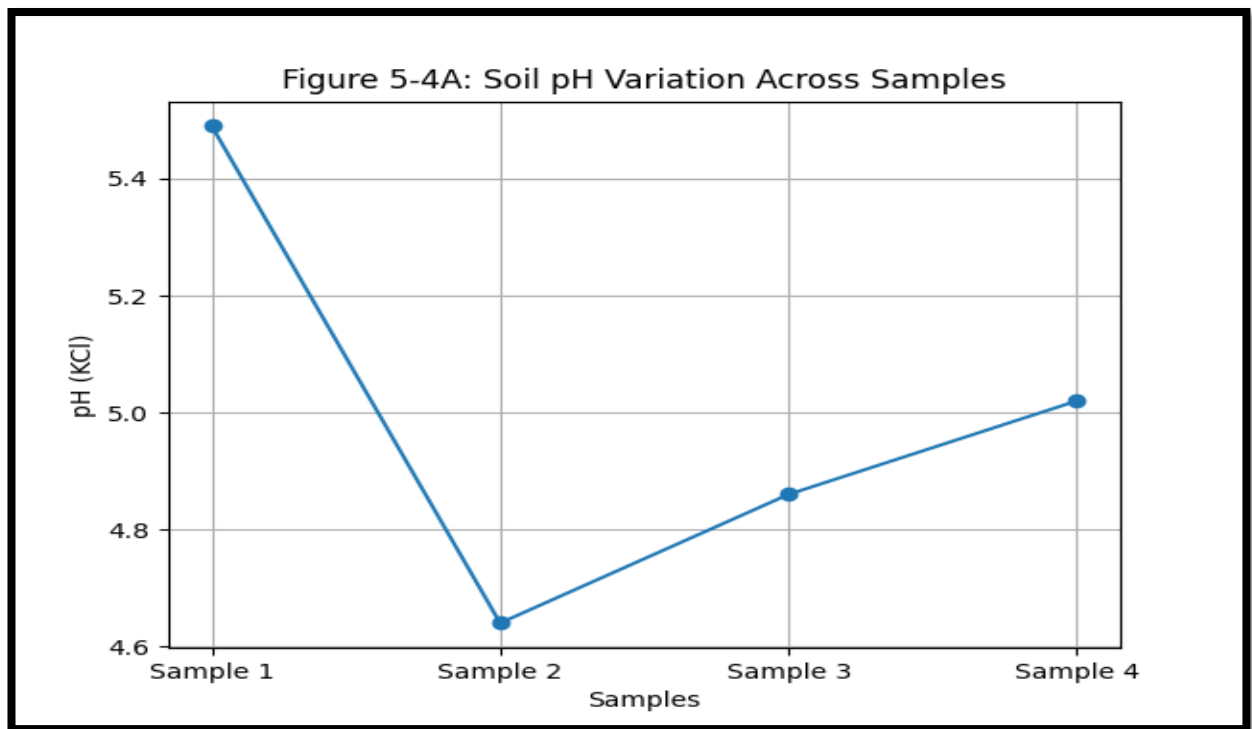


Figure 15: Soil pH Variation Across Samples

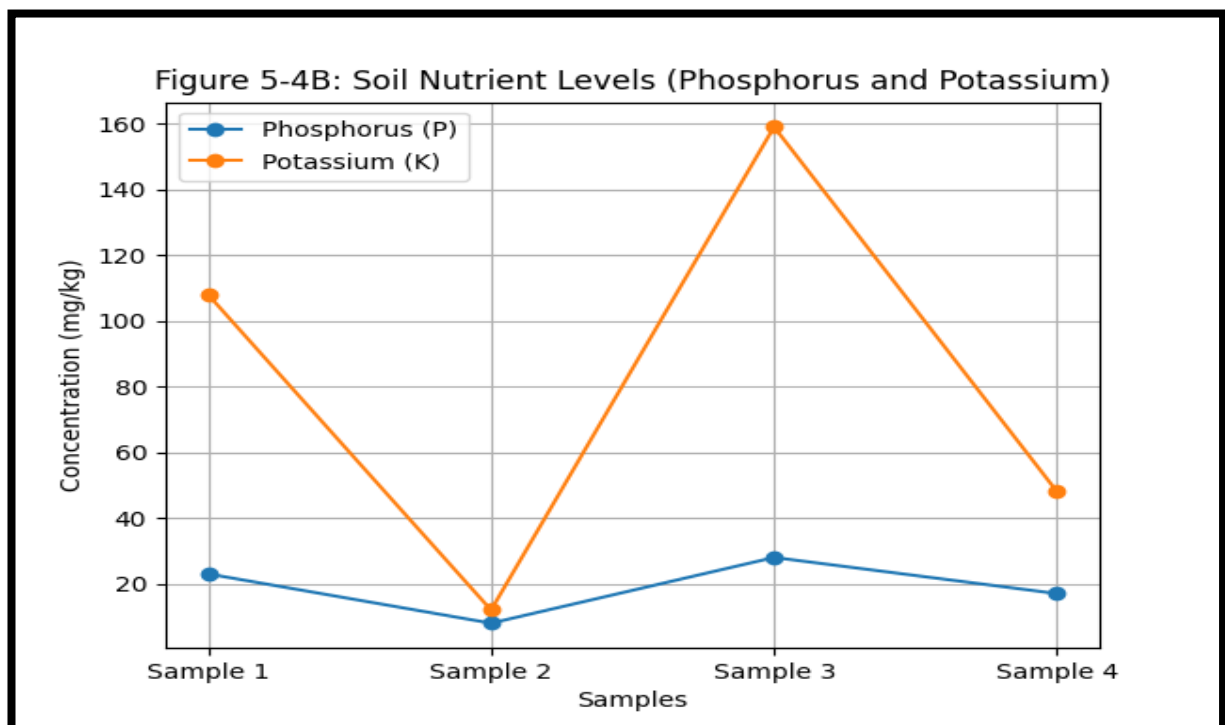


Figure 16: Soil Nutrient Levels (Phosphorus and Potassium)

- Variability in soil acidity across the site
- Significant variation in nutrient availability

5.3.6 Interpretation of Soil Chemical Properties

Soil Reaction (pH)

- Soils are moderately to strongly acidic (pH 4.6–5.5)
- Typical of sugarcane-growing regions
- Requires lime application for optimal productivity

Nutrient Status

- **Phosphorus (P):**
 - Low to moderate levels
 - Limiting nutrient for crop growth
- **Potassium (K):**
 - Highly variable
 - Some areas suitable, others deficient
- **Calcium (Ca) & Magnesium (Mg):**
 - Strong variability indicates differences in soil development and management

Soil Fertility

- Sample 1 indicates **good fertility (likely managed agricultural soil)**
- Samples 2–4 reflect:
 - Lower fertility
 - Reduced agricultural productivity without intervention

Soil Physical Condition

- Density values indicate:
 - Mostly acceptable soil structure
 - Localised compaction (Sample 2)

5.3.7 Agricultural Interpretation

From an agricultural perspective:

- Soils are currently productive under sugarcane cultivation, indicating:
 - Suitability for agriculture with management
- However, limitations include:
 - Soil acidity
 - Nutrient deficiencies
 - Spatial variability

5.3.8 Summary of Soil Suitability

Table 11 : Soil Suitability

Parameter	Assessment
Soil fertility	Moderate to low
Soil acidity	Limiting factor
Agricultural suitability	Moderate (improved under management)
Land capability implication	Class II–IV (mixed capability)

5.4 Interpretation of Soil Properties

Agricultural Interpretation (DALRRD-Aligned)

- Soil acidity requires lime correction for optimal crop production
- Phosphorus levels are limiting in some areas
- Nutrient variability reflects:
 - Differences in management practices
 - Variable soil potential across the site

Despite limitations, the soils:

- Are actively supporting sugarcane production
- Have demonstrated agricultural viability under management

5.5 Land Capability Classification (DALRRD Framework)

In accordance with South African land capability systems:

Site Classification: Class II – IV (Mixed Capability)

Class II–III (Sugarcane Areas):

- Moderate to high agricultural potential
- Suitable for commercial cultivation
- Improved through management practices

Class III–IV (Mixed / Disturbed Areas):

- Moderate limitations
- Suitable for grazing or limited cropping

5.6 Agricultural Sensitivity (PDAL Compliance)

High Sensitivity Areas

- Active sugarcane fields
- Productive agricultural zones



Figure 17 : Class II–III (Sugarcane Areas)

Moderate Sensitivity Areas

- Transitional rural/agricultural land
- Previously disturbed or mixed-use zones



Figure 18: Class III–IV (Mixed / Disturbed Areas)

Low Sensitivity Areas

- Residential portions
- Industrial/disturbed land



Figure 19: Low Sensitivity Areas Industrial/disturbed land

5.7 Impact Assessment (Agricultural Perspective)

Potential Impacts

- Loss of productive agricultural land (sugarcane areas)
- Fragmentation of farming operations
- Soil disturbance during construction

Impact Significance (PDAL Context)

- Moderate to High where prime agricultural land is affected
- Low to Moderate in already transformed areas

5.8 Mitigation Measures

- Minimise disturbance to active sugarcane fields
- Implement topsoil stripping and stockpiling
- Rehabilitate disturbed areas post-construction
- Maintain access routes for farming operations

The study area represents a partially transformed agricultural landscape, with commercial sugarcane farming forming the dominant and most sensitive land use.

From a DALRRD / PDAL compliance perspective:

- Portions of the site qualify as moderate to high agricultural potential land
- However, existing residential and industrial land uses reduce overall agricultural integrity

The site is therefore classified as:

Mixed Land Capability (Class II–IV)

Development within the site should:

- Avoid high-value cultivated areas where possible
- Implement mitigation measures to preserve soil resources
- Ensure compliance with agricultural land protection principles

6. AGRICULTURAL IMPACT ASSESSMENT

6.1 Introduction

This section presents the assessment of potential impacts of the proposed Impala Zircon 132kV temporary by-pass powerline and associated infrastructure on agricultural resources within the study area. The assessment considers both the construction and operational phases of the

project and evaluates impacts on soil resources, land capability, and existing agricultural activities, particularly commercial sugarcane farming.

The assessment has been undertaken in accordance with applicable South African environmental and agricultural assessment frameworks, including principles outlined by the Department of Agriculture, Land Reform and Rural Development and the Preservation and Development of Agricultural Land Act.

6.2 Impact Assessment Methodology

The impact assessment follows a qualitative approach based on:

- Nature of the impact
- Extent (site-specific, local, regional)
- Duration (short-term, medium-term, long-term)
- Intensity (low, moderate, high)
- Probability of occurrence
- Reversibility
- Significance before and after mitigation

The significance of impacts is rated as:

- Low
- Medium
- High

6.3 Identified Agricultural Impacts

6.3.1 Loss of Agricultural Land

Description: The construction of the powerline and associated infrastructure will result in the temporary and potentially permanent loss of agricultural land, particularly within actively cultivated sugarcane fields.

Impact Characteristics:

- Nature: Negative
- Extent: Local

- Duration: Long-term (permanent footprint areas)
- Intensity: Moderate

Significance (Pre-Mitigation): High

Mitigation Measures:

- Minimise footprint within cultivated fields
- Align infrastructure along existing disturbed corridors where possible
- Avoid high-value agricultural areas

Significance (Post-Mitigation): Medium

6.3.2 Soil Disturbance and Degradation

Description: Construction activities will disturb topsoil, potentially leading to compaction, erosion, and loss of soil structure.

Impact Characteristics:

- Nature: Negative
- Extent: Site-specific to local
- Duration: Short- to medium-term
- Intensity: Moderate

Significance (Pre-Mitigation): High

Mitigation Measures:

- Strip and stockpile topsoil separately
- Limit movement of heavy machinery
- Implement erosion control measures
- Rehabilitate disturbed areas

Significance (Post-Mitigation): Low to Medium

6.3.3 Impact on Soil Fertility

Description: Disturbance of soils may reduce fertility, especially in areas already exhibiting nutrient limitations and acidic conditions.

Impact Characteristics:

- Nature: Negative
- Extent: Site-specific
- Duration: Medium-term
- Intensity: Moderate

Significance (Pre-Mitigation): Medium

Mitigation Measures:

- Reapply topsoil during rehabilitation
- Amend soils (lime and fertiliser) where required
- Restore vegetation cover

Significance (Post-Mitigation): Low

6.3.4 Disruption of Farming Activities

Description: Construction activities may interfere with normal farming operations, including access to fields and harvesting activities.

Impact Characteristics:

- Nature: Negative
- Extent: Local
- Duration: Short-term
- Intensity: Moderate

Significance (Pre-Mitigation): Medium

Mitigation Measures:

- Maintain access routes for farmers
- Schedule construction to avoid peak farming periods
- Engage with landowners

Significance (Post-Mitigation): Low

6.3.5 Fragmentation of Agricultural Land

Description: Infrastructure placement may fragment agricultural land, affecting operational efficiency.

Impact Characteristics:

- Nature: Negative
- Extent: Local
- Duration: Long-term
- Intensity: Low to Moderate

Significance (Pre-Mitigation): Medium

Mitigation Measures:

- Strategic placement of infrastructure
- Maintain connectivity of farm units

Significance (Post-Mitigation): Low

Table 12 : Impact Summary Table

Impact	Extent	Duration	Intensity	Significance (Pre-Mitigation)	Significance (Post-Mitigation)	Relevance
Loss of agricultural land	Local	Long-term	Moderate	High	Medium	High (sugarcane areas)
Soil disturbance	Local	Medium-term	Moderate	High	Low–Medium	High

Soil fertility reduction	Site-specific	Medium-term	Moderate	Medium	Low	Medium
Disruption of farming	Local	Short-term	Moderate	Medium	Low	Medium
Land fragmentation	Local	Long-term	Low–Moderate	Medium	Low	Medium

Conclusion of Impact Assessment

The proposed development will result in moderate impacts on agricultural resources, primarily associated with:

- Disturbance of soils
- Temporary disruption of farming activities
- Partial loss of cultivated sugarcane land

However, given the already transformed nature of the site, including the presence of residential and industrial land uses, the overall agricultural sensitivity is considered moderate.

With the implementation of appropriate mitigation measures, impacts can be reduced to low to moderate significance, and the development can proceed without resulting in unacceptable loss of agricultural potential.

7. MITIGATION AND MANAGEMENT MEASURES

7.1 Introduction

This section outlines the mitigation and management measures required to minimise potential impacts on agricultural resources, soil quality, and land capability within the study area. The measures are aligned with good agricultural practices and South African regulatory expectations, including DALRRD and PDAL principles.

The objective is to ensure that:

- Soil resources are protected and conserved
- Agricultural productivity is maintained where possible
- Disturbed areas are effectively rehabilitated

7.2 General Environmental Management Principles

The following overarching principles shall apply throughout the project lifecycle:

- Avoid disturbance of high-value agricultural land where possible
- Minimise the development footprint
- Protect topsoil as a valuable agricultural resource
- Prevent unnecessary soil compaction and erosion
- Ensure rehabilitation restores land capability to pre-development levels

7.3 Mitigation Measures per Project Phase

7.3.1 Pre-Construction Phase

Objectives: Planning and avoidance

Measures:

- Conduct final walk-down to confirm sensitive agricultural areas
- Demarcate no-go areas (high capability soils, active cultivation zones)
- Engage with landowners and farmers prior to construction
- Align infrastructure along existing disturbed corridors and access routes
- Develop a Soil Management Plan

7.3.2 Construction Phase

a) Topsoil Management

- Strip topsoil (minimum 150–300 mm) before construction
- Stockpile topsoil separately from subsoil
- Protect stockpiles from erosion (cover or vegetate if long-term)
- Avoid mixing of soil horizons

b) Soil Compaction Control

- Restrict heavy machinery to designated routes

- Avoid unnecessary traffic in cultivated areas
- Rip compacted soils during rehabilitation

c) Erosion Control

- Install erosion control measures (e.g. berms, silt fences)
- Stabilise exposed soils immediately after disturbance
- Avoid construction during heavy rainfall periods where possible

d) Soil Fertility Protection

- Prevent contamination from fuels, oils, and chemicals
- Implement spill control procedures
- Maintain buffer zones around agricultural fields

e) Access and Farming Continuity

- Maintain access routes to agricultural fields
- Coordinate construction activities with farmers
- Avoid peak planting and harvesting periods

7.3.3 Rehabilitation Phase

a) Topsoil Replacement

- Replace stored topsoil evenly across disturbed areas
- Ensure correct soil profile reconstruction

b) Soil Amendment

Based on laboratory results:

- Apply **lime** to correct acidic soils (pH improvement)
- Apply fertilisers (P and K) where deficiencies were identified
- Improve soil organic matter where necessary

c) Revegetation

- Re-establish vegetation using:
 - Indigenous grass species OR
 - Agricultural crops (where applicable)
- Ensure rapid vegetation cover to prevent erosion

d) Monitoring and Maintenance

- Monitor rehabilitated areas for:
 - Vegetation establishment
 - Soil stability
 - Erosion
- Implement corrective measures where necessary

7.4 Agricultural Compliance Measures (DALRRD / PDAL Alignment)

To ensure compliance with agricultural protection frameworks:

- Avoid irreversible loss of high-potential agricultural land
- Maintain or restore land capability post-construction
- Ensure soil conservation measures are implemented
- Protect productive sugarcane farming areas
- Ensure development does not compromise long-term agricultural viability

7.5 Mitigation Summary Table

Table 13: Mitigation Summary Table

Impact	Key Mitigation Measures	Residual Impact
Loss of agricultural land	Minimise footprint, strategic routing	Medium
Soil disturbance	Topsoil management, erosion control	Low
Soil fertility loss	Soil amendments (lime, fertiliser)	Low
Compaction	Controlled machinery movement, ripping	Low
Farming disruption	Maintain access, stakeholder engagement	Low
Land fragmentation	Careful infrastructure placement	Low

The implementation of the above mitigation and management measures will significantly reduce the identified impacts on agricultural resources. With proper soil management, rehabilitation, and stakeholder coordination, the development can proceed while maintaining the long-term agricultural functionality of the study area.

8. IMPACT STATEMENT AND FINAL RECOMMENDATION

8.1 Impact Statement

The Agricultural Impact Assessment undertaken for the proposed development indicates that the study area is characterised by a mixed land use setting, comprising:

- Commercial sugarcane farming (dominant land use)
- Rural residential areas
- Localised industrial activities
- Farm access routes and disturbed zones

The soils within the study area exhibit moderate agricultural potential, with the following key characteristics:

- Acidic soil conditions (pH 4.6 – 5.5)
- Variable nutrient levels (particularly phosphorus and potassium)
- Evidence of active agricultural management (especially sugarcane cultivation)
- Moderate soil fertility with localised limitations

Based on the soil laboratory analysis and field verification, the land capability is classified as:

Moderate agricultural capability (Class II–IV), requiring management inputs to sustain productivity

Overall Impact Summary

The proposed development is expected to result in the following key impacts:

- Localised loss of agricultural land within the development footprint
- Temporary disturbance of soil structure and topsoil
- Potential reduction in soil fertility if not properly managed

- Short-term disruption to farming activities
- Minor fragmentation of cultivated land

However, it is important to note that:

- The study area is already partially transformed
- Agricultural activities are managed and adaptable
- The development footprint is relatively limited in extent

Table 14 : Impact Significance

Phase	Impact Significance (Pre-Mitigation)	Impact Significance (Post-Mitigation)
Construction	High	Low to Medium
Operation	Medium	Low

8.2 Cumulative Impact Consideration

Cumulative impacts on agricultural resources are considered **low to moderate**, given that:

- The surrounding landscape already includes mixed land uses
- The development does not introduce large-scale irreversible transformation
- Agricultural activities can continue alongside the proposed infrastructure

8.3 Acceptability of Impacts

The impacts associated with the proposed development are considered:

Acceptable, provided that recommended mitigation measures are fully implemented

This is based on:

- The moderate agricultural sensitivity of the site
- The limited spatial extent of the disturbance
- The ability to rehabilitate affected areas
- The feasibility of maintaining ongoing agricultural activities

8.4 Final Recommendation

Based on the findings of this Agricultural Impact Assessment, it is recommended that:

The proposed development be supported from an agricultural perspective, subject to the implementation of mitigation and management measures outlined in this report.

Conditions for Approval

The following conditions are strongly recommended:

- A Soil Management Plan must be implemented
- Topsoil must be stripped, stored, and reinstated correctly
- Soil fertility must be restored through liming and fertilisation
- Disturbed areas must be rehabilitated to pre-development land capability
- Ongoing monitoring of rehabilitated areas must be conducted
- Engagement with affected landowners must be maintained

8.5 Statement of Confidence

The assessment is based on:

- Field survey and verification
- Laboratory soil analysis
- Established agricultural assessment methodologies

It is therefore concluded with a high level of confidence in the findings and recommendations presented

8.6 Conclusion

The study confirms that while the proposed development will result in localised and manageable impacts on agricultural resources, these impacts can be effectively mitigated.

With proper implementation of recommended measures, the development will:

- Not result in unacceptable loss of agricultural land
- Maintain the overall agricultural functionality of the area

- Be compatible with the existing mixed land use character

APPENDIX

Appendix A: Laboratory Certificate of Analysis

The soil samples collected during the field survey were analysed by **NviroTek Laboratories**, an accredited analytical laboratory. The laboratory results provide detailed information on soil chemical properties and fertility indicators.

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WO 198035:252812
PAGE: 1 of 2

Certificate of Analysis

Nviro Business Hub unit 6, Ou Wapad road, Ifafi, Hartbeespoort, 0260 | Tel: 012 252 7588 | www.nvirotek.co.za

Datum Ontvang/Date Received:		2026-03-18		Verslag nr./Report no.:		WO 198035:252812	
Datum Begin/Date Commenced:		2026-03-18		Datum Gerapporteer/Date Reported:		2026-03-25	

To/Aan:

KMG ENVIRONMENTAL SOLUTIONS SERVICES

27119696184

8 HILLSIDE ROAD FOREST TOWN JOHANNESBURG 2193

Representative/Verteenwoordiger: Given

Farm Name/Plaas Naam:

Order/Bestel#: Email: Given Marabe
marabekg@kmgenviro.co.za, accounts@kmgenviro.co.za

Lab Nummer	Sample Reference	pH KCl	P Bray I	K AmAc	Na AmAc	Ca AmAc	Mg AmAc	EXCH ACID KCl	Ca% AmAc	Mg% AmAc	K% AmAc	Na% AmAc	ACID SAT. AmAc	Ca-Mg AmAc	(Ca+Mg)/K AmAc	Mg/K AmAc	S-VALUE AmAc	Na/K AmAc	T-VALUE AmAc	Dens. g/ml	S AmAc
G40-46020	Sample 1	5.49	23	108	43	4261	201	0.00	90.99	7.03	1.18	0.80	0.00	12.94	83.32	5.98	23.42	0.68	23.42	0.99	20.00
G40-46021	Sample 2	4.64	8	12	13	83	21	0.00	61.57	25.64	4.56	8.24	0.00	2.40	19.12	5.62	0.68	1.81	0.68	1.52	3.80
G40-46022	Sample 3	4.86	28	159	51	866	273	0.00	60.14	31.10	5.66	3.10	0.00	1.93	16.12	5.49	7.20	0.55	7.20	0.97	44.59
G40-46023	Sample 4	5.02	17	48	11	205	51	0.00	63.62	25.82	7.58	2.98	0.00	2.46	11.79	3.41	1.61	0.39	1.61	1.14	4.83

NOTAS / NOTES:

Resultate goedgekeur deur / Results approved by:

Pieter Lourens
pieter.l@nvirotek.co.za
Technical Signatory



Certificate of Analysis

Nviro Business Hub unit 6, Ou Wapad road, Itafi, Hartbeespoort, 0260 | Tel: 012 252 7588 | www.nvirotek.com

BELANGRIK / IMPORTANT

* Results marked with * in this report are not included in the Schedule of Accreditation for this laboratory.

** Results marked with ** are Subcontracted Tests and are not included in the Schedule of Accreditation for this laboratory.

Where a result is reported as less than (<) a value, the result obtained is below the limit of quantification for the specific analyte.
< For Mycotoxins and Trihalomethanes: if results are less than the working range determined in the validation for each analyte and matrix, the results shall be reported as less than (<) the lower limit of the working range obtained.

1. This test report shall not be reproduced except in full, without written approval of the laboratory. These results are only applicable to the tests performed on the sample as received.
2. Results will be reported electronically in a PDF format. The Laboratory will not be responsible for any unauthorised changes made to results after the report was issued.
3. Uncertainties of Measurement, Limits of Detection and Method Descriptions will be provided upon request.
4. Decision Rule: Results reflecting on Test Reports are the actual results as obtained at the time of testing, and do not include any uncertainty considerations. NviroTek does not issue any statements of conformity, unless by prior arrangement.
5. Any opinions and interpretations expressed herein are outside the scope of accreditation for the laboratory.

Test	Method	Test	Method
pH(KCl)*	WIN 031	Na%(AmAc)	WIN 072
P(Bray I)*	WIN 073	ACID SATURATION(AmAc)	WIN 072
K(AmAc)	WIN 072	Ca:Mg(AmAc)	WIN 072
Na(AmAc)	WIN 072	(Ca+Mg)/K (AmAc)	WIN 072
Ca(AmAc)	WIN 072	Mg:K(AmAc)	WIN 072
Mg(AmAc)	WIN 072	S-VALUE(AmAc)	WIN 072
EXCH ACID KCl	WIN 031	Na:K	WIN 072
Ca%(AmAc)	WIN 072	T-VALUE(AmAc)*	Calculation
Mg%(AmAc)	WIN 072	Dens. - Density*	WIN 076
K%(AmAc)	WIN 072	S (AmAc)	WIN 072

End of Report

APPENDIX B: Specialist Declaration and CVs

I, Khumbelo Given Marabe, declare that I:

- I act as the independent specialist in this application.
- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- all the particulars furnished by me in this form are true and correct; and
- am aware that it is an offence in terms of Regulation 48 to provide incorrect or misleading information and that a person convicted of such an offence is liable to the penalties as contemplated in section 49B(2) of the National Environmental Management Act, 1998 (Act 107 of 1998).
- I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.



Signature

Khumbelo Given Marabe

SACNASP REG NO:132731

I, **Tshiamo Setsipane** declare that:

- I act as the independent specialist in this application.
- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- All the particulars furnished by me in this form are true and correct; and
- I am aware that it is an offence in terms of Regulation 48 to provide incorrect or misleading information and that a person convicted of such an offence is liable to the penalties as contemplated in section 49B (2) of the National Environmental Management Act, 1998 (Act 107 of 1998).
- I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.



Signature

Tshiamo Setsipane (M.Sc)

SACNASP NO: 114882

Executive Professional Summary – Khumbelo Given Marabe

Khumbelo Given Marabe Principal Environmental Consultant | Environmental Specialist

Contact Information

Email: marabekg@kmgenviro.co.za | marabekg@gmail.com

Mobile: 072 546 3191 | Office: 011 969 6184

Address: 7094 Shoveler Street, Crystal Park, Benoni, 1501

Professional Summary

Khumbelo Given Marabe is a registered Environmental Scientist with SACNASP and a Professional Process Controller with WISA. He has over a decade of professional experience in environmental consulting, monitoring, compliance auditing, and impact assessments, with a strong focus on sustainability and regulatory adherence. Currently serving as Principal Environmental Consultant at KMG Environmental Solutions Services (Pty) Ltd, he has led high-impact projects across mining, energy, manufacturing, and agricultural sectors. Khumbelo combines technical depth with leadership and operational insight, making him a trusted advisor in environmental management.

Qualifications

- Bachelor of Environmental Sciences – University of Venda
- Bachelor of Honours in Environmental Monitoring and Modelling (in progress) – UNISA
- Business Management Certificate – AECI Foundation Management Development Programme (FMDP), GIBS – University of Pretoria
- Business Management Certificate – AECI Middle Management Development Programme (MMDP), GIBS – University of Pretoria
- Certificate in Advanced Health and Safety – HASLAC
- Certificate in First Line Management – Legitimate Leadership
- Water Treatment Certificate – FESTO
- Environmental Management Certificate – NEBOSH
- ISO 45001:2018 & ISO 14001:2015 – Introduction, Implementation, and Internal Auditor Certificates – NOSA
- Other Certificates: Environmental Awareness (AEL Mining Services), Asset Care, Organized Workplace

Professional Memberships

- SACNASP – Registered Environmental Scientist (Reg. No. 132731)
- WISA – Professional Process Controller (Reg. No. 39885)
- IAIAsa – Full Member (Membership No. 7837, since 2025)

Key Skills & Competencies

- Environmental Impact Assessments (EIA) & Specialist Studies
- Soil, Land Use, Land Capability & Agricultural Assessments
- Environmental Monitoring (Dust, Water, Air, Noise)
- Waste Management, Auditing & Licensing (IWMP)
- Environmental Training & Awareness Campaigns
- ISO 14001 & ISO 45001 Implementation & Auditing
- SHEQ and Regulatory Compliance (NEMA, MPRDA)
- Stakeholder Engagement and Reporting

Professional Experience

KMG Environmental Solutions Services (Pty) Ltd

Principal Environmental Consultant

2020 – Present

Lead and manage environmental monitoring, specialist studies, audits, and training programmes

Supervise field teams in sample collection, device installation, and site assessments

Compile compliance reports, monitoring reports, and licensing applications for mining, energy, and manufacturing clients

Deliver training and awareness sessions on environmental best practices and regulatory compliance

Recent Projects Include:

- Soil & Agricultural Assessments: Rampower Solar PV (370MW), Uthukela SEZ (KZN), Emzinoni Extension 15 & 16 (Mpumalanga), Corobrik Rietvlei Mine
- Environmental Monitoring: FS Mining Wash Plant, Fry's Metals, Tate & Lyle, Gauteng Environmental Management
- Specialist Studies: Air Quality (Tenbosh Mining), Noise Surveys (Mabuya Lab), Biodiversity (Tate & Lyle), Soil (Corobrik)
- Training & Awareness: Hannel International, Food & Trees for Africa, Mupo Environmental Consultancy

AECI Mining Explosives – Modderfontein

Effluent Plant, Lead Azide & Spray Dry Plant Manager

2014 – 2020

- Managed ISAP Effluent Treatment and production facilities with a focus on environmental compliance
- Oversaw plant audits, process decommissioning, waste reduction projects, and health & safety programmes

Key Projects:

- ISAP Waste Reduction & Water Recycling
- Old Plant Decommissioning (TDP, Powders, Nitrates)
- Wastewater Treatment & Discharge Monitoring

Achievements

- Recognition for Workplace Environmental Awareness Training – Hannel International
- First Runner-Up – Environmental Awareness Competition (AELMS)
- Best Participant – First Line Management Programme (AELMS)
- Successful campaign delivery – Food & Trees for Africa

Personal Attributes

- Integrity, Creativity, and Strong Leadership
- Excellent Communication and Team Collaboration
- Results-Oriented with High Attention to Detail
- Ability to Manage Pressure and Meet Deadlines

References

- **Thulani Mhlongo** – Plant Manager, AECI Mining Explosives
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☎ 083 441 7882 | ✉ m.grade@jpgoheconsultants.co.za
- **Kabelo Phakwago** – Principal Consultant, MK Envirosolution & Projects
☎ 079 054 7652 | ✉ phakwagokabelo@gmail.com