



Revised-Draft Basic Assessment and Environmental Management Programme Report for the Proposed Prospecting Right Application for Niara Minerals (Pty) Ltd

Prepared for

Niara Minerals (Pty) Ltd



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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)

Specialist Information


Title of Specialist Study:	Revised- Draft Basic Assessment and Environmental Management Programme Report for the Proposed Prospecting Right Application for Niara Minerals (Pty) Ltd
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Title of Specialist Study:	Revised- Draft Basic Assessment and Environmental Management Programme Report for the Proposed Prospecting Right Application for Niara Minerals (Pty) Ltd Draft Basic Assessment and Environmental Management Programme Report for the Proposed Prospecting Right Application for Niara Minerals (Pty) Ltd
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Declaration by the Specialist

I Nolwazi Dlamini, as duly authorised representative of Temvelo Consultants (Pty) Ltd, hereby confirm my independence and declare that I:

- 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:	
Name of Specialist	Nolwazi Dlamini
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

Declaration by the Specialist


I, Legion Mazibuko, as duly authorised representative of Temvelo Consultants (Pty) Ltd, hereby confirm my independence and declare that I:

- 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:	<i>L. Mazibuko.</i>
Name of Specialist	Legion Mazibuko
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

Undertaking under Oath/Affirmation

I Nolwazi Dlamini, 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:	
Name of Specialist	Nolwazi Dlamini
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

Undertaking under Oath/Affirmation

I Legion Mazibuko, 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:	<i>L. Mazibuko.</i>
Name of Specialist	Legion Mazibuko
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

Specialist Checklist

EIA REGULATIONS 2017 GNR 327, 325 and 324 Appendix 6 CONTENT OF THE SPECIALIST REPORTS	In accordance with the EIA Regulations	Cross reference in this Report
(a) details of, the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	✓	Section 2
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	✓	Page iv and v134
(c) an indication of the scope of, and the purpose for which, the report was prepared	✓	Page 11
(cA) an indication of the quality and age of Base Data used for the specialist report	✓	Page 30
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and the levels of acceptable change	✓	Page 30
(d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	✓	Page 30
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	✓	Section 11112
(f) 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 13110
(g) an identification of any areas to be avoided, including buffers;	✓	Section 9.4125
(h) 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	✓	Page 55139
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	✓	Section 17132
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities	✓	Section 14115
(k) any mitigation measures for inclusion in the EMPr	✓	Section 10115
(l) any conditions for inclusion in the environmental authorisation;	✓	N/A132
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	✓	Page 153
(n) a reasoned opinion, i. whether the proposed activity, activities or portions thereof should be authorised; and (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities 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;	✓	Page 158
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	✓	Page 122
(p) any other information requested by the competent authority	✓	None yet157

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation, or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has considered any minimum requirements applicable, or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

- Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Describe the need and desirability of the proposed alternatives,
- Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - The degree to which these impacts –
 - Can be reversed;
 - May cause irreplaceable loss of resources; and
 - Can be managed, avoided, or mitigated.
- Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to -
 - Identify and motivate a preferred site, activity, and technology alternative;
 - Identify suitable measures to manage, avoid or mitigate identified impacts; and
 - Identify residual risks that need to be managed and monitored.

Executive Summary

Introduction

Niara Minerals (Pty) Ltd has applied for a Prospecting Right in accordance with Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), to explore coal, pseudo-coal, and torbanite/oil shale within a 14,772-hectare area in the Abaqulusi Local Municipality, under the Amajuba District Municipality, KwaZulu-Natal Province. The application also triggers the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and its associated EIA Regulations. Temvelo Consultants (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) responsible for the environmental authorisation process.

The proposed prospecting area spans various portions of farms including Isihlengeni, Demoina, Weltevrede, Misty Valley, and Toovernaars Rust. The area lies approximately 3 km south of Ngenetseni and 23 km south of Louwsburg.

Details of the Applicant

Niara Minerals (Pty) Ltd is a 100% black female-owned mineral exploration, prospecting, and mining company based in South Africa. Established with the vision of becoming a leading player in the exploration, responsible extraction, and development of mineral resources, Niara Minerals is committed to sustainable mining practices, community development, and environmental stewardship.

As a proudly South African company, Niara Minerals aligns its operations with national and international mining regulations, ensuring compliance with the Minerals and Petroleum Resources Development Act (MPRDA), the Mining Charter, and the International Finance Corporation (IFC) Performance Standards. The Director, Vumile Ribeiro is a seasoned professional in the mining and environmental consulting sectors. With extensive experience in socio-economic impact assessments, human rights impact assessments, resettlement action plans, stakeholder engagement, and health impact assessments, she brings a wealth of knowledge to Niara Minerals. Under her leadership, the company prioritizes ethical exploration, compliance with regulatory frameworks, and sustainable resource management.

Table 1-1: Details of the Applicant

Name of Applicant:	Niara Minerals (PTY) Ltd
Registration number (if any):	2025/151259/07
Trading name (if any):	Niara Minerals (PTY) Ltd



Contact person:	Vumile Ribeiro		
Physical address:	28 Shamrock Street Ferndale Randburg		
Postal address:	28 Shamrock Street Ferndale Randburg		
Postal code:	2194	Cellphone:	0827672786
Telephone:	0827672786	Fax:	0865314434
Email:	vumile@niaraminerals.co.za		

Environmental Consultants

Temvelo Consultants (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) for this application. Temvelo is a reputable environmental consultancy with extensive experience in Basic Assessments, Environmental Impact Assessments, and regulatory compliance across South Africa. The firm is known for its technically sound assessments, stakeholder-sensitive approach, and strong understanding of relevant legislation. Temvelo brings a high standard of professional integrity and scientific rigour to the environmental authorisation process for this prospecting project.

Table 1-2: Details of the EAPs

Company name:	Temvelo Consultants (PTY) Ltd
Contact person:	Legion Mazibuko
Email:	info@temveloconsultants.co.za

Public Participation Process Methodology

A Public Participation Process (PPP) will be initiated during the Draft BAR phase. It will be undertaken as required in terms of regulation 41 of the EIA Regulations, 2014 (as amended), promulgated under NEMA. During the undertakings of the PPP, the environmental and social impacts will be investigated, and all stakeholders affected by the project will be afforded an opportunity to comment, raise concerns and contribute to the assessment to ensure that local knowledge, needs, and values are taken into consideration throughout the process.

During the BA Phase, the following will be undertaken, to provide opportunities for stakeholders to identify issues of concern and provide input on the application process:

- All landowners directly affected by the proposed project will be identified and encouraged to participate in the BA process through hand delivery information [BID, Advert].
- Distribution of the draft BA Report which will also serve as a Background Information Document and Comment Sheet to all registered and identified I&APs.
- Placement of statutory advertisements in Newspaper;
- Erection of On-Site Notice Boards at various locations within the study area.
- The draft BA/EMPr Report will be made available for public review and comment for a period of 30 days; and

- A public meeting with the interested and affected parties to discuss the draft BA/EMPr Report will be held.

Methodology

The ranking of impacts/determination of significance is estimated using two criteria, namely Consequence and Probability. These consider the contributing factors / criteria listed in the legislation. The definitions of each are provided below.

- The **Consequence** of an impact resulting from an aspect is expressed as a combination of:
 - **Nature** of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).
 - **Extent** of impact: A spatial indication of the area impacted (i.e., how far from activity the impact is realised).
 - **Duration** of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period of time.
 - **Frequency** of the impact occurring: An indication of how often an aspect, as a result of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs. It applies only to the aspect. For example, driving takes place daily whilst other activities take place monthly while the resultant frequency of the impacts occurring will vary based on a number of factors.
 - **Magnitude/Severity** of an impact determines to what extent will the environment be destroyed or its functions be altered by the activity.
 - **Significance** of the impact is an indication of the importance of the impact in terms of both the physical extent and the time scale. It indicates the level of mitigation required.

This rating system is weighted in such a way as to set impacts that are very likely to occur, but have very little consequence, as Low significance. Similarly, impacts with serious consequences but that are unlikely to occur are rated lower, than impacts with serious consequences that are likely to occur.

Activities

The planned invasive activities will entail the drilling of boreholes to obtain sub-surface geological samples for analysis.

A total of approximately **10 to 15 boreholes** are proposed. Each borehole will disturb a relatively small surface footprint. The final locations of the boreholes will be identified following the completion of desktop geological studies, field mapping, and geophysical surveys. These boreholes will be strategically distributed within the 15-hectare application area to ensure minimal environmental impact while ensuring representative geological sampling.

The purpose of the drilling is to assess the presence, depth, thickness, and quality of the target mineral formations. Borehole drilling will be conducted using rotary core drilling rigs supported by small trucks and mobile water tanks. Drilling activities will be carried out by a qualified drilling contractor in line with all applicable safety and environmental legislation.

The prospecting programme will be carried out over four (4) phases within a total duration of 60 months (five years). If required, the Prospecting Right may be renewed for an additional period of three (3) years.

Conclusion and Recommendations

This BAR has systematically assessed the environmental, social, and economic implications of the proposed prospecting activities for coal, pseudo-coal, and torbanite/oil shale within a defined area of approximately 15 hectares. The application spans multiple farm portions, including:

- Remaining Extent of Isihlengeni No. 689
- Remaining Extent of Demoina
- Portion 1 of Weltevrede No. 540
- Portion 1 of Misty Valley No. 831
- Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518

The site is located approximately 3 km south of Ngenetseni and 23 km south of Louwsburg, within the Abaqulusi Local Municipality (Zululand District, KwaZulu-Natal Province).

Based on the findings of this assessment and the outcomes of six specialist studies, the proposed prospecting project poses limited and manageable environmental risks if conducted in accordance with the proposed mitigation and monitoring measures. The key conclusions are as follows:

- The ecological assessment (Arid Cactus Consulting, 2025) identified Endangered Mistbelt Grasslands and Sensitive Species of Conservation Concern (SCC) within the project area. However, due to the temporary, small-scale nature of the prospecting footprint, these habitats can be effectively protected through:
 - 100 m ecological buffers around sensitive habitats;
 - Strict adherence to no-go zones; and

- Targeted rehabilitation with indigenous species after activity completion.
- Two FEPA rivers, the Sihlengeni and Sikwebezi, traverse the area and are in a natural, high-ecological state. Although no direct activity is planned within their boundaries, buffer zones of at least 500 m must be respected, and erosion/sediment controls applied to adjacent areas.
- The wetlands, especially valley-bottom types with hydrophytic vegetation and hydromorphic soils, have high ecological function and must be protected through complete avoidance and the application of stormwater and sediment control measures.
- The Floodline Determination Study (Altra Watch, 2025) identified flash flood risks, particularly in Drainage Area 1, due to steep slopes and shallow soils. All infrastructure and drilling points must be excluded from 1:50 and 1:100-year floodlines to avoid downstream impacts and damage to ecological systems.
- The Social Impact Assessment (Temvelo Consultants, 2025) found a positive local sentiment, especially around potential employment and procurement opportunities. The project is seen as a source of socio-economic upliftment in Wards 2, 3, and 4, provided that environmental safeguards are strictly implemented and local engagement is maintained.
- No Water Use Licence (WUL) is required, as all operations are dry in nature, and potable water will be imported to site. There is no planned abstraction from local rivers or wetlands.
- No permanent infrastructure is proposed, and all activities will be reversible. Rehabilitation will commence immediately after the completion of prospecting activities.
- A comprehensive suite of management tools has been developed, including:
 - A detailed Environmental Management Programme (EMPr);
 - An Environmental Awareness Training Plan for all personnel and contractors;
 - A Post-Closure Monitoring Framework to ensure rehabilitation effectiveness and long-term environmental stability.

In conclusion, the proposed prospecting right, if subject to strict adherence to the recommended conditions, mitigation measures, and monitoring protocols, is not expected to result in significant or irreversible environmental impacts. The temporary and small-scale nature of the activity, coupled with a strong management framework, ensures that risks to biodiversity, water resources, cultural heritage, and local communities can be minimised and effectively managed, while offering meaningful socio-economic benefits to the surrounding rural areas.

Recommendations

In light of the findings presented in this Basic Assessment Report (BAR), the outcomes of the specialist studies, and the commitments contained in the associated Environmental Management Programme (EMPr), it is recommended that the proposed prospecting right be authorised, subject to the following conditions:

- Full compliance with the EMPr, including but not limited to:
- 100 m ecological buffers around wetlands, rivers (including Sihlengeni and Sikwebezi FEPA rivers), and sensitive habitats;
- Strict dust suppression measures;
- Soil erosion control and prompt rehabilitation of disturbed areas using indigenous vegetation.
- Exclusion of all prospecting-related infrastructure and activities from areas within the 1:50 and 1:100-year floodlines, in accordance with the Floodline Determination Study (Altra Watch, 2025).
- Prospecting activities must be scheduled for the dry season to minimise risks of erosion, sedimentation, and disturbance to aquatic and riparian ecosystems.
- Implementation of a site-specific biodiversity protection approach, including:
- Avoidance of Mistbelt Grasslands and Important Bird Areas (IBAs);
- Special attention to Species of Conservation Concern (SCC) and ecologically sensitive areas identified in the Ecological Assessment (Arid Cactus Consulting, 2025).
- Continuous environmental monitoring and auditing, as detailed in the EMPr, must be undertaken. Reports must be submitted to the DMRE and other relevant authorities, with:
- Adaptive management responses to non-compliance or unexpected environmental issues;
- Clear performance criteria for post-prospecting site rehabilitation.
- Local socio-economic development should be actively supported through:
- Prioritisation of ward-based employment and procurement;
- Ongoing communication with traditional leaders, ward councillors, and established community forums;
- Transparent grievance redress and stakeholder engagement mechanisms.
- Regular environmental and safety training must be provided to all employees and contractors, with inductions covering:
- Ecological sensitivity of the site;
- Heritage protocols (including the Fossil and Heritage Chance Find Procedures);
- Emergency response and spill prevention.
- Heritage resources must be safeguarded through:
- Pre-activity surveys where needed;



- Avoidance of known graves, archaeological sites, and areas flagged by the Heritage and Palaeontology Assessments (Agri Civils, 2025; Bamford, 2025);
- Immediate cessation of works and notification of Amafa/PHRA if chance finds occur.

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List of Abbreviations and Acronyms

AIPs	Alien Invasive Plants
BID	Background Information Document
CMA	Catchment Management Area
CRR	Comments and Response Report
DEA	Department of Environmental Affairs
DFFE	Department: Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GNR	Government Notice Regulation
GPS	Global Positioning System
Ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IBAs	Important Bird Areas
IHI	Index for Habitat integrity
WULA	Water Use Licence Application
Km	kilometers
M	meters
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MR	Mining Right
NAAQS	National Ambient Air Quality Standards
NBA	National Biodiversity Assessment
NCR	Noise Control Regulations Act, 1989 (Act 73 of 1989)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM: BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)

NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PR	Prospecting Right
PHRA-G	Provincial Heritage Resources Authority of Gauteng
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SAIAB	South African Institute of Aquatic Biodiversity
SANBI	South African National Biodiversity Index
SANS	South African National Standards
SAWS	South African Weather Service
SCC	Species of Conservation Concern
SIA	Social Impact Assessment
SMME	Small Medium Enterprises
SPLM	Sol Platjie Local Municipality
SWMP	Stormwater Management Plan
TDS	Total Dissolved Solids
WMA	Water Management Area
WML	Waste Management Licence

PART A: Environmental Impact Assessment

1 Introduction

Niara Minerals (Pty) Ltd is applying for a Prospecting Right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), for the exploration of coal, pseudo-coal, and torbanite/oil shale. The application area spans various farm portions, namely the Remaining Extent of Isihlengeni No. 689; the Remaining Extent of Demoina; Portion 1 of Weltevrede No. 540; Portion 1 of Misty Valley No. 831; and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. The proposed prospecting area is located within the Abaqulusi Local Municipality, under the Amajuba District Municipality in the KwaZulu-Natal Province, covering a total area of approximately 15 hectares. The project area is situated approximately 3 km south of Ngenetseni and about 23 km south of Louwsburg.

Niara Minerals (Pty) Ltd has appointed Temvelo Consultants (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to conduct the environmental authorisation process. The proposed prospecting activities will include both non-invasive and invasive techniques. The planned invasive activities will entail the drilling of boreholes to obtain sub-surface geological samples for analysis.

A total of approximately 10–15 boreholes are proposed, with each borehole expected to disturb a small surface footprint. The precise location of these boreholes will be determined following the completion of a desktop study, field mapping, and geophysical surveys. The boreholes will be strategically located within the designated 15-hectare prospecting area to ensure minimal environmental impact and to provide representative sampling across the application area.

The aim of drilling is to determine the presence, depth, thickness, and quality of the targeted mineral formations. Borehole drilling will be undertaken using rotary core drilling rigs and associated equipment, with support by small trucks and mobile water tanks. Drilling will be performed by a qualified drilling contractor in compliance with relevant safety and environmental standards.

The prospecting programme will be executed over four (4) phases within a total period of 60 months (five years). The prospecting right may be renewed for an additional three (3) years if the programme is not completed within the initial term.

The proposed prospecting project triggers activities listed in Listing Notice 1 of the National Environmental Management Act (NEMA), and therefore a Basic Assessment process in terms of Government Notice Regulation

(GNR) 982 (as amended) is required. The environmental impacts of the proposed activities were assessed by identifying environmental aspects and conducting an environmental sensitivity analysis to determine significant issues. The environmental impact assessment covers all project phases, including site establishment, drilling operations, rehabilitation, and closure. A structured impact rating system was applied to evaluate the potential environmental effects and the effectiveness of proposed mitigation measures.

2 Contact Person and Correspondence Address

This chapter provides the contact details of the Applicant, Niara Minerals (Pty) Ltd, and the appointed independent Environmental Assessment Practitioner (EAP), Temvelo Environmental Consultants (Pty) Ltd, who has been tasked with undertaking the Basic Assessment process in support of the Prospecting Right Application. In line with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the Environmental Impact Assessment (EIA) Regulations (GNR 982 of 2014, as amended), the EAP is responsible for managing and coordinating the environmental authorisation process, including the preparation of all necessary reports, stakeholder engagement, and compliance with applicable legislation.

2.1 Details of the Applicant

Niara Minerals (Pty) Ltd is a wholly black female-owned South African company engaged in mineral exploration, prospecting, and the sustainable development of mineral resources. The company was established with a long-term vision to become a trusted contributor to the mining sector through responsible exploration practices, regulatory compliance, and meaningful socio-economic development. Niara Minerals operates in accordance with all applicable national legislation, including the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), and is aligned with the principles of the Mining Charter and relevant international frameworks such as the International Finance Corporation (IFC) Performance Standards.

The company is led by Mrs Vumile Ribeiro, a senior practitioner with extensive experience in environmental and social consulting in the mining and infrastructure sectors. Her expertise spans socio-economic impact assessments, health impact assessments, resettlement planning, stakeholder engagement, and human rights due diligence, with a strong focus on international best practice. Under her leadership, Niara Minerals upholds the highest standards of environmental stewardship, social accountability, and ethical governance in the execution of its exploration and prospecting activities.

Table 2-1: Details of the Applicant

Name of Applicant:	Niara Minerals (PTY) Ltd		
Registration number (if any):	2025/151259/07		
Trading name (if any):	Niara Minerals (PTY) Ltd		
Contact person:	Vumile Ribeiro		
Physical address:	28 Shamrock Street Ferndale Randburg		
Postal address:	28 Shamrock Street Ferndale Randburg		
Postal code:	2194	Cellphone:	0827672786
Telephone:	0827672786	Fax:	0865314434
Email:	yumile@niaraminerals.co.za		

2.2 Details of the EAP

Temvelo Consultants (Pty) Ltd is a multidisciplinary environmental consultancy with a proven track record in delivering high-quality environmental services across South Africa. Established in 2019, the firm has developed a strong reputation for its technical competence, regulatory compliance, and stakeholder sensitivity, particularly within the mining, energy, and infrastructure development sectors.

Temvelo offers a full suite of services aligned with national legislation, including Environmental Impact Assessments (EIAs), Basic Assessments (BAs), Environmental Management Programmes (EMPrs), Water Use Licence Applications (WULAs), environmental compliance monitoring, and specialist coordination. The firm’s leadership includes SACNASP-registered professionals and EAPASA-affiliated practitioners who bring both academic rigour and practical experience to every project.

Temvelo’s approach is rooted in environmental ethics, sustainability, and inclusive stakeholder engagement. As the appointed independent Environmental Assessment Practitioner (EAP) for this project, Temvelo is committed to upholding the integrity of the environmental authorisation process by applying objective scientific methods, legislative alignment, and transparent community consultation. Their growing portfolio of successfully

authorised applications—especially in rural and environmentally sensitive areas—demonstrates their capacity to deliver technically sound and socially responsive environmental solutions.

Table 2-2: Details of the EAP

Company name:	Temvelo Consultants (PTY) Ltd
Contact person:	Legion Mazibuko
Physical address:	138 summer Rain Estate, Karino, Mbombela, 1204
Telephone:	+27 63 585 2145
Email:	info@temveloconsultants.co.za

2.3 Expertise of the EAP

Legion Mazibuko is an experienced Environmental Consultant and Geographic Information Systems (GIS) Specialist with over six years of progressive experience in the environmental consulting sector. Her expertise lies in the execution and coordination of Environmental Impact Assessments (EIAs), environmental authorisation processes, environmental audits, project management, stakeholder engagement, and the implementation of Environmental Management Programmes (EMPs). She has demonstrated competency in compliance monitoring and facilitating public participation processes in accordance with applicable environmental legislation and regulatory frameworks.

In her current role as an Environmental Consultant at Temvelo Consultants (Pty) Ltd, Ms Mazibuko plays an integral part in coordinating and executing environmental assessments, ensuring adherence to the National Environmental Management Act (NEMA) and associated regulations. She has a sound understanding of environmental governance and the practical application of regulatory instruments across a range of development sectors, including mining, infrastructure, and utilities.

Ms Mazibuko brings strong GIS technical capabilities, with experience in managing spatial data acquisition, editing geodatabases, mapping analysis, and spatial modelling. She is proficient in leading GIS-driven environmental assessments and has developed and maintained GIS infrastructure to support informed environmental decision-making. Her technical proficiency includes ESRI’s ArcGIS Suite (ArcMap 10.5/10.6, ArcGIS Pro, ArcGIS Earth), ArcGIS Online tools (Collector, Survey123, Operations Dashboard), as well as open-source platforms such as Quantum GIS. She has also delivered GIS training and provided ongoing support for mapping and geospatial analysis in environmental projects.

Throughout her career, Ms Mazibuko has developed a robust foundation in both environmental assessment and spatial analysis, contributing to the delivery of high-quality environmental reports, stakeholder-inclusive

planning processes, and GIS-supported decision tools. Her multidisciplinary skill set makes her a valuable contributor to integrated environmental management and sustainable development practices.

2.3.1 The qualifications of the EAP (with evidence as Appendix 1)

This section describes the EAP's qualifications and experience for the proposed Project. Appendix A contains the EAPs' curriculum vitae and degrees.

Table 2-3: Expertise of the EAP

Name	Nolwazi Dlamini
QAULIFICATIONS	<ul style="list-style-type: none"> • BSocSc. (Geography and Environmental Management) University of KwaZulu Natal (2020); • Bsc Hons. (Geography) University of Witwatersrand (2021)
RESPONSIBILITY ON PROJECT	Report Compiler
PROFESSIONAL REGISTRATION	Environmental Assessment Practitioners Association of South Africa (EAPASA Reg : 2022/5249)
EXPERIENCE	3 + years
Name	Legion Mazibuko
QUALIFICATIONS	<ul style="list-style-type: none"> • BSc. Hons (Geography) University of South Africa (2020) • Certificate in Geoinformatics. (GIS) University of Johannesburg (2016) • BA. (Environmental Management) University of South Africa (2015)
Responsibility on Project	Report Reviewer
PROFESSIONAL REGISTRATION	Environmental Assessment Practitioner (EAPASA Reg 2022/4687)
EXPERIENCE	8 years

3 Location of the Overall Activity

3.1 Regional Context

The proposed prospecting activities by Niara Minerals (Pty) Ltd are situated within the jurisdiction of the Abaqulusi Local Municipality, which falls under the Zululand District Municipality in the KwaZulu-Natal Province of South Africa. This region forms part of the northern inland area of the province, characterised by a mix of rural villages, extensive forestry operations, communal grazing areas, and patches of natural grasslands and wetlands.

The prospecting area lies approximately 3 km south of the settlement of Ngenetsheni and around 23 km south of the town of Louwsburg, placing it within a predominantly rural socio-economic and ecological setting.

3.2 Site Boundaries and Land Parcels

The application area comprises multiple portions of farmland with a cumulative extent of approximately 15 hectares, dispersed across four primary farm entities and one subdivided property. These parcels are located within wards 2, 3, and 4 of the Abaqulusi Local Municipality, as illustrated in *Figure 2.1: Local Setting Map*. The project footprint is bounded by a mosaic of land uses, including communal agricultural lands, scattered rural homesteads, portions of the Ngome Forest, and other environmentally sensitive areas such as FEPA rivers and Critical Biodiversity Areas (CBAs).

The specific properties and their associated 21-digit Surveyor General codes are listed in the table below.

Table 3-1: Project Site Land Parcel Information

SG Code	Farm Parcel Key	Farm No	Farm Name	Farm Portion(s)
N0HU00000000051800000	K263N0HU00000000051800000	518	TOOVERNAARS RUST 518 HU	0,1,2, 3, 4, 5 & 6
N0HU00000000068900000	K263N0HU00000000068900000	689	ISIHLENGENI 689 HU	0
N0HU00000000054000000	K263N0HU00000000054000000	540	WELTEVREDE 540 HU	1
N0HU00000000083100000	K263N0HU00000000083100000	831	MISTY VALLEY 831 HU	1
N0HU00000000083000000	K263N0HU00000000083000000	830	DEMOINA 830 HU	0

3.3 Accessibility and Infrastructure

The project area is accessible via secondary gravel roads branching from the R69 provincial route, which connects the regional centres of Vryheid and Nongoma. Several homesteads and villages are located in proximity to the identified prospecting blocks, with Roma, Boshhoek, and Ngenetsheni being the nearest settlements. Limited formal infrastructure exists in the immediate project footprint, reflecting the rural and partially underdeveloped nature of the area.

3.4 Environmental and Social Sensitivities

The location intersects with ecologically significant landscapes, including Ngome Forest, mapped Key Biodiversity Areas (KBAs), and National Protected Area Expansion Strategy (NPAES) focus areas. Additionally, parts of the area fall within traditional authority land and communal tenure systems, which require culturally and socially responsive engagement and land access protocols.

Proximity to ward boundaries and traditional authority governance structures necessitates early and ongoing engagement with relevant community forums, tribal councils, and municipal representatives to ensure procedural integrity and social license to operate.

3.5 Strategic Importance

Positioned within a mineral-rich corridor, the identified parcels offer potential for coal, pseudo-coal, and torbanite/oil shale exploration. However, this opportunity must be weighed against the area's ecological, heritage, and social sensitivities, particularly given the high rural dependency on natural resources and communal land access.

As such, the project location is not only a geographic reference but also a determinant of the project's social feasibility and environmental sustainability. This SIA report aims to ensure that location-specific risks and opportunities are comprehensively considered in the project planning and implementation phases.

Table 3-2: Details of the overall activity location

<p>LOCATION</p>	<p>The proposed project is situated within various land parcels located in the Abaqulusi Local Municipality, KwaZulu-Natal Province. The specific properties include:</p> <ul style="list-style-type: none"> • Remaining Extent of the farm Isihlengeni No. 689 • Remaining Extent of the farm Demoina No. 830 • Portion 1 of the farm Weltevrede No. 540 • Portion 1 of the farm Misty Valley No. 831 • Portions 0, 3, 4, and 6 of the farm Toovernaars Rust No. 518
<p>APPLICATION AREA (HA)</p>	<p>~15 ha</p>
<p>ADMINISTRATIVE DISTRICT</p>	<p>Abaqulusi Local Municipality, within the Zululand District Municipality</p>
<p>DISTANCE AND DIRECTION FROM NEAREST TOWN</p>	<p>Project is located approximately 3km South of Ngenetseni town and approximately 23km South of Louwsburg Town</p>
<p>21-DIGIT SURVEYOR GENERAL CODE FOR EACH FARM PORTION</p>	<p>N0HU00000000068900000 N0HU00000000083000000 N0HU00000000054000000 N0HU00000000083100000 N0HU00000000051800000</p>

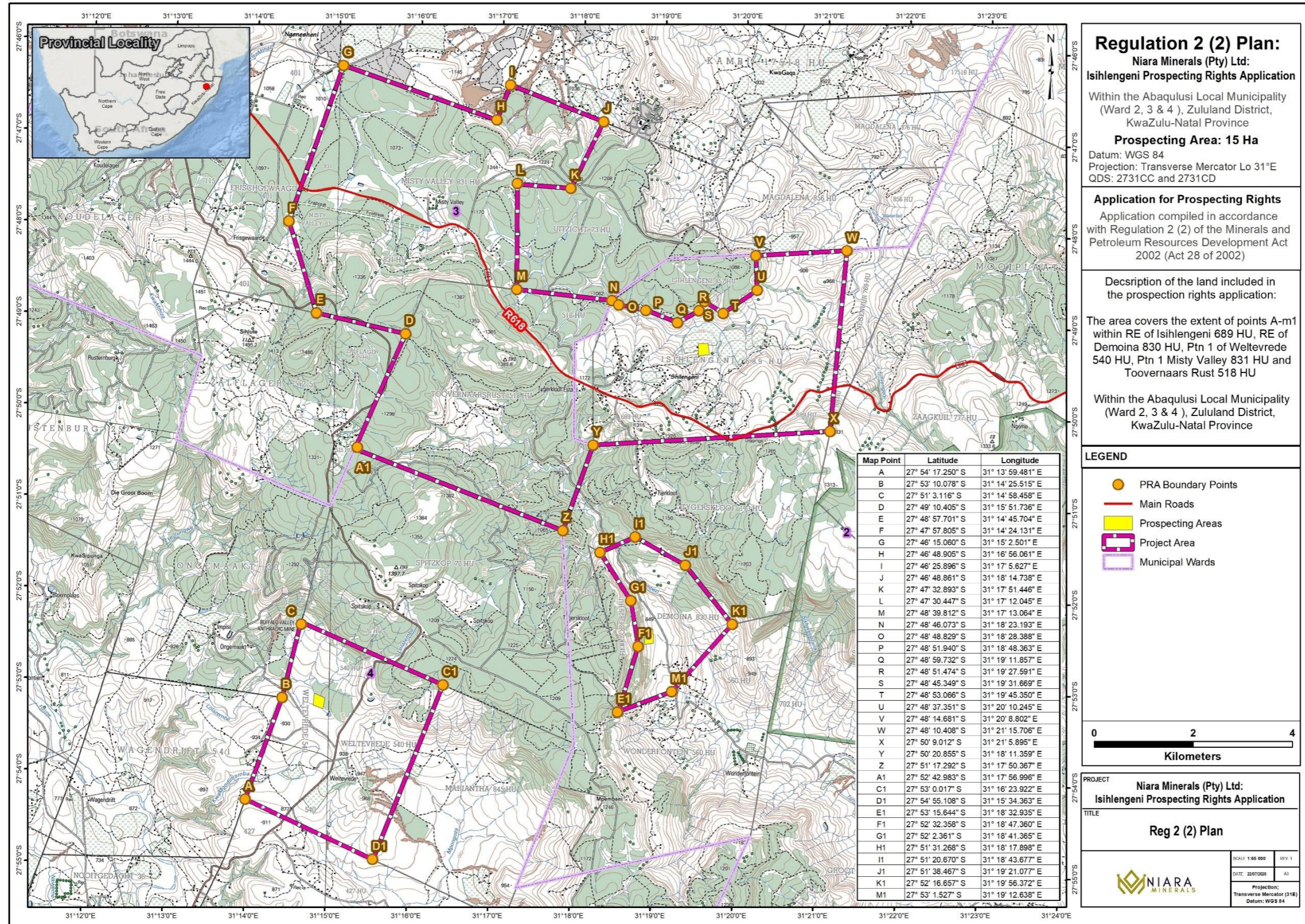


Figure 3-1: Regulation 2 (2) Plan



4 Locality Map

Attach a locality map at a scale not smaller than 1:250000 showing the nearest town and attach as **Appendix 2**.

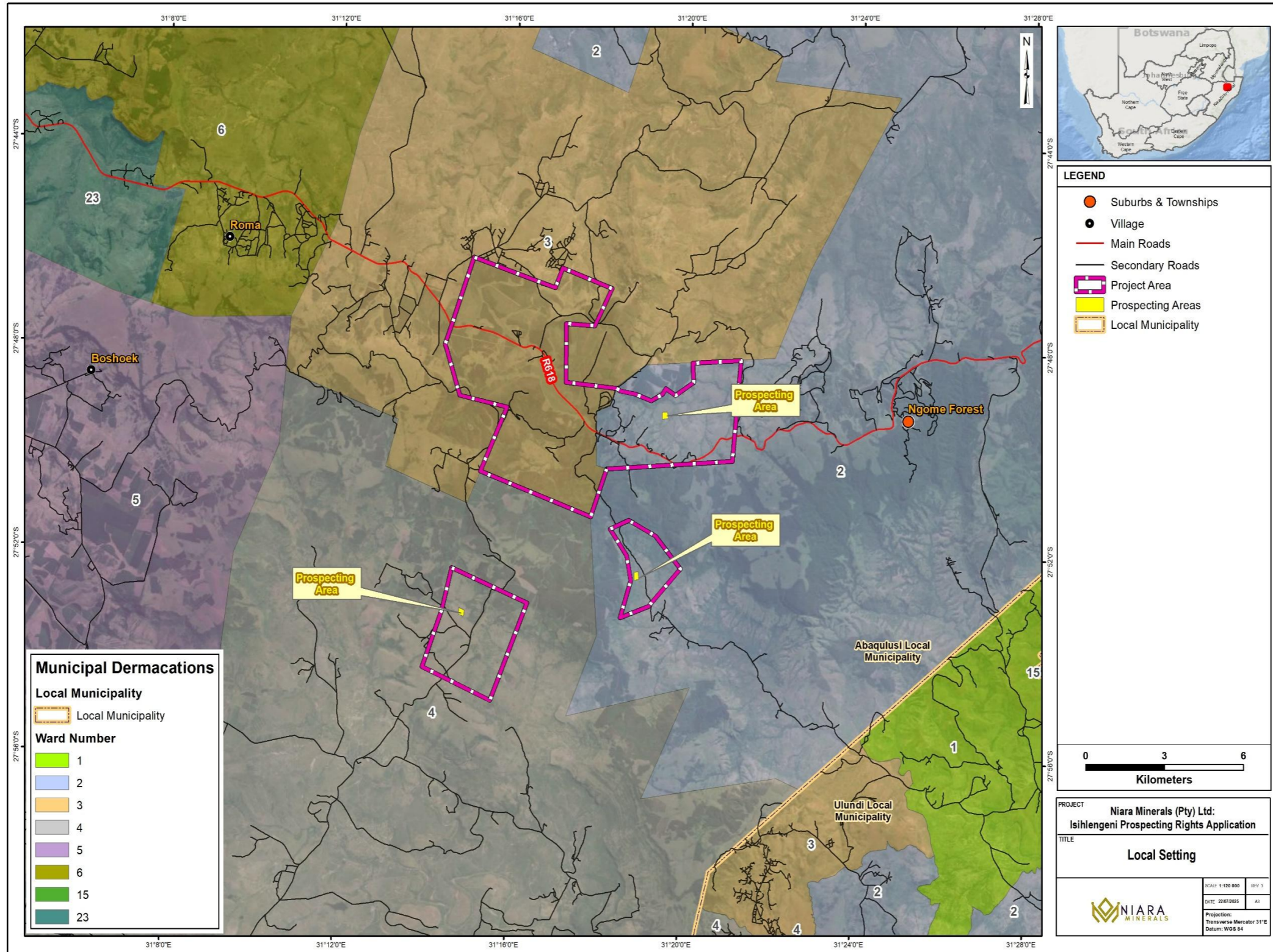


Figure 4-1 Locality map of the proposed area

5 Description of the scope of the proposed overall activity

The proposed prospecting activities by Niara Minerals will be undertaken in several phases, commencing with site establishment, followed by access road preparation, borehole drilling and sampling, and concluding with rehabilitation and environmental management. The total application area measures approximately 15 hectares and has been carefully selected to support the project's resource exploration goals while minimising environmental and social impacts. Each activity within the prospecting programme has been designed to align with applicable national legislation, including the NEMA, and the MPRDA

5.1 Site Establishment

The initial phase of the project will involve the limited clearing of vegetation at selected borehole locations to create access routes and designated operational zones. These clearings will be undertaken using a bulldozer or similarly light machinery, and only the minimum footprint necessary for drilling will be disturbed. Temporary infrastructure will be established to support the drilling operations, which may include equipment laydown areas, mobile site offices or control points, portable sanitation facilities, and water storage tanks. All site establishment activities will be executed in a manner that avoids unnecessary disturbance to vegetation, soil, and drainage patterns, with due regard for environmental sensitivity and safety.

5.2 Access Road Preparation

To the greatest extent possible, the project will make use of existing access roads to reduce the need for new surface disturbances. However, where new access routes are deemed unavoidable, they will be carefully planned based on the findings of environmental sensitivity assessments to avoid ecologically significant habitats and protected areas. Where constructed, new access roads will be developed in accordance with best environmental practices. These include the implementation of erosion control measures, adequate drainage systems, and minimal soil compaction. The objective is to ensure that access infrastructure facilitates prospecting activities while maintaining the ecological integrity of the surrounding landscape.

5.3 Borehole Drilling and Sampling

The core activity of the project involves the drilling of between 10 and 15 boreholes across the application area. Each borehole site will require a working area of approximately 500 square metres (25 m x 20 m) to accommodate the drill rig, support vehicles, containment facilities for drill cuttings, and operational safety zones. The cumulative disturbed area resulting from borehole drilling is expected to be between 0.5 and 0.75 hectares.

The boreholes may reach depths of up to 120 metres, depending on local geological conditions, and will be drilled using rotary core rigs to retrieve continuous core samples for geological analysis.

To maintain borehole integrity and prevent the contamination of groundwater aquifers, casing and grouting will be applied as necessary. Water required for drilling activities will either be sourced from local supply points or transported via mobile water tanks. The volume and use of water will be carefully monitored to avoid wastage, spillage, or over-abstraction, in line with the National Water Act, 1998 (Act No. 36 of 1998). Drill cuttings and wastewater will be managed in lined containment pits or tanks and disposed of in accordance with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). Final borehole locations will be confirmed following desktop geological analysis, field mapping, and non-invasive geophysical surveys to ensure optimal resource targeting while minimising environmental disturbance.

5.4 Environmental Management and Rehabilitation

All prospecting activities will be carried out in accordance with the environmental principles and duty of care obligations set out in NEMA and the MPRDA. Environmental management during the operational phase will be governed by applicable legal frameworks, including Sections 38 and 41 of the MPRDA, which mandate the duty to prevent environmental degradation and make financial provision for rehabilitation. In addition, the Waste Act will guide the management of drilling residues and other solid or liquid waste materials, while the National Water Act will inform the management of surface and groundwater resources.

Rehabilitation of disturbed areas will commence as soon as prospecting activities at a particular site are concluded. All boreholes will be properly sealed and decommissioned using appropriate grouting or capping techniques to prevent contamination or safety risks. Temporary infrastructure will be dismantled and removed, and disturbed surfaces will be reshaped where necessary to restore original land contours. Topsoil previously stockpiled during site clearance will be reapplied to promote soil recovery, and locally adapted indigenous vegetation will be introduced to facilitate ecological restoration.

Erosion control measures will be employed to stabilise soils, especially on sloped or disturbed terrain, and progressive rehabilitation will be prioritised throughout the life of the project rather than deferred until closure. A dedicated rehabilitation monitoring programme will be implemented to assess the success of restoration efforts and to identify and implement corrective measures where rehabilitation objectives are not being achieved. This adaptive approach ensures that environmental performance is maintained at a high standard and that ecological function is restored as close to baseline conditions as possible.

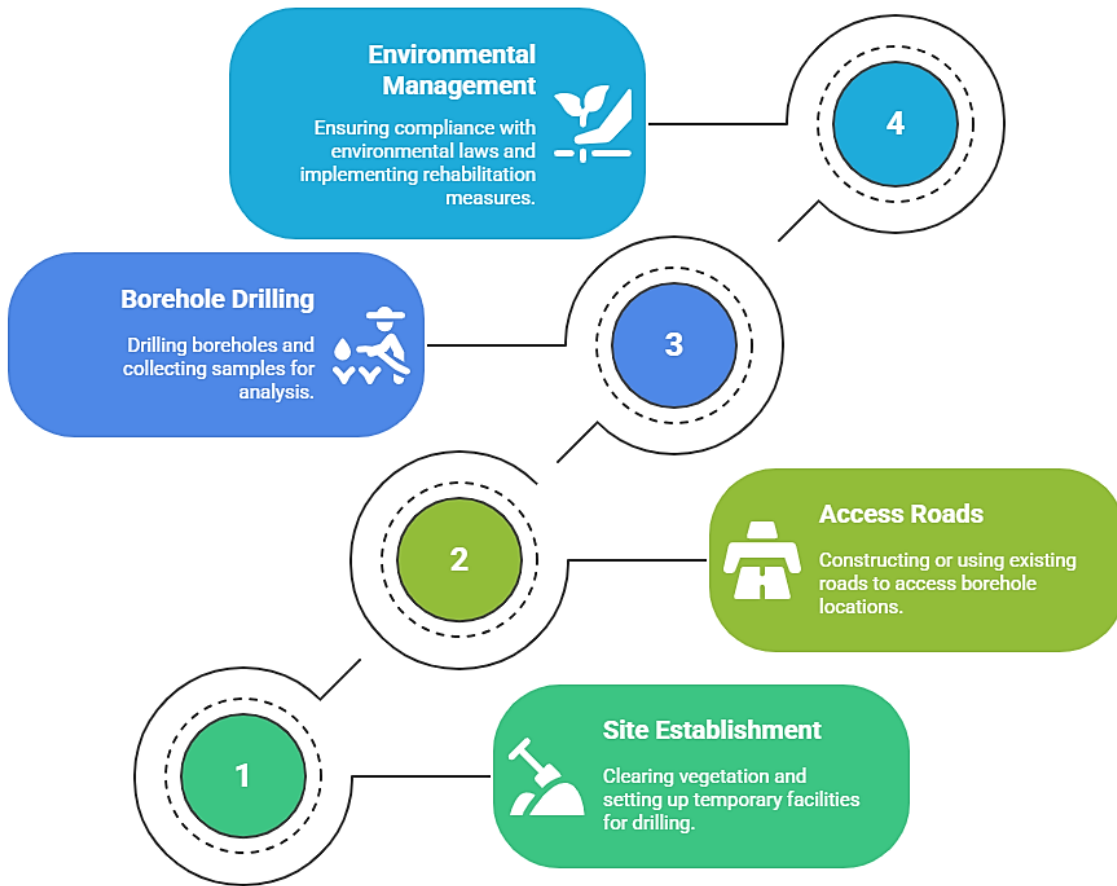


Figure 5-1: Prospecting Right Application Project Execution Phases

5.5 Listed and Specified Activities

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), certain activities require environmental authorisation before commencement. The proposed coal prospecting activities by Niara Minerals (Pty) Ltd are expected to trigger the following listed activities under Listing Notice 1 (GN R.983).

Table 5-1 provides a summary of the identified NEMA listed activities that will be triggered by the proposed prospecting project.

Table 5-1: Listed Activities

Name of Activity	Aerial Extent of the Activity (HA OR M ²)	Applicable Listing Notice GN R 3983, GN R 984 or GN R 985 (as amended)
Prospecting Right Application Area	15 ha	Activity 20 of GNR 983 (as amended)
Planned invasive ~10-15 boreholes, 25 m × 20 m (500 m ²), depths of up to 120 meters	1.5 ha	Activity 27 of GNR 983 (as amended)
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation	1.5 ha	Activity 27 of GNR 983 (as amended)
Geophysical survey	15 ha	Not Listed
Geological field mapping	15 ha	Not Listed
Access road (3m x 50m)- if necessary	60m ²	Not Listed

6 Policy and Legislative Context

Table 6-1: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	Reference where applied
<p><u>The Constitution of the Republic of South Africa, 1996</u></p> <p>Under Section 24 of the Constitution of the Republic of South Africa, 1996 (the Constitution) it is clearly stated that:</p> <p>Everyone has the right to</p> <ul style="list-style-type: none"> • an environment that is not harmful to their health or well-being; and • to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that Prevent pollution and ecological degradation; • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. 	<p>Temvelo is undertaking an BA process to identify and determine the potential impacts associated with the proposed prospecting activities. Mitigation measures recommended will aim to ensure that the potential impacts are managed to acceptable levels to support the rights as enshrined in the Constitution.</p>
<p><u>National Environmental Management Act, 1998 (Act No. 107 of 1998) and EIA Regulations (as amended in 2017)</u></p> <p>The Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended) was set in place in accordance with Section 24 of the Constitution. Certain environmental principles under NEMA must be adhered to, to inform decision making for issues affecting the environment.</p> <p>Section 24 (1)(a) and (b) of NEMA state that:</p> <p>The potential impact on the environment and socio-economic conditions of activities that require authorization or permission by law and which may significantly affect the environment, must be considered, investigated, and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.</p> <p>The EIA Regulation, 2014 was published under GN R 326 on 07 April 2017 (EIA Regulations) and came into effect on 07 April 2017. Together with the EIA Regulations, the Minister also published GN R 327 (Listing Notice No. 1), GN 325 (Listing Notice No. 2) and GN R 324 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended.</p>	<p>Activities associated with the proposed prospecting activities are identified as in the Listed Activities in the Listing Notice 1, Activity No. 20 of the NEMA Regulations GN R983 (as amended).</p> <p>The proposed project also triggers Activity 27 of the NEMA Regulations GN 983 (as amended)</p>
<p><u>Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002)</u></p> <p>The Act makes provision for equitable access to and sustainable development of the nation’s mineral and petroleum resources; and provide for matters connected therewith. Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002): Mineral and Petroleum Resource Development Regulations GNR 527 of 2004; Section 7 (1). The prospecting work programme must contain:-</p> <ul style="list-style-type: none"> • a description of how the mineral resource and mineral description of the prospecting area will be determined throughout – (i) the prospecting work to be performed; • a geological survey to be carried out; and • a geophysical survey to be undertaken. 	<p>The proposed project is applied for in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (as amended) (MPRDA) and the planned activities are according to the scope of the PWP in terms of the Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002): Mineral and Petroleum Resource Development Regulations GNR 527 of 2004.</p>

Applicable legislation and guidelines used to compile the report	Reference where applied
<ul style="list-style-type: none"> • a description of the prospecting method or methods to be implemented that may include – • any excavations, trenching, pitting, and drilling to be carried out; • any sampling and testing to be carried out; and • any other prospecting methods to be applied. 	
<p><u>National Water Act, 1998 (Act No. 36 of 1998) (NWA)</u></p> <p>The NWA ensures that water resources are used and protected in a sustainable and equitable manner. It is based on the principle that the National Government has overall responsibility and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, and that a person can only be entitled to use water if the use is permitted by the NWA.</p> <p>GN R 704 was published in June 1999 and aims to regulate the use of water for mining and related activities for the protection of water resources and states the following:</p> <ul style="list-style-type: none"> • Regulation 4: No residue deposit, reservoir or dam may be located within the 1:100-year flood line, or less than a horizontal distance of 100 m from the nearest watercourse. Furthermore, person(s) may not dispose of any substance that may cause water pollution; • Regulation 5: No person(s) may use substances for the construction of a dam or impoundment if that substance will cause water pollution; • Regulation 6 is concerned with the capacity requirements of clean and dirty water systems, and • Regulation 7 details the requirements necessary for the protection of water resources. 	<p>The proposed prospecting project will not require a WULA in terms of Section 21 of the NWA. All water used onsite will be bought and transported to the site using water bowsers.</p>
<p><u>National Environmental Management: Waste Act, 2008</u></p> <p>The National Environmental Management: Waste Act of 2008 (No. 59 of 2008) (NEM: WA) governs all aspects of waste management, with a focus on waste avoidance and minimization. NEM: WA developed a system for categorizing and licensing waste management activities. Listed waste management activities that exceed certain thresholds are subject to an impact assessment and licensing process. Activities in Category A necessitate a Basic Assessment, whereas activities in Category B necessitate a Scoping and EIA process.</p>	<p>The prospecting activities will not be generating waste that will trigger or require the application of the Waste Management License in terms of the NEMWA. However, Niara Minerals must ensure that the waste generated must be properly managed through a Waste Management Programme (WMP).</p>
<p><u>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA)</u></p> <p>The NEM:BA governs the management and conservation of South Africa's biodiversity within the framework established by NEMA. This Act also governs the protection of species and ecosystems that require national protection, as well as the management of invasive and alien species. The following regulations have been promulgated in accordance with the NEM:BA and are also relevant:</p> <ul style="list-style-type: none"> • Alien and Invasive Species Lists, 2014 published (GN R.599 in GG 37886 of 1 August 2014); • National Environmental Management: Biodiversity Act, 2004: Threatened and Protected Species Regulations; and 	<p>A Fauna and Flora Impact Assessment has been conducted and findings included in this BAR</p>
<p><u>National Noise Control Regulations, R.154 of 1992 (the Noise Regulations) promulgated in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</u></p> <p>The National Noise-Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCRs) form part of the Environmental Conservation Act and these Regulations apply to external noise.</p>	<p>The EMPr includes measures to control and manage noise.</p>

Applicable legislation and guidelines used to compile the report	Reference where applied
<p>The NCRs differentiates between Disturbing Noise levels (which is objective and scientifically measurable which are generally compared to existing ambient noise level) and Noise Nuisance (which is a subjective measure and is defined as noise that <i>“disturbs or impairs or may disturb or impair the convenience or peace of any person”</i>).</p> <p>Local Authorities use Controlled Areas to identify areas with high noise levels. Restrictions have been set out for development that occurs in these Controlled Areas. These regulations make provision for guidelines pertaining to noise control and measurements. The regulations make reference to the use of the South African National Standards 10103:2008 (SANS) guidelines for the Measurement and Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication.</p>	
<p><u>The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</u></p> <p>The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is the main piece of legislation in South Africa that protects and regulates the management of heritage resources. The Act requires Heritage Resources Agencies, in this case in the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority of Gauteng (PHRA-G), to be notified of any developments that may exceed certain minimum thresholds as soon as possible.</p>	<p>A Heritage Impact Assessment has been conducted and finding form part of this BAR.</p>

7 Need and desirability of the proposed activities

7.1 Need for the Proposed Prospecting Activities

The proposed prospecting activities by Niara Minerals (Pty) Ltd are crucial for the exploration of coal, pseudo-coal, and torbanite/oil shale. The application area spans various farm portions, namely the Remaining Extent of Isihlengeni No. 689; the Remaining Extent of Demoina; Portion 1 of Weltevrede No. 540; Portion 1 of Misty Valley No. 831; Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. The proposed prospecting area is located within the Abaqulusi Local Municipality, under the Amajuba District Municipality in the KwaZulu-Natal Province, covering a total area of approximately ~15 hectares.

The primary need for the proposed prospecting is to:

- Determine the extent and quality of the coal resource in the area to assess the feasibility of future coal extraction and mining operations. This is essential to enable informed decision-making for potential development of coal mining projects in the region.
- Support national energy security by identifying new coal resources that can be used for power generation. The continued availability of coal as an energy source is vital for the South African energy sector, contributing to base-load electricity generation and ensuring stable energy supply.
- Stimulate local and regional economic development by providing information that may lead to future mining operations, creating job opportunities, boosting the local economy, and attracting investments into the region. The exploration activities themselves will create temporary employment during the prospecting phase, with the potential for further job creation should mining operations commence.

The prospecting activities are in line with national and regional development objectives, including the South African government's Integrated Resource Plan (IRP) and the KwaZulu-Natal Provincial Growth and Development Strategy, which emphasize sustainable resource utilization and industrial development.

7.2 Desirability of the Proposed Prospecting Activities

The proposed prospecting activities are desirable for several reasons, including:

- **Contributing to resource optimization:** The exploration of coal resources will allow for better management and optimization of South Africa's mineral resources. By identifying and assessing untapped coal deposits, the project could contribute to increasing the lifespan of the local and national coal industry, supporting economic growth and providing employment opportunities.

- **Enhancing energy security and stability:** As coal continues to play a critical role in South Africa's energy mix, discovering and assessing new coal deposits can help maintain energy stability, reduce reliance on energy imports, and improve long-term energy security for the country.
- **Addressing socio-economic needs:** The project offers opportunities for job creation, skills development, and local procurement during the prospecting phase. Should the prospecting results be favorable, the transition to full-scale mining could generate additional employment and contribute to the overall socio-economic development of the Abaqulusi Local Municipality and surrounding areas.
- **Compliance with national policies:** The proposed prospecting activities are consistent with South Africa's Mineral and Petroleum Resources Development Act (MPRDA) and the country's broader objectives for mineral resource development, economic growth, and environmental sustainability. By following a structured process for obtaining environmental authorisation and conducting prospecting activities in compliance with all relevant legislation, Niara Minerals is committed to conducting responsible and sustainable exploration.
- **Environmental management and mitigation:** While the project involves earthworks and land disturbance, the prospecting activities are designed to minimize environmental impact. Rehabilitation measures will be implemented throughout the process, ensuring that any disturbances are temporary and the area is restored to its original state following the completion of prospecting. The activities will be conducted with due consideration of all applicable environmental regulations and best practices to minimize long-term ecological impacts.

8 Motivation for the overall preferred site, activities, and technology alternative

8.1 Motivation for the Preferred Site

The proposed prospecting project is situated across several farm portions, including the Remaining Extent of Isihlengeni No. 689, the Remaining Extent of Demoina, Portion 1 of Weltevrede No. 540, Portion 1 of Misty Valley No. 831, and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. Located within the Abaqulusi Local Municipality under the Amajuba District Municipality in KwaZulu-Natal Province, the project area spans approximately 15 hectares. Geographically, it is positioned about 3 kilometers south of Ngenetseni and approximately 23 kilometers south of Louwsburg, providing a strategically accessible location for the proposed activities.

The selection of this site is underpinned by a combination of geological, logistical, and environmental considerations that collectively justify its suitability for prospecting. Geologically, the area is promising due to the regional occurrence of targeted coal deposits, which are influenced by the local geological framework. The prospecting activities are designed to confirm the presence, extent, and quality of these mineral deposits. Should the exploration phase validate the occurrence of economically viable and environmentally sustainable coal resources, subsequent steps will be undertaken to determine optimal extraction methods. This approach ensures that any future mining activities are grounded in comprehensive data and aligned with sustainable practices.

Logistically, the site benefits from its proximity to existing infrastructure, which significantly enhances its operational feasibility. Located along the R618 and near the towns of Ngenetseni and Louwsburg, the area is well-connected to road networks, water resources, and electricity supplies. This accessibility reduces the need for extensive new infrastructure development, thereby lowering both environmental impacts and project costs. Furthermore, the site's location facilitates the transportation of materials and equipment, while also enabling the recruitment of a local workforce. These factors contribute to the project's potential to deliver socio-economic benefits to the surrounding communities, including job creation and local economic stimulation.

From an environmental and social perspective, preliminary screenings indicate that the site does not encompass critical biodiversity areas or present significant social conflicts. To ensure minimal environmental disturbance, detailed environmental assessments will be conducted as part of the project's progression. These assessments will inform the development of robust mitigation measures to address any potential impacts during the prospecting phase. Additionally, progressive rehabilitation will be implemented throughout the project lifecycle to restore disturbed areas and maintain environmental integrity. By integrating these measures, the project aims to balance resource exploration with responsible environmental stewardship and community well-being.

8.2 Motivation for the Preferred Activities

The proposed prospecting activities, including site preparation, vegetation clearance, excavation, and drilling, have been selected based on their suitability to the region's geological conditions and their alignment with industry standards for mineral exploration.

The motivation for these activities includes:

- **Minimizing Environmental Impact:** The proposed prospecting activities are designed to minimize environmental disturbance. The activities will involve the minimal clearance of vegetation for site establishment and drilling, utilizing bulldozers for vegetation removal and excavators for excavation. The use of existing access roads will also reduce environmental disturbance.

- **Data Quality and Resource Confirmation:** The drilling and sampling will provide accurate data on coal seam characteristics and the distribution of the mineral resource. These methods are well-suited for coal prospecting, as they allow for detailed analysis of coal quality and quantity, which is critical for future mining feasibility studies.
- **Regulatory Compliance:** The selected activities comply with the requirements of the Mineral and Petroleum Resources Development Act (MPRDA), National Environmental Management Act (NEMA), and other relevant legislation. The activities will be conducted according to best practices to ensure full compliance with environmental and safety regulations.
- **Socio-economic Considerations:** The prospecting activities will create temporary jobs and skills development opportunities for local communities. Should the exploration phase prove successful, it could lead to the development of a full-scale mining project, generating long-term employment and economic benefits for the region.

8.3 Motivation for the Preferred Technology Alternative

The technology and methods selected for the proposed prospecting activities are considered the most effective and efficient for achieving the project's objectives. The selection of these technologies is motivated by the following factors:

- **Minimizing Disturbance and Impact:** The prospecting activities will utilize appropriate machinery to minimize environmental impact. Bulldozers will be used to clear vegetation, while excavators and rigid haul trucks will be employed to remove topsoil and drilling sites. This equipment is best suited for the geological conditions and will ensure that the prospecting process is conducted efficiently with minimal disruption to the environment.
- **Effective Sampling:** The drilling and sampling will provide detailed geological data, which is essential for determining the feasibility of coal extraction. The material will be screened using a scrubber and stockpiled for later analysis, ensuring the collection of high-quality samples.
- **Environmental Best Practices:** The technologies selected for the project are designed to adhere to environmental best practices. Dust suppression techniques, erosion control measures, and noise mitigation will be implemented during the prospecting phase to ensure minimal environmental disruption.
- **No Alternative Technologies Identified:** Based on the nature of the prospecting activities, there are no alternative technologies identified that would be more appropriate for the coal exploration project.

The methods proposed, including drilling and sampling, are standard industry practices for this type of exploration and are the most effective for confirming the presence of coal deposits.

8.4 Alternative Considerations

The proposed prospecting project within the Abaqulusi Local Municipality has been exclusively focused on the selected site due to its unique geological attributes, which are critical for the successful exploration of coal deposits. The project area, encompassing portions of Isihlengeni No. 689, Demoina, Weltevrede No. 540, Misty Valley No. 831, and Toovernaars Rust No. 518, lies within a historically recognized coal-bearing region of KwaZulu-Natal Province. The geological framework of this area is characterized by specific lithological and structural features conducive to the formation and preservation of coal seams, making it the only viable location for the proposed prospecting activities. Alternative sites were not considered, as the regional geology outside this area does not exhibit the same favorable conditions for coal occurrence, rendering exploration elsewhere inefficient and unlikely to yield comparable results.

The decision to focus solely on this site is further supported by its alignment with the project's technical and economic objectives. The targeted coal deposits are hypothesized to exist in sufficient quality and quantity within this area, based on historical geological data and regional studies. Prospecting in this location allows for a focused and efficient exploration effort, optimizing resource allocation and minimizing unnecessary environmental disturbance in less promising areas. The proposed prospecting activities, including geophysical surveys and limited drilling, have been selected as the most effective and least invasive methods to confirm the presence, extent, and quality of the coal deposits. These techniques are industry-standard for early-stage exploration and are designed to gather critical data while adhering to environmental best practices.

Moreover, the site's strategic advantages reinforce its exclusivity as the preferred location. Its proximity to existing infrastructure, such as the R618 road network and nearby towns like Ngenetseni and Louwsburg, ensures logistical efficiency, reducing the need for extensive new infrastructure that would increase both costs and environmental impacts. The absence of alternative sites with comparable geological potential and logistical benefits further solidifies the rationale for selecting this location. Should the prospecting phase confirm the presence of economically viable coal deposits, subsequent phases will involve detailed assessments to develop a comprehensive mining plan, incorporating environmentally sustainable extraction methods tailored to the site's specific characteristics. By concentrating efforts on this geologically and logistically optimal site, the project maximizes its potential for success while prioritizing environmental responsibility and operational efficiency.

9 Full description of the process followed to reach the proposed preferred alternatives within the site

NB! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

9.1 Details of the development footprint alternatives considered.

9.1.1 Details of the Development Footprint Alternatives Considered

The proposed prospecting activities by Niara Minerals (Pty) Ltd are intended for the exploration of coal, pseudo-coal, and torbanite/oil shale on various farm portions, namely the Remaining Extent of Isihlengeni No. 689; the Remaining Extent of Demoina; Portion 1 of Weltevrede No. 540; Portion 1 of Misty Valley No. 831; and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. The application area falls within the Abaqulusi Local Municipality, under the Amajuba District Municipality in the KwaZulu-Natal Province.

No site alternatives were considered for the prospecting right application, as the presence and location of coal-bearing formations are dictated by natural geological conditions. Unlike other development types where multiple site options might be viable, coal exploration is inherently location-specific, and prospecting must be undertaken where the mineral resource is geologically located.

However, within the approved prospecting area, alternative methodologies and operational layouts were considered to minimise environmental impacts. These include:

- Utilising borehole drilling as the primary invasive technique, instead of trenching, to reduce surface disturbance while still allowing for accurate geological sampling and assessment.
- Optimising the placement of boreholes based on the results of desktop studies, geophysical surveys, and field mapping, to avoid ecologically sensitive features such as wetlands, drainage lines, and areas of high biodiversity.
- Minimising total surface disturbance, with borehole pads limited to approximately 500 m² each, and ensuring that the overall project footprint, including access roads and support zones, does not exceed 15 hectares.
- Implementing progressive rehabilitation, including proper sealing of boreholes post-drilling, reapplication of topsoil, and revegetation using indigenous species to support site recovery.

While the specific location of the coal deposit limits the selection of alternative sites, methodological and layout alternatives have been considered and will be refined throughout the project life cycle to ensure environmental responsibility, operational efficiency, and regulatory compliance.

9.1.2 The property on which or location where the activity is proposed to be undertaken;

No alternative properties or locations were considered for the exploration of coal, pseudo-coal, and torbanite/oil shale. The application area spans various farm portions, namely the Remaining Extent of Isihlengeni No. 689; the Remaining Extent of Demoina; Portion 1 of Weltevrede No. 540; Portion 1 of Misty Valley No. 831; and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. The proposed prospecting area is located within the Abaqulusi Local Municipality, under the Amajuba District Municipality in the KwaZulu-Natal Province.

Coal and related resources occur in specific geological formations, and therefore prospecting activities must be conducted in locations where these mineral deposits are known or suspected to exist. Unlike other types of developments where multiple site alternatives may be viable, coal prospecting is inherently constrained by geological factors and limited to areas with confirmed or potential coal-bearing strata.

Although no alternative locations were feasible due to the fixed nature of the resource, alternative methodologies within the designated prospecting area have been considered to minimise environmental impact. These include:

- Replacing invasive trenching with borehole drilling to reduce surface disturbance while still enabling subsurface geological investigation;
- Strategically locating boreholes based on environmental sensitivity mapping, desktop assessments, and geophysical survey data to avoid sensitive features such as wetlands, riparian zones, and areas of ecological importance;
- Implementing strict rehabilitation measures, including proper sealing of boreholes, site restoration, and revegetation with indigenous species to support environmental recovery post-prospecting.

These measures ensure that while the location is fixed due to geological constraints, the approach to prospecting remains environmentally responsible and in line with regulatory requirements.

9.1.3 The type of activity to be undertaken;

The proposed activity involves the drilling of approximately 10-15 boreholes to explore for coal, pseudo-coal, and torbanite/oil shale within the approved prospecting area. The specific location of each borehole will be determined following the completion of desktop geological assessments, field mapping, and geophysical surveys, which will guide optimal placement based on both mineral potential and environmental sensitivity.

At this stage, alternative borehole locations cannot be confirmed, as siting depends on the interpretation of geological data and site-specific environmental considerations. However, flexibility will be maintained during planning to avoid sensitive habitats and ensure minimal environmental disturbance.

In terms of access, two alternatives were considered:

- Constructing new access roads, or
- Utilising existing roads and informal tracks where available.

The preferred option is to use existing roads and tracks to the greatest extent possible, as this significantly reduces the need for vegetation clearance and minimizes the risk of erosion, habitat fragmentation, and other associated environmental impacts. Where new access paths are necessary, they will be kept to a minimum footprint and routed based on an environmental sensitivity assessment.

This approach ensures that while the activity is technically invasive, its implementation is strategically planned to reduce environmental impact and maintain compliance with regulatory and sustainability objectives.

9.1.4 The design or layout of the activity;

As the proposed prospecting activities involve borehole drilling only, with no permanent or complex surface infrastructure, no significant design or layout alternatives were necessary for the core activity area. Boreholes will be dispersed within the designated 15-hectare prospecting footprint, and their exact locations will be finalised based on the results of desktop studies, field mapping, and geophysical surveys.

However, alternatives were considered for the placement of support infrastructure, including the campsite and temporary equipment staging area. Options assessed included:

- A mobile campsite or modular setup that can move with drilling progress;
- An offsite campsite, located away from the immediate project footprint.

These alternatives were evaluated based on environmental sensitivity, proximity to access routes, and operational efficiency. The preferred option will minimise disturbance to sensitive ecological features and align with best environmental management practices.

Given the temporary and low-impact nature of the infrastructure, the layout is designed to be flexible, enabling repositioning if required due to environmental or logistical considerations. The final layout will be confirmed during detailed planning and subject to environmental and landowner constraints.

9.1.5 The technology to be used in the activity

The prospecting activities proposed in the Prospecting Works Programme will follow a phased approach, where each phase is informed by the results of the preceding phase. As such, no alternative technologies were identified at this stage; instead, a reliable sequence of standard and trusted prospecting techniques will be employed.

The primary invasive technique will involve the use of rotary core drilling rigs, which are widely accepted in the mining industry for their ability to produce high-quality subsurface geological samples. This technology allows for the accurate assessment of coal seams, pseudo-coal, and torbanite/oil shale with minimal surface disturbance.

Support technologies may include:

- Geophysical survey equipment (e.g., resistivity or seismic tools) to refine borehole placement;
- Mobile water storage and recycling systems for managing drilling fluid;
- Lined containment pits or tanks for temporary storage of drill cuttings and water;
- Low-impact access equipment to reduce the need for extensive road construction.

All equipment and technologies will be selected based on their efficiency, environmental performance, and compliance with DMRE and NEMA regulations.

This approach ensures that prospecting is conducted using technically appropriate and environmentally responsible methods suited to the geological context of the site.

9.1.6 The operational aspects of the activity; and

The operational aspects of the proposed prospecting activities will follow a phased exploration programme focused on the drilling of approximately 10-15 boreholes to investigate the presence and quality of coal, pseudo-coal, and torbanite/oil shale. Activities will be designed and implemented in a manner that minimises environmental disturbance while ensuring compliance with all regulatory requirements.

9.1.6.1 Site Establishment

- Vegetation clearing will be limited to the minimum area required for safe and efficient drilling operations.
- A bulldozer or similar light earth-moving equipment will be used to clear designated borehole sites and establish temporary infrastructure such as laydown areas and equipment storage zones.
- Each borehole pad will occupy an area of approximately 25 m × 20 m (500 m²), with up to 10-15 boreholes distributed across the prospecting area.

- Temporary facilities may include:
 - Mobile water tanks
 - Portable sanitation units
 - A temporary site office or shelter for personnel and equipment

9.1.6.2 Access Roads

- Existing roads and farm tracks will be utilised as far as possible to limit surface disturbance.
- Where new access routes are unavoidable, they will be designed based on an environmental sensitivity assessment, avoiding wetlands, drainage lines, and sensitive habitats.
- All new access paths will be constructed using best environmental practices, including proper drainage, erosion control, and minimal compaction.

9.1.6.3 Drilling operation

- The core operational activity is rotary core drilling for subsurface sampling.
- Approximately 10-15 boreholes, each reaching depths of up to 120 meters, will be drilled to assess the quality, thickness, and extent of coal-bearing strata.
- Borehole placement will be guided by the results of desktop studies, geophysical surveys, and field mapping.
- Drilling will be conducted using mobile drilling rigs, supported by light trucks and water bowsers.
- Casing and grouting will be applied where aquifers or unstable zones are encountered to prevent groundwater contamination and ensure borehole integrity.
- Water use will be managed carefully, with water supplied by mobile tanks or licensed sources. All drilling wastewater and cuttings will be contained in lined pits or tanks and managed according to the National Environmental Management: Waste Act, 2008.

9.1.6.4 Processing operations

- No on-site processing operations (e.g., crushing, screening, washing, or beneficiation) will take place as part of this prospecting project.
- Coal and associated material recovered from drilling will be collected and transported to an off-site laboratory for analysis to determine the quality and characteristics of the deposit.

- The focus of the project is exploratory in nature, assessing the presence, depth, and quality of the target resources.
- Once drilling is complete, all boreholes will be sealed or decommissioned, and sites will be rehabilitated through reshaping, topsoil reapplication, and re-vegetation with indigenous species.

All operational activities will be implemented in compliance with the Mineral and Petroleum Resources Development Act (MPRDA), National Environmental Management Act (NEMA), and other applicable environmental legislation.

9.1.7 The option of not implementing the activity.

The option of not implementing the proposed exploration of coal, pseudo-coal, and torbanite/oil shale on the various farm portions, namely the Remaining Extent of Isihlengeni No. 689; the Remaining Extent of Demoina; Portion 1 of Weltevrede No. 540; Portion 1 of Misty Valley No. 831; and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518, located within the Abaqulusi Local Municipality under the Amajuba District Municipality in the KwaZulu-Natal Province, would result in no physical disturbance to the environment. Existing land uses (such as agriculture or conservation) would remain unchanged, and potential short-term environmental impacts associated with prospecting, such as soil disturbance, vegetation clearance, and localised groundwater interaction, would be entirely avoided.

However, not proceeding with the activity would also mean that the coal and associated resources in the area would remain unassessed, and the opportunity to determine the economic viability of a potential mining operation would be lost. This could have broader implications for:

- Local and regional economic development
- Employment and income generation
- Contributions to South Africa's energy mix and resource security

Importantly, the revised prospecting method, borehole drilling rather than trenching, significantly reduces environmental disturbance, with boreholes occupying small footprints (~500 m² each) and rehabilitation conducted immediately after completion. Environmental controls, site selection protocols, and progressive rehabilitation further ensure that the prospecting process is conducted in a responsible and compliant manner.

Therefore, while the “no-go” option avoids all environmental impact in the short term, it also prevents the realisation of potential long-term socio-economic benefits linked to sustainable mineral resource development. The carefully planned and environmentally managed prospecting activity presents a balanced approach to resource exploration with reduced environmental risk.

9.2 Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB! The affected parties must be specifically consulted regardless of whether they attended public meetings. Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

9.2.1 Announcement Phase

I&APs were notified about the Project, as well as provided with an opportunity to provide comments on the draft BAR. The announcement phase included the activities detailed below.

9.2.2 Newspaper Advert

Advertisement was placed in the local newspaper namely: Northern Natal newspaper on 12 June 2025, to notify Interested and Affected Parties of the proposed project and methods to register and to submit comments within 30 days regarding the Basic Assessment Report.

9.2.3 Background Information Document (BID) and Letters of Invitation

Written notice and Background Information Document (BID) providing a description of the proposed development were emailed and hand delivered to Interested and Affected Parties, including neighbours, competent authority and other relevant Government departments from 19 July 2025

9.2.4 Site notice

Site notices informing I&APs of the application were placed at the strategic location (R618 route that traverse the project site, Hamu high school and SAPS Ngome police station and other public places) on 21 June 2025;

9.2.5 Public meeting

A public meeting with the interested and affected parties to discuss the draft BAR were held on the 25th of June 2025, 28th of June 2025 and 26th of July 2025.

9.2.6 Notification E-mails and SMS

Letters notifying were emailed to stakeholders of the release of the Draft Basic Assessment Report from the 19th of June 2025.

9.3 Summary of issues raised by I&APs

A comments and response report will be developed to record and document the concerns, comments, viewpoints and questions (collectively referred to as 'issues') raised by the stakeholders and authorities during the PPP. The

comments and response report will list all the concerns / issues together with the project teams' responses and will be included in the final BAR. Registered I&APs will be notified of the progress of the proposed Project as well as have access to necessary documentation. Furthermore, all stakeholders will be notified of the outcome of the application process.

9.4 Baseline Environment: The environment affected by the proposed activity.

9.4.1 Regional Setting

The proposed project area falls within the jurisdiction of the Abaqulusi Local Municipality within the Amajuba District Municipality in Figure 4. Project is located approximately 3km South of Ngenetseni town and approximately 23km South of Louwsburg Town

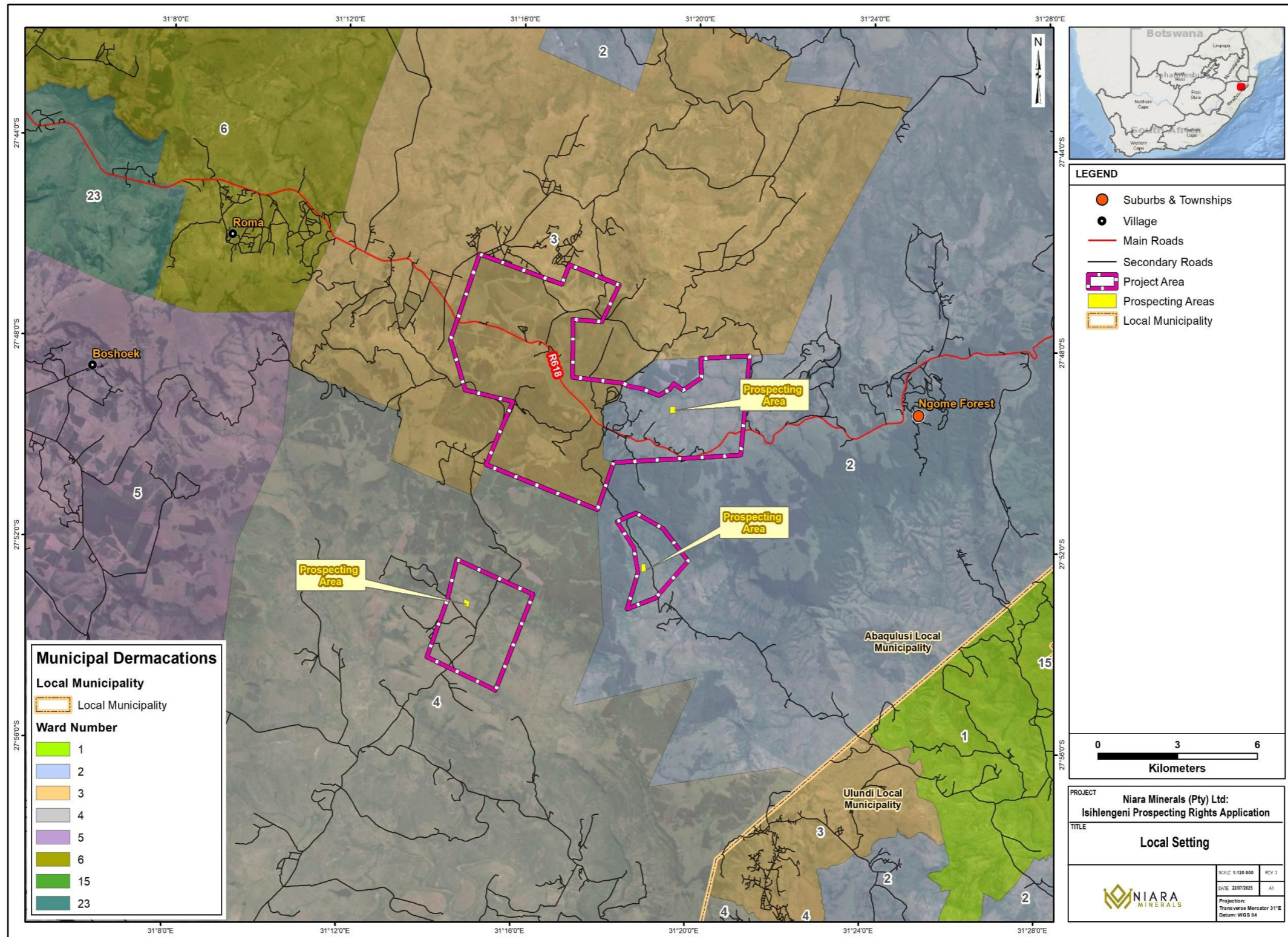


Figure 9-1 Municipality Boundaries

9.4.2 Climate

Isihlengi, located within the Abaqulusi Local Municipality, experiences a temperate climate characterized by warm summers and cool winters. The region's elevation and inland position influence its weather patterns, contributing to seasonal variations in temperature and rainfall. While there is no dedicated weather station in Isihlengi, climate data from the nearby Vryheid weather station, situated approximately 30 km away, provides a reliable proxy for understanding local conditions due to the similar topography and elevation between the two areas.

Temperature:

During the summer months (December to February), average daytime temperatures in the region range from 25°C to 27°C, with nighttime temperatures cooling to between 14°C and 16°C. In winter (June to August), daytime temperatures typically range from 19°C to 21°C, while nighttime temperatures can drop to between 4°C and 6°C. Occasional frost can occur during winter, particularly in low-lying or open rural areas.

Precipitation:

The area receives moderate rainfall, primarily concentrated in the summer months (November to March), with annual precipitation averaging around 800 mm. December is generally the wettest month, often recording over 160 mm of rainfall. The winter season is markedly dry, with June and July experiencing the lowest precipitation levels, sometimes less than 20 mm monthly. Rainfall patterns in the area are shaped by convective summer storms and occasional orographic influence from surrounding uplands.

Wind:

Wind conditions are generally moderate, with prevailing winds from the southeast. Wind speeds tend to be higher during transitional seasons (spring and autumn), with occasional gusts during summer thunderstorms. These wind patterns can influence localized microclimates and are relevant for both agriculture and infrastructure planning.

These climatic conditions support mixed agricultural activities, including livestock grazing and the cultivation of crops suited to summer rainfall. However, variability in rainfall, occasional frost, and moderate wind conditions highlight the need for climate-adaptive planning, especially in rural and smallholder contexts such as Isihlengi.

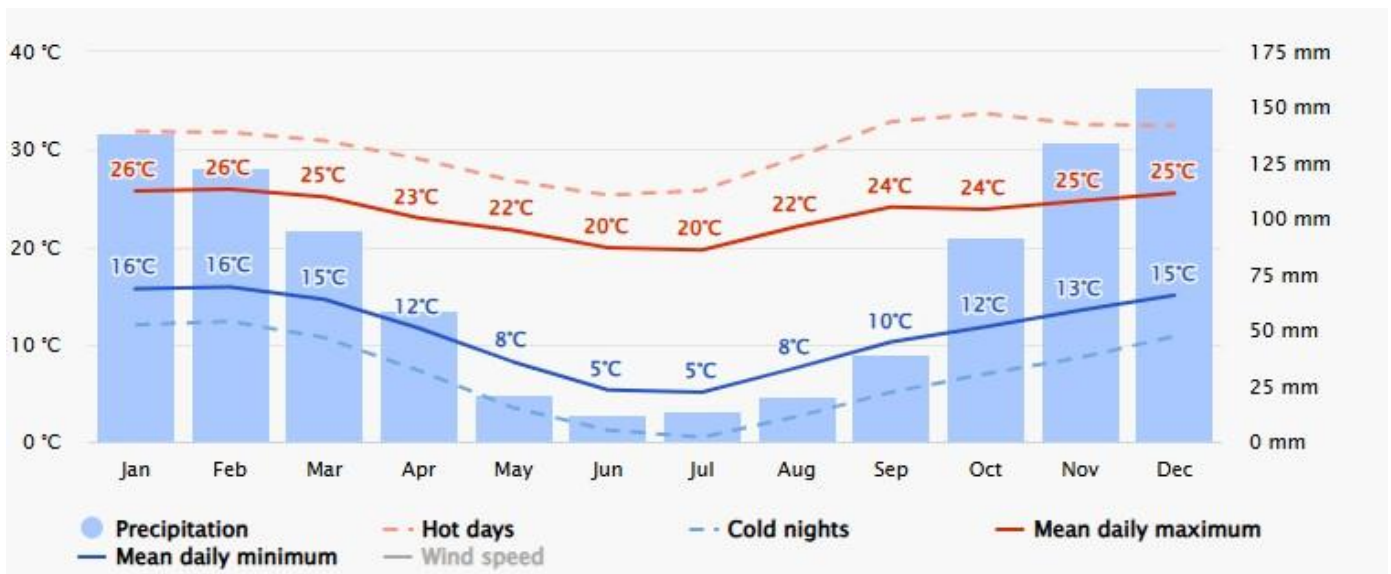


Figure 9-2: Average climatic conditions for project area (<https://www.meteoblue.com>)

Isihlengi’s wind patterns are best understood through data from the nearby Vryheid weather station, as no dedicated meteorological station exists within the settlement itself. Given the close proximity and similar topographical features, Vryheid provides a reliable representation of wind conditions in Isihlengi.

Wind Direction:

- The predominant wind directions in Vryheid are from the southeast and east, with occasional shifts to the south and southwest. These patterns reflect typical inland KwaZulu-Natal atmospheric circulation, shaped by regional pressure systems.

Wind Speed:

- The windier period in the area spans from late May to late November, during which average wind speeds frequently exceed 14 km/h (approximately 8.7 mph).
- During this season, wind speeds typically range between 1.0 and 4.0 m/s (3.6 to 14.4 km/h), with periodic gusts above 6 m/s (21.6 km/h), especially during frontal systems or dry-season weather patterns.

These conditions suggest that Isihlengi experiences predominantly moderate wind speeds, with stronger winds more common during mid-year months. While Vryheid provides a general climate profile, local terrain around Isihlengi, such as hills, valleys, and open grasslands, can influence actual wind behavior on a micro-scale. This has implications for dust generation, infrastructure design, and environmental planning, particularly in the context of ongoing or proposed development activities in the area.

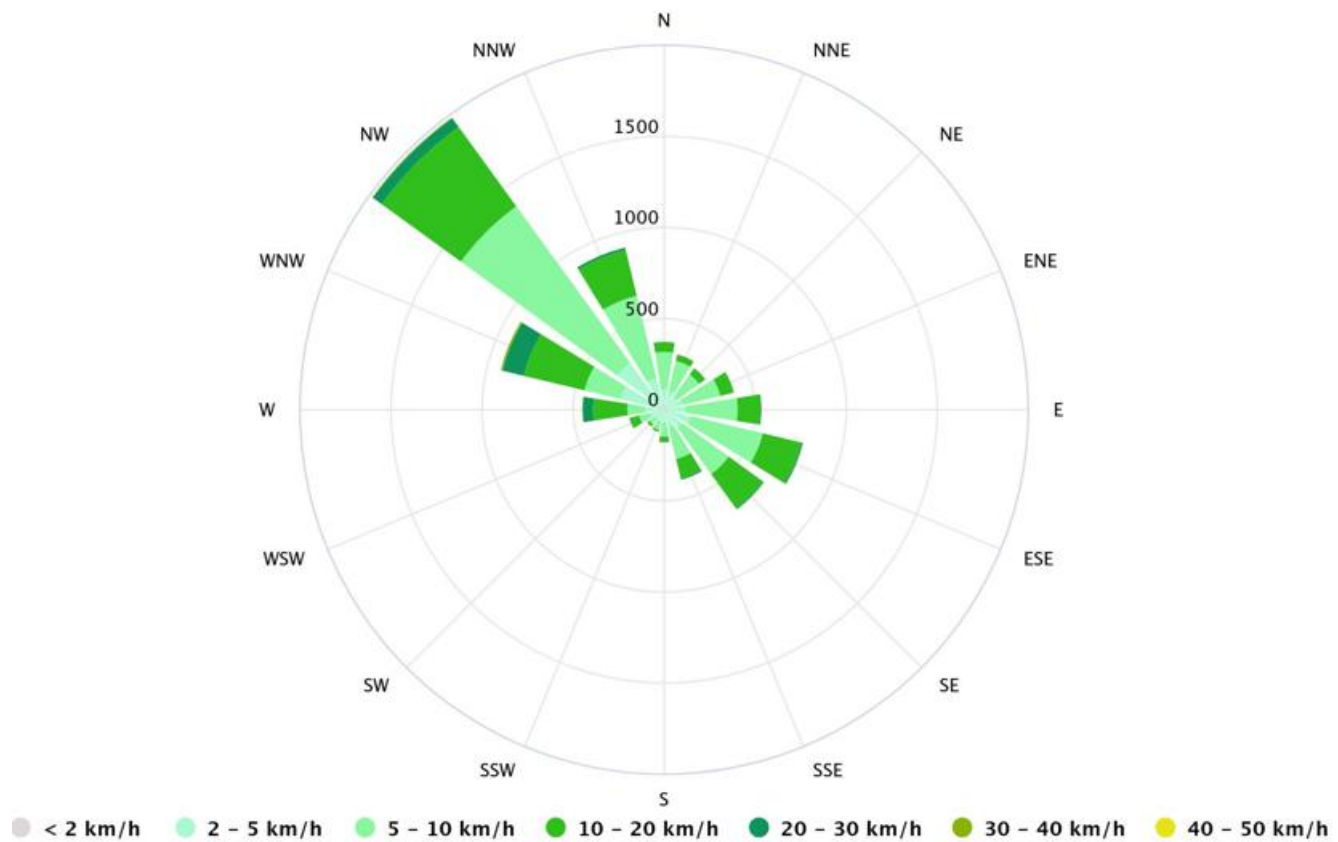


Figure 9-3: Wind Rose for project area (<https://www.meteoblue.com>)

9.4.3 Geology and Soils

The geology of the project area is complex and stratigraphically varied, with the dominant formations being the JD Dolerite, PP, shale and siltstone, and PV, sandstone, shale, and grit with interbedded coal and oil-shale beds (Figure 9-4). These formations are representative of the Ecca Group within the Karoo Supergroup, which is geologically significant for its fossil fuel-bearing sequences (Johnson et al., 2006; Catuneanu et al., 2005).

The JD Dolerite occurs as intrusive sills and dykes, cutting through sedimentary strata. It is a medium- to coarse-grained igneous rock of volcanic origin, typically associated with the Jurassic Karoo magmatic event. These intrusions can alter surrounding sedimentary rocks through contact metamorphism and may act as barriers or conduits for groundwater flow, depending on their extent and fracturing (Smith, 2018).

The PV Formation is the dominant lithological unit in the area and is composed predominantly of sandstone, shale, and grit, interbedded with coal and oil-shale seams. These coal-bearing sequences are of economic importance and were deposited in fluvio-deltaic environments during the Permian period. The grit and sandstone units provide structural support, while the finer-grained shales host organic-rich layers that have led

to the formation of oil shale and coal (Cairncross, 2001). These formations are consistent with the region's known potential for coal mining and hydrocarbon resource exploration.

The PP Formation is composed mainly of shale and siltstone, which are indicative of low-energy depositional environments such as offshore or lacustrine settings. These fine-grained sediments often act as cap rocks or aquitards, influencing groundwater dynamics and gas migration (Johnson et al., 2006).

In limited portions of the site, CPD (Dwyka Group) tillite is also present. This diamictite is of glacial origin and represents some of the oldest strata in the area, deposited during the Late Carboniferous glaciation. Overlying this are minor zones of Surbornian shale, dropstone-bearing shale, and sandstone, reflecting episodic sedimentation in cold-climate marine settings (Visser, 1990).

Additionally, small outcrops of ZMP (Mokolian age) volcanic rocks are noted in the area, comprising amygdaloidal acid lava, tuff, tuff breccia, sandstone, mudstone, and orthoquartzite. These units, though limited in areal extent, represent remnants of older volcanic activity and contribute to local lithological heterogeneity (Council for Geoscience, 2010).

This diverse geological profile provides both challenges and opportunities for mining development. The coal and oil-shale seams offer resource extraction potential, while the presence of dolerite, volcanic rocks, and glacial deposits must be considered in terms of structural integrity, groundwater flow, and environmental impact.

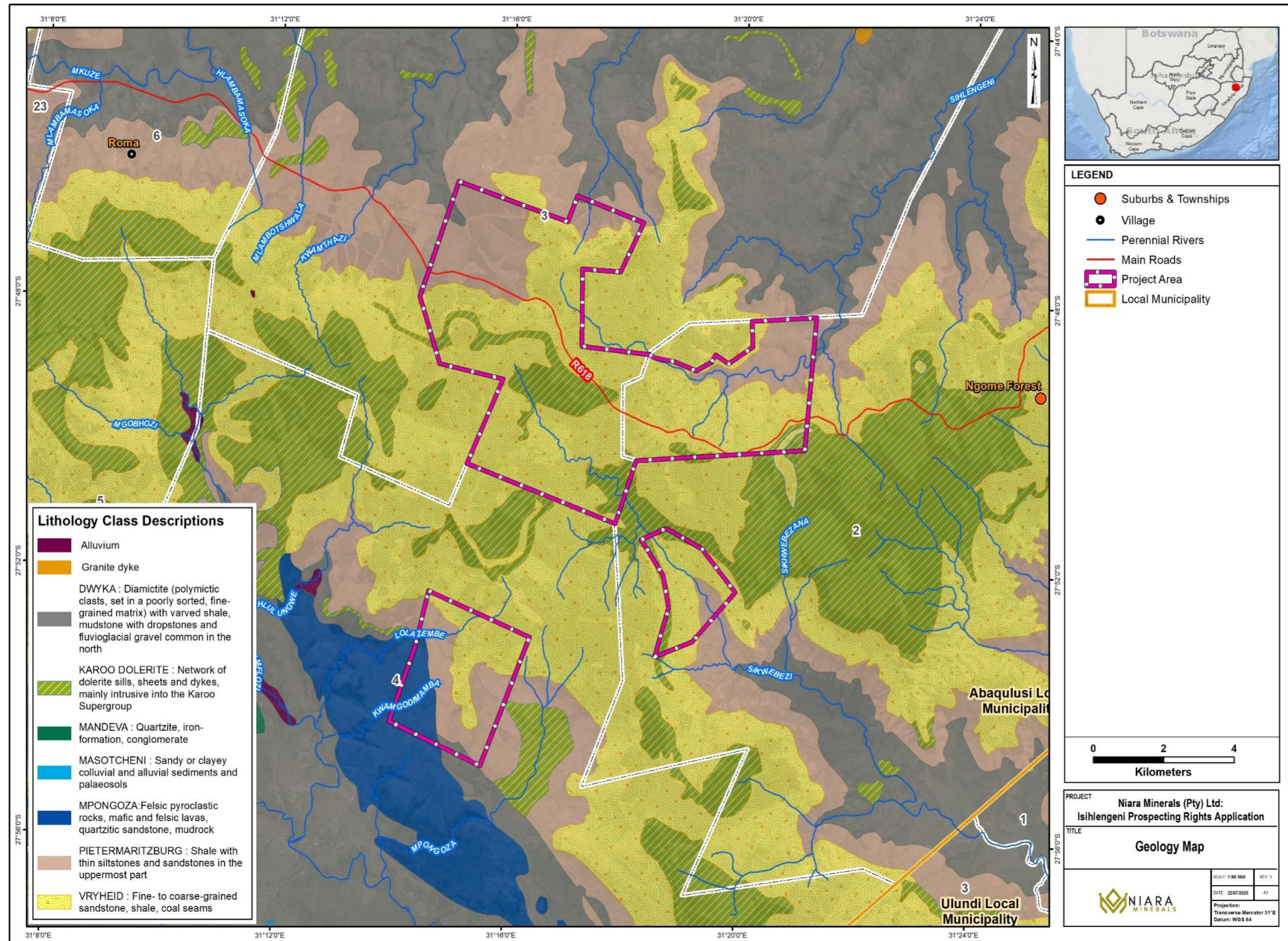


Figure 9-4 Geology of the proposed area

9.4.4 Hydrology and Geohydrology

Altra Watch (Pty) Ltd was appointed to conduct a floodlines determination study and its findings informs this section of the BAR.

9.4.4.1 Hydrological assessment

9.4.4.1.1 *Physiographic Setting*

According to the floodline determination study undertaken by Altra Watch (Pty) Ltd (2025), the prospecting rights area falls within quaternary catchments W31B and W31C of the Mkuze River system, as well as W22A, W22C, and W22E, which form part of the Black Mfolozi River basin within the Pongola-Mtamvuna Water Management Area (WMA).

For the purposes of hydrological modelling, these sub-catchments were delineated and designated as Drainage Areas 1 through 5. These drainage areas represent headwater reaches originating in hilly, mountainous terrain that is predominantly rural and undeveloped. Within Drainage Area 1, several small-scale farm dams were noted, most likely utilised for irrigation purposes, while portions of the catchment are covered by forested plantations.

With the exception of the Sihlengeni and Sikwebezi Rivers, most of the watercourses in the area are unnamed non-perennial tributaries, suggesting minimal baseflow and limited surface water persistence during the dry season (Altra Watch, 2025).

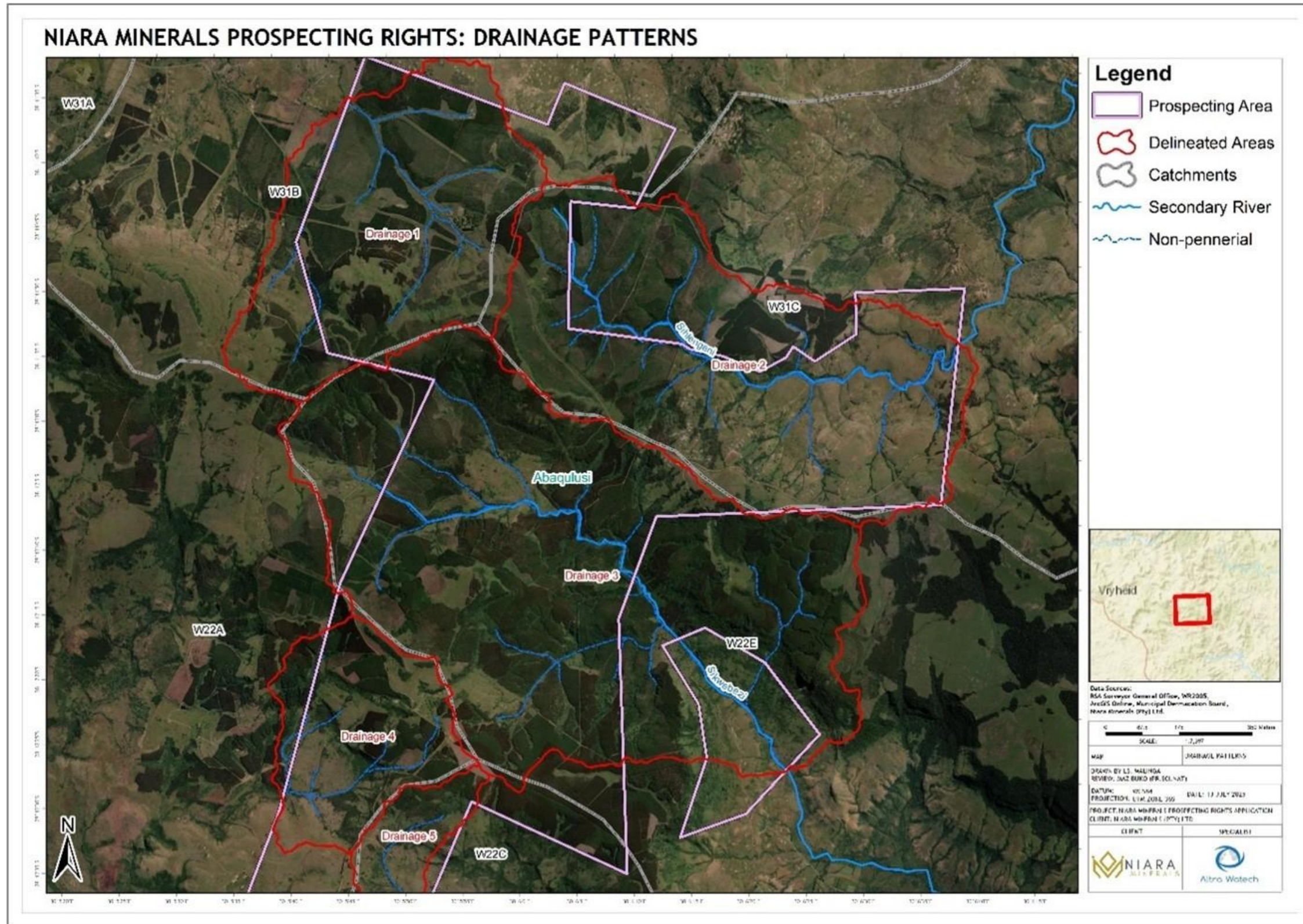


Figure 9-5 Study site drainage boundaries and river lines (source : Altra Watch (Pty) Ltd ,2025)

As reported in the floodline determination study by Altra Watch (Pty) Ltd (2025), the headwater reaches of the relevant quaternary catchments are situated at approximately 1,528 metres above mean sea level (mamsl). In contrast, the lowest river outlet within the modelled system occurs at an elevation of 417 mamsl. This substantial elevation gradient reflects the area's steep and varied topography, which significantly influences surface runoff dynamics and flow velocities across the drainage network.

The regional topography was analysed using digital elevation data obtained from a 30-metre resolution Digital Surface Model (DSM), which enabled the accurate delineation of catchments and hydrological flow paths for modelling purposes (Altra Watch, 2025).

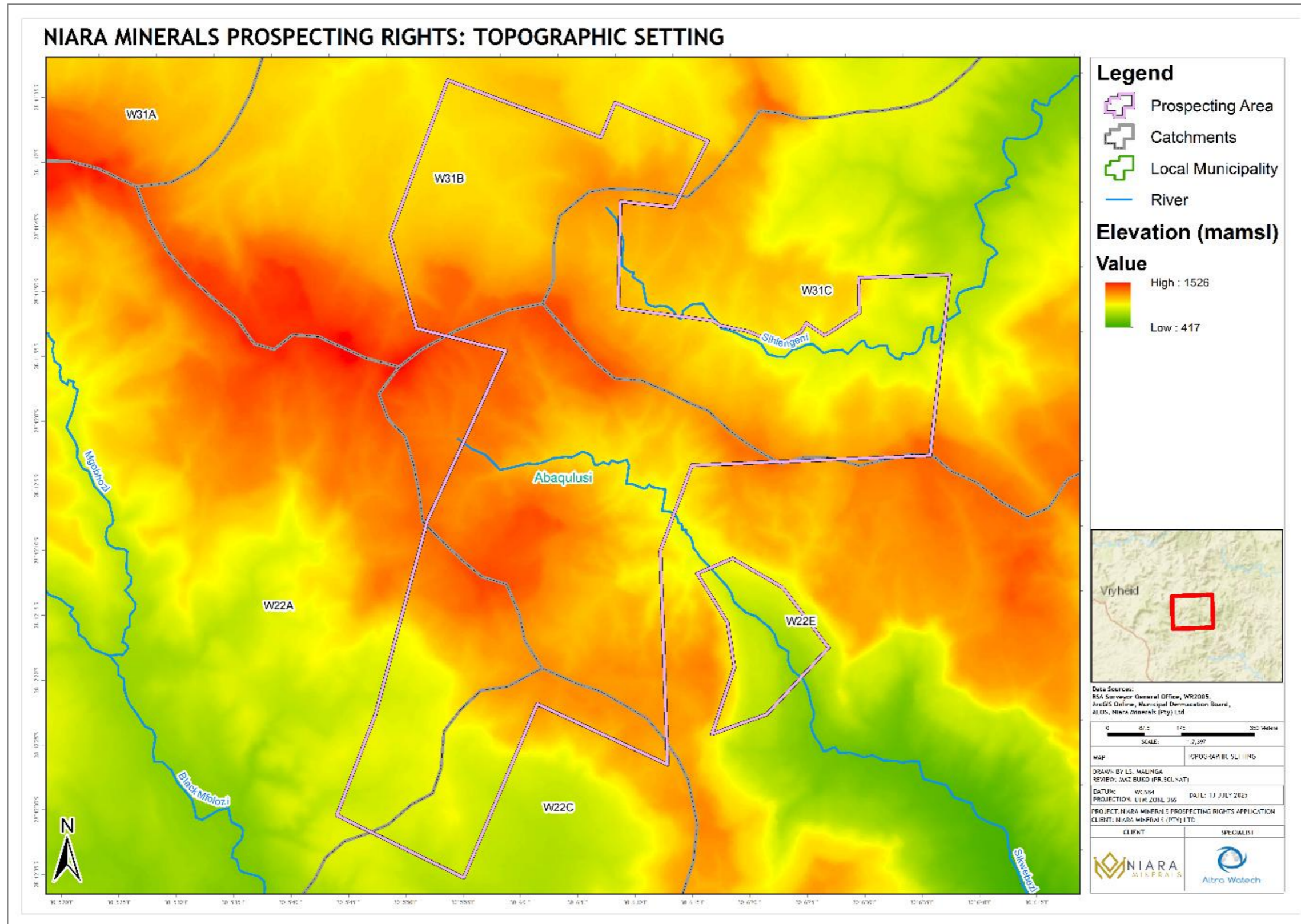


Figure 9-6 Topographic setting of the area draining to the study site (source : Altra Watch (Pty) Ltd ,2025)

According to the floodline determination study conducted by Altra Watch (Pty) Ltd (2025), catchment slope is a critical parameter in estimating flood peak flow volumes. Steeper slopes are associated with increased surface runoff volumes, elevated flow velocities, and a reduction in the duration of rainfall events required to generate flooding. This is due to the fact that steep terrain typically features shallower soil profiles, fewer surface depressions, and reduced infiltration capacity, all of which contribute to more rapid runoff and higher peak discharges.

The slope analysis conducted for the modelled catchment areas indicated that the headwater reaches are characterised by high elevation and are drained by deeply incised channels with moderately steep gradients. These conditions are likely to generate floodwaters with elevated flow velocities and high erosive potential in downstream sections, due to the influence of the catchment's slope dynamics (Altra Watch, 2025).

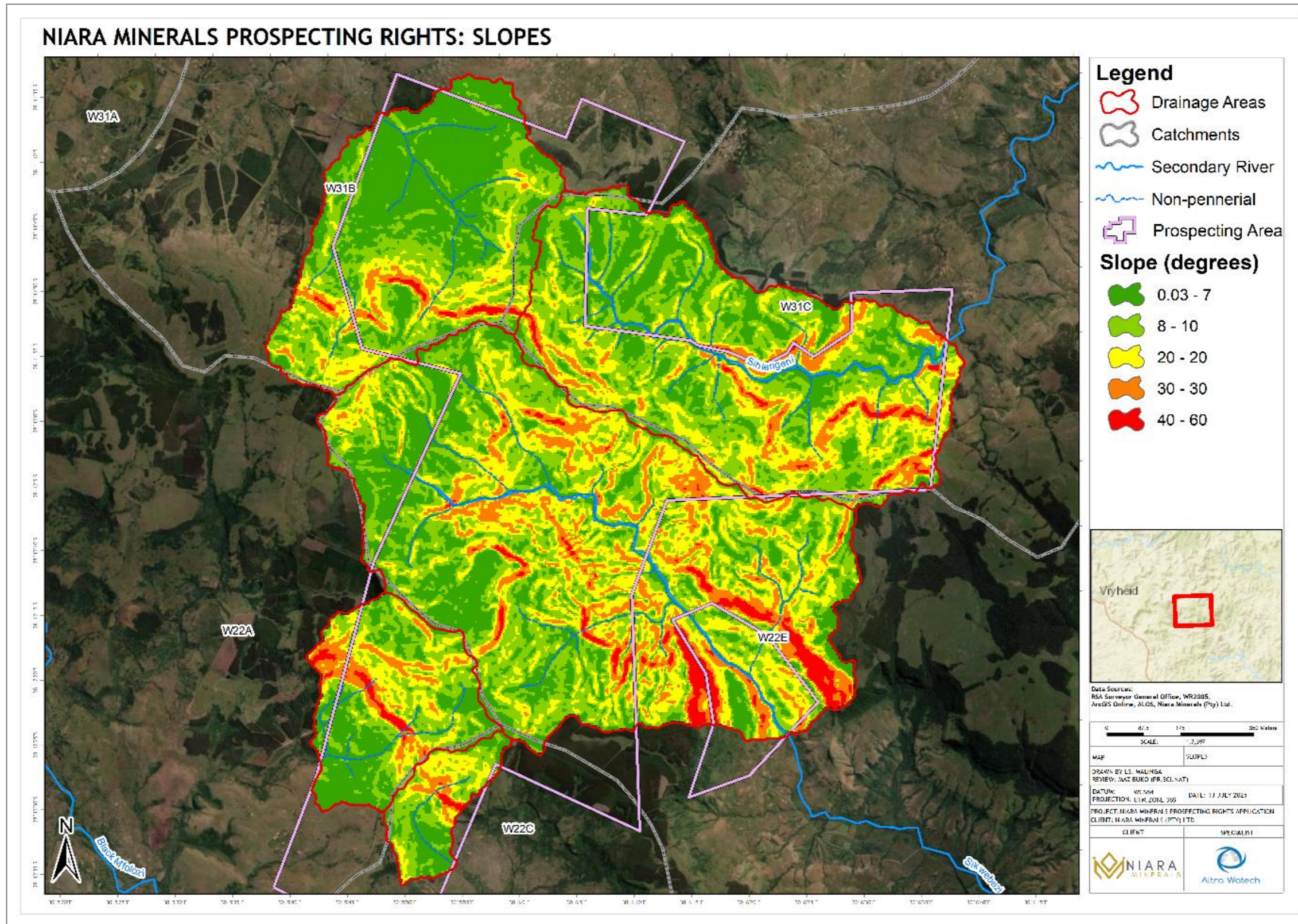


Figure 9-7 Slope characteristics of the drainage areas within the study site (source : Altra Watch (Pty) Ltd ,2025)

The floodline determination study undertaken by Altra Watch (Pty) Ltd (2025) identified the dominant land cover types within the drainage areas of the prospecting rights site as being largely composed of commercial forest plantations, followed in extent by natural grasslands, cultivated agricultural land, and rural built-up settlements.

Within Drainage Areas 3, 4, and 5, the riparian zones were noted to be primarily vegetated with indigenous forest, whereas grassland was observed along the riparian corridors of Drainage Areas 1 and 2, with the exception of the headwater region of Drainage Area 2, which was found to be under forestry cover. These land cover patterns were confirmed during the site visit and were used to inform the assignment of Manning's n roughness coefficients within the hydraulic modelling, to appropriately reflect surface resistance and flow behaviour across varying terrain types.

Due to the absence of site-specific water level or streamflow data within the study area, the initial boundary conditions applied in the hydraulic model were based on the calculated average slopes of each river reach at their respective outlet points (Altra Watch, 2025).

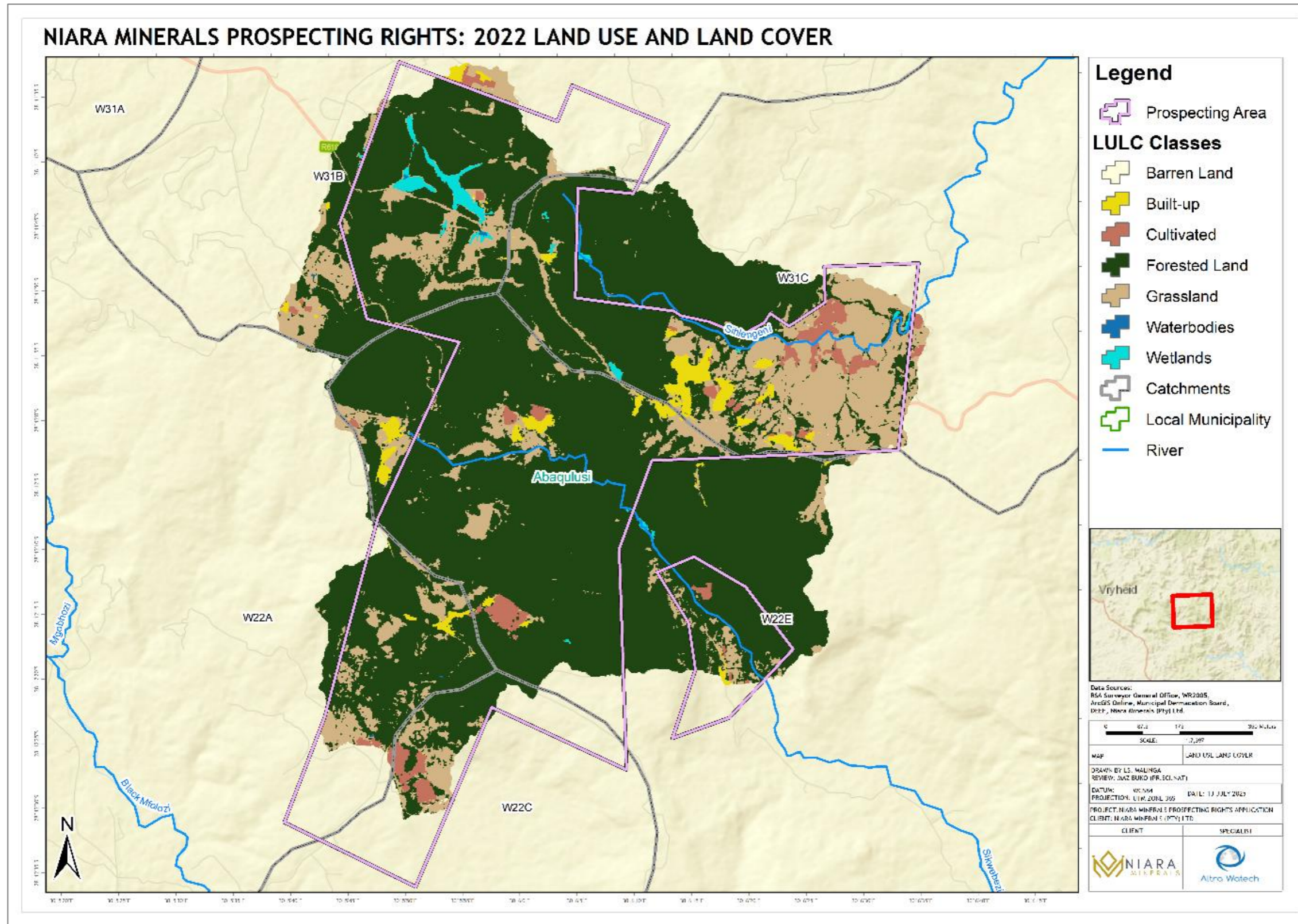


Figure 9-8 Land use and land cover features across the study area (source : Altra Watch (Pty) Ltd ,2025

9.4.4.2 *Baseline Hydrology and Hydrometeorology*

The floodline determination study prepared by Altra Watch (Pty) Ltd (2025) described the project area as experiencing a temperate climate, classified as Cwa under the Köppen-Geiger system (Kottek et al., 2006). This climate type is characterised by dry, cold winters and wet, seasonally concentrated summers.

Long-term climatic data for the broader Ngome region indicate that the coldest months, typically June and July, record minimum temperatures of approximately 6°C, while summer months, between December and February, experience maximum daily temperatures reaching 26°C.

Hydrological data derived from the 90-year South African Water Resources Study (WR2012) (Bailey & Pitman, 2015) reveal that the area receives a Mean Annual Precipitation (MAP) of approximately 878 mm, based on the average rainfall values of the quaternary catchments intersecting the prospecting rights area.

In terms of evaporative demand, the study area is characterised by relatively high Mean Annual Evaporation (MAE), with an estimated volume of 1,500 mm per year. The evaporation pattern across the site is consistent, indicating similar evaporative conditions across all modelled catchments (Altra Watch, 2025).

9.4.4.3 *Floodlines*

As detailed in the floodline determination study conducted by Altra Watch (Pty) Ltd (2025), the hydraulic modelling exercise focused on the main channels of the identified rivers within the prospecting rights area. Although many of these river reaches receive inflow from non-perennial tributaries, only the main channels were incorporated into the modelling, as they serve as the primary routes for conveying flood volumes downstream and out of the catchment.

Floodline delineation was performed for 1:50-year and 1:100-year return period peak flow events using the Rational Method for peak discharge estimation. The modelling results indicated that the topographic and soil characteristics of the region are conducive to the formation of flash flood events, with high-intensity flows and significant peak discharges entering the river systems during extreme rainfall events.

The analysis showed that, due to the generally steep and incised nature of most river channels, excluding those in Drainage Area 1, floodwaters are typically contained within narrow valleys, reducing the extent of potential inundation. However, Drainage Area 1 was found to have a relatively flat terrain, dominated by grassland vegetation along the riparian zones, making it more susceptible to wider floodplain inundation during peak flow events.

In terms of flood risk, river reaches with steep gradients and confined channels were identified as particularly hazardous due to their potential to generate turbulent, high-energy flows with strong erosive forces. These

characteristics increase the potential for infrastructure damage and environmental degradation when compared to the lower risk posed by floodwaters in flatter areas (Altra Watch, 2025).

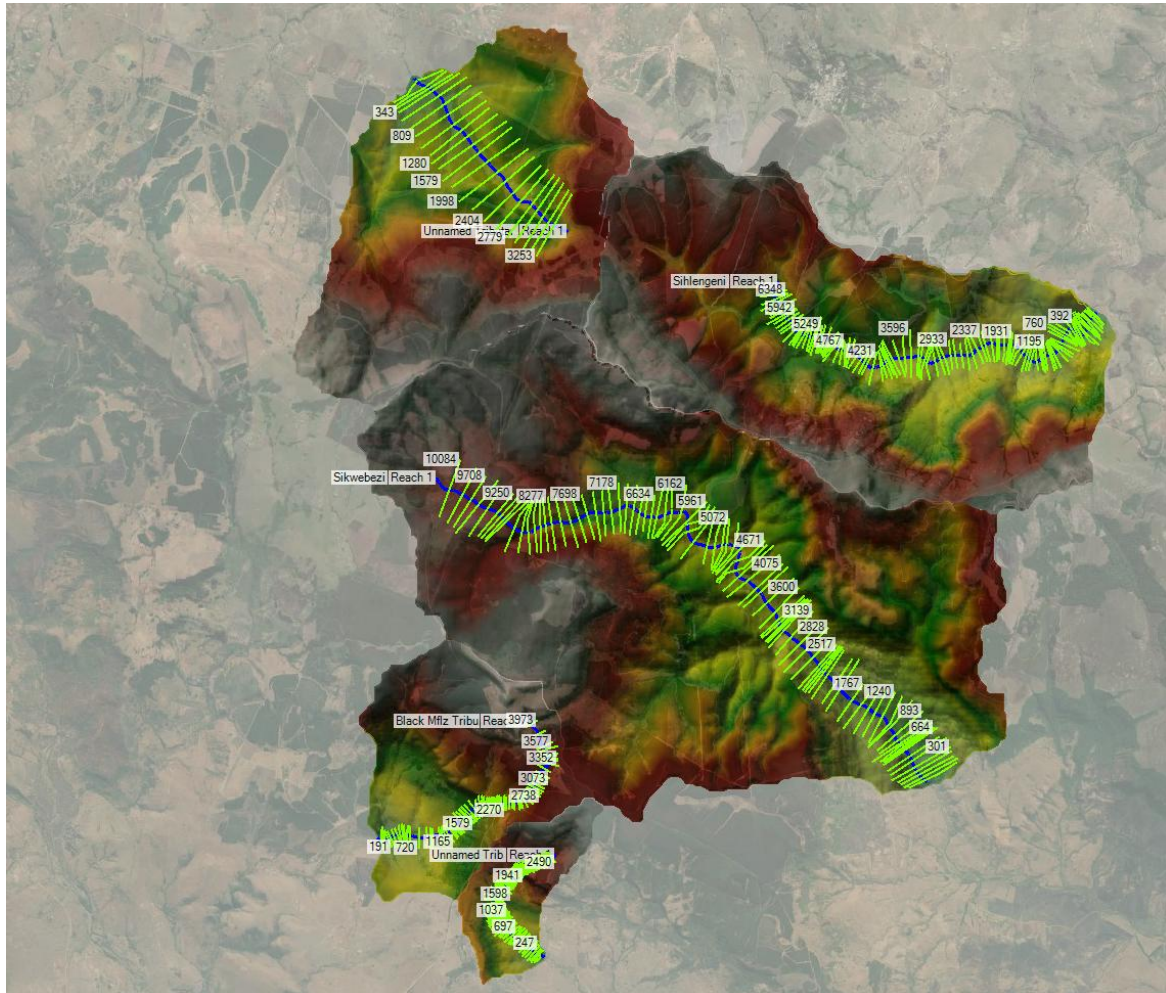


Figure 9-9 Modelled river section geometry used in the simulation of the floodlines (source : Altra Watch (Pty) Ltd ,2025)

9.4.4.4 Mitigation measure

The floodline determination study by Altra Watch (Pty) Ltd (2025) recommends that all potential developments be situated outside the boundaries of the simulated 1:50-year and 1:100-year floodlines to ensure safety and compliance with applicable regulations and legislation. For developments proposed along river reaches containing in-line structures such as low-crossing bridges and culverts, it is advised that the floodline simulations be further refined. This refinement is necessary to accurately represent such structures within the hydraulic model and to assess their potential impacts on flood behaviour effectively.

9.4.5 Biodiversity

An Ecological assessment was conducted by Arid Cactus Consulting in July 2025 and informs this section of the BAR. As part of the ecological assessment undertaken to inform this Basic Assessment Report, the following key objectives were defined:

- To delineate and characterise potential habitat areas through a comprehensive desktop review;
- To identify and assess vegetation types, faunal species, and habitat features present within the proposed development footprint;
- To evaluate the potential ecological impacts associated with the proposed development activities; and
- To develop appropriate mitigation measures and provide evidence-based recommendations aimed at minimising identified ecological risks and impacts.

9.4.5.1 Flora

Prior to the field-based ecological survey, a preliminary desktop investigation was conducted to obtain records of plant Species of Conservation Concern (SCC) and their associated habitat requirements. This information was sourced from the South African National Biodiversity Institute (SANBI) database for the relevant Quarter Degree Square encompassing the study area, along with pertinent regional, provincial, and national species listings. During the fieldwork, focused efforts were directed toward identifying any floral SCC and evaluating the presence of habitat conditions conducive to supporting such species (Arid Cactus Consulting, 2025).

Species Inventory

The compilation of the floral species inventory was informed by the vegetation classification framework provided by Mucina and Rutherford (2006) and supplemented by records retrieved from SANBI's National Herbarium Pretoria Computerised Information System (PRECIS). In parallel, lists of expected faunal species, including mammals, birds, reptiles, amphibians, and invertebrates, were developed using multiple reputable sources. The likelihood of occurrence for IUCN Red List species within the project footprint was also assessed. A complete listing of expected species is provided in the appendices of ecological study (Arid Cactus Consulting, 2025).

9.4.5.2 National Biodiversity Assessment (2018)

9.4.5.2.1 Ecosystem Status (2018)

According to the ecological assessment conducted by Arid Cactus Consulting (2025), the ecosystems located within the proposed development area have been classified as Endangered (EN) in terms of the National Ecosystem Threat Status (NESP, 2011; SANBI, 2019), as illustrated in Figure 7-3. This classification indicates that

a significant portion of the original natural habitat has already been lost, largely as a result of agricultural activities, settlement expansion, and infrastructure development.

It was noted in the assessment that the remaining habitat fragments are both degraded and highly fragmented, rendering them increasingly vulnerable to further ecological decline and permanent transformation. The Endangered status also reflects a substantial reduction in ecosystem functionality and resilience, which compromises the ability of these systems to deliver essential ecological services, such as biodiversity maintenance, water regulation, soil stability, and carbon sequestration (Arid Cactus Consulting, 2025).

The findings underscore the necessity of informed land use planning and the adoption of robust mitigation and conservation strategies aimed at curbing additional biodiversity loss and promoting the long-term sustainability of these sensitive vegetation types within the region.

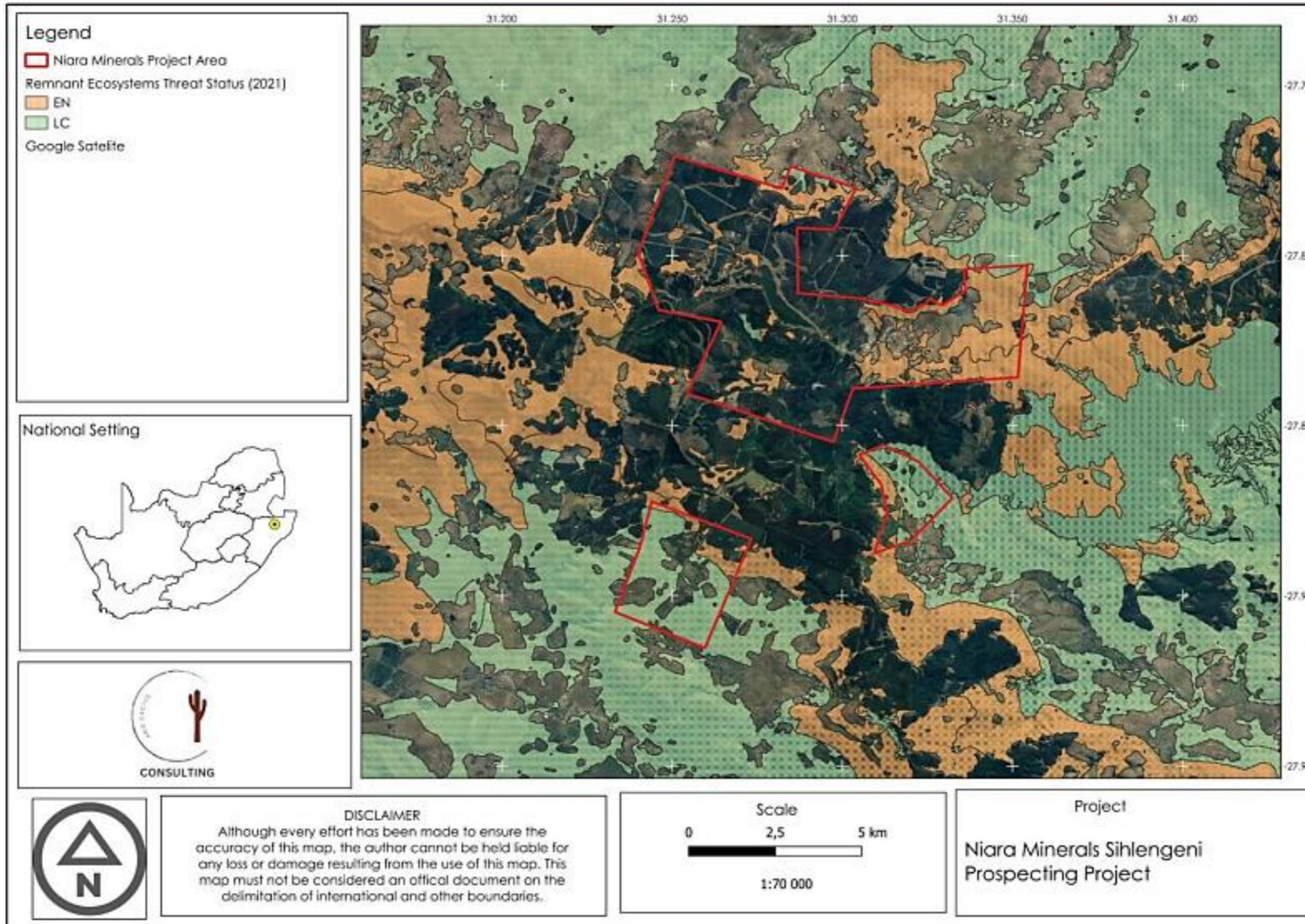


Figure 9-10 Threat status of ecosystems within the project area (source: Arid Cactus Consulting, 2025)

9.4.5.2.2 *Key Biodiversity Areas*

Although the project site is not situated within a formally designated Key Biodiversity Area (KBA) under the global KBA Standard, the ecological assessment undertaken by Arid Cactus Consulting (2025) identified that the site lies within a broader region of high biodiversity significance. The area was found to overlap with the KwaZulu-Natal Mistbelt Grasslands Important Bird Area (IBA), which has been recognised by BirdLife International (2024) for its role in supporting globally threatened and regionally endemic bird species.

Species identified as potentially occurring within the area include the Blue Swallow (*Hirundo atrocaerulea*), Southern Bald Ibis (*Geronticus calvus*), Blue Crane (*Anthropoides paradiseus*), and Grey Crowned Crane (*Balearica regulorum*), all of which are considered reliant on intact grassland habitats for successful breeding and foraging.

In addition, the assessment reported that the dominant vegetation units present within the project footprint, specifically the Northern Zululand Mistbelt Grassland and Paulpietersburg Moist Grassland, have been classified as Vulnerable ecosystems in the National Biodiversity Assessment due to extensive historical transformation and the limited extent of remaining undisturbed habitat (SANBI, 2019). These ecosystems were described as supporting high species richness, local endemism, and ecological sensitivity.

Although formal KBA status has not been assigned, the assessment concluded that the combination of Endangered ecosystem classifications, overlap with an IBA, and confirmed presence of threatened avifauna indicates a high conservation value. It was recommended that the area be managed with the same ecological caution typically afforded to formally designated KBAs (Arid Cactus Consulting, 2025).

To further safeguard biodiversity, the assessment proposed the formal designation of remaining natural grassland patches and surrounding undeveloped areas as KBAs. Moreover, the implementation of a minimum 100-metre ecological buffer zone around the proposed prospecting activities was advised. This buffer is intended to mitigate potential impacts including habitat fragmentation, edge effects, dust deposition, and disturbance to sensitive faunal species (Arid Cactus Consulting, 2025).

9.4.5.3 *National Wetlands and rivers*

According to the ecological assessment undertaken by Arid Cactus Consulting (2025), two watercourses within the project area, the Sihlengeni and Sikwebezi Rivers, were identified as Freshwater Ecosystem Priority Areas (FEPAs). Both rivers were classified as being in a Natural (Class A) ecological condition, indicating minimal anthropogenic disturbance and a high level of ecological integrity.

In light of their FEPA status and ecological sensitivity, the assessment recommended the implementation of a minimum 500-metre buffer zone around each of the identified river systems. This buffer is intended to preserve aquatic biodiversity, maintain ecological functioning, and protect the hydrological integrity of these priority freshwater ecosystems from potential adverse impacts associated with the proposed development (Arid Cactus Consulting, 2025).

9.4.5.4 Wetland Unit Setting

The ecological assessment conducted by Arid Cactus Consulting (2025) described the project area as comprising a predominantly undulating terrain, interspersed with steep slopes and incised valleys. Wetland features identified within the landscape were primarily classified as valley-bottom wetlands and seep zones, which appeared dispersed across the broader topographical gradient.

The wetlands were observed to occur primarily within slope and valley-bottom landscape positions, which are typically associated with seasonal or permanent hydrological inputs. These positions suggest a functional role in local water regulation, sediment trapping, and the provision of habitat for moisture-dependent species (Arid Cactus Consulting, 2025).

9.4.5.5 Wetland Soils and vegetation

According to the findings of the ecological assessment conducted by Arid Cactus Consulting (2025), the wetland areas within the project site were underlain by soil forms indicative of hydromorphic conditions. The dominant soil forms identified included Katspruit, Kroonstad, and Longlands, each associated with specific wetness indicators consistent with wetland functionality.

The seep wetlands were reported to be primarily associated with the Longlands soil form, while the valley-bottom wetlands were characterised by the presence of Katspruit and Kroonstad soil forms. These soils are typically associated with prolonged saturation and are indicative of the presence of wetlands with moderate to high ecological function (Arid Cactus Consulting, 2025).

As reported in the ecological assessment by Arid Cactus Consulting (2025), the vegetation observed within wetland areas was composed predominantly of hydrophytic plant species, which are characterised by their physiological and morphological adaptations to persist in saturated soil conditions.

Among the indigenous wetland species positively identified were *Schoenoplectus corymbosus*, *Imperata cylindrica*, and *Centella asiatica*. The valley-bottom wetlands were found to be dominated by *Phragmites australis*, while *Imperata cylindrica* was noted to be prevalent within the seep zones.

The assessment also recorded the presence of alien invasive plant species within the valley-bottom wetland systems. These included *Cortaderia selleana*, *Melia azedarach*, and *Acacia mearnsii*, all of which pose a risk to

wetland ecological integrity through displacement of native species and alteration of hydrological regimes (Arid Cactus Consulting, 2025).

9.4.5.5.1 *Mitigation measures*

According to the ecological assessment conducted by Arid Cactus Consulting (2025), the following mitigation measures are recommended for implementation **prior to and during the construction phase** of the proposed development to minimise ecological degradation and protect sensitive habitats:

- Avoidance of aquatic features: All water resources within the project area should be avoided wherever feasible to prevent disturbance to aquatic ecosystems.
- Use of existing access routes: Construction vehicles and machinery must utilise existing roads and access paths to the greatest extent possible, before considering new routes through undisturbed areas.
- Placement of construction infrastructure: Laydown areas, construction camps, and storage facilities must be located outside of delineated watercourses and their associated buffer zones. Where crossings are required, they should originate from existing roads rather than within the watercourse itself.
- Spill prevention and response: Contractors must have site-specific environmental action plans in place, including the availability of spill kits and appropriate training for personnel. Any fuel or oil spills must be cleaned and disposed of in accordance with environmental best practices.
- Seasonal timing of works: Where practical, construction activities should be scheduled during the dry season to reduce the risk of soil erosion and surface runoff from exposed areas.
- Controlled vehicle access: Uncontrolled vehicular movement through watercourses must be prevented, as it can lead to significant impacts on hydrological patterns and soil compaction.
- Chemical storage: All hazardous materials, including chemicals and toxicants, must be stored in bunded areas situated outside of water resources and buffer zones.
- Equipment maintenance: All machinery and equipment should undergo regular inspections for mechanical faults or fluid leaks, and any maintenance should be conducted off-site to reduce contamination risk.
- Environmental induction: All personnel, including contractors and workers, must receive environmental induction training prior to commencing work. The training should include guidance on proper waste management, spill response, littering prevention, and general environmental awareness.

- Sanitation provisions: Adequate sanitary facilities and ablutions must be provided throughout the project area, particularly along the servitude. These facilities should be regularly maintained to encourage their use and discourage defecation in surrounding vegetation.
- Material stockpiling: Excavated soil and construction materials must not be stockpiled within any wetland or watercourse areas. Stockpiling must occur in designated areas that are level, bunded, and protected from erosion and surface runoff.
- Erosion control and rehabilitation: To prevent sedimentation of watercourses, stabilisation structures such as gabions and Reno mattresses should be installed where necessary, and disturbed banks should be promptly rehabilitated through re-vegetation with locally indigenous grass species.
- Waste management: On-site waste must be effectively managed. Recycling and separation of waste streams should be encouraged, and no dumping of construction materials will be permitted under any circumstances.

These measures are critical to ensuring that construction activities proceed with minimal impact to ecological integrity and support the long-term sustainability of sensitive habitats within the project area (Arid Cactus Consulting, 2025).

9.4.5.6 *Biomes*

The project area is predominantly situated within the Grassland Savanna Biome, with the Savanna Biome representing the second largest portion of the landscape. Scattered patches of Azonal vegetation and forest areas are also present, reflecting the ecological diversity of the region (Musina & Rutherford, 2006), as illustrated in Figure 9-11

- Grassland Savanna Biome

The Grassland Savanna Biome covers the majority of the project area and is characterized by extensive open landscapes dominated by grasses interspersed with scattered trees and shrubs. This biome supports a rich diversity of herbaceous plants and grazing animals, playing a critical role in regional biodiversity and ecosystem functioning. The grasslands experience seasonal rainfall that supports the growth of grasses while periodic dry spells and fires help regulate woody plant encroachment, maintaining the savanna structure (Mucina & Rutherford, 2006).

The soils within this biome are generally fertile and support a range of agricultural activities. However, land transformation and fragmentation due to farming and development pressures pose significant risks to the biome's ecological integrity. Conservation of these grassland savannas is important to sustain ecosystem services such as carbon sequestration, soil stabilization, and habitat provision.

- Savanna Biome

The Savanna Biome is the second most dominant vegetation type in the area, featuring a mosaic of grasses, shrubs, and more dense tree cover compared to the grassland savanna. This biome supports a wide variety of wildlife species and is adapted to a climate with distinct wet and dry seasons. The structure and composition of the savanna are shaped by fire regimes, grazing, and rainfall patterns (Mucina & Rutherford, 2006).

- Azonal Vegetation and Forests

Scattered throughout the project area are localized patches of Azonal vegetation, including wetlands and riparian woodlands, as well as small forested areas. These habitats occur where soil conditions or microclimates differ markedly from the surrounding savanna and grassland and often support unique biodiversity elements, contributing to the overall ecological complexity of the landscape (Musina & Rutherford, 2006).

- Ecological Importance and Prospecting Impacts

Together, these biomes provide essential ecosystem services such as carbon storage, water regulation, and biodiversity support. Prospecting activities in the area have the potential to temporarily disturb vegetation and soil structure. However, with the implementation of comprehensive environmental management and mitigation measures, such as minimizing footprint size, controlling erosion, rehabilitating disturbed areas, and protecting sensitive vegetation patches, these impacts can be effectively managed and minimized.

Environmental monitoring and adaptive management will ensure that the natural vegetation is conserved and that ecosystem functions are maintained throughout the prospecting phase. By adopting best-practice mitigation strategies, prospecting can coexist with the conservation of these biomes, supporting sustainable development while safeguarding the region's ecological integrity (Mucina & Rutherford, 2006).

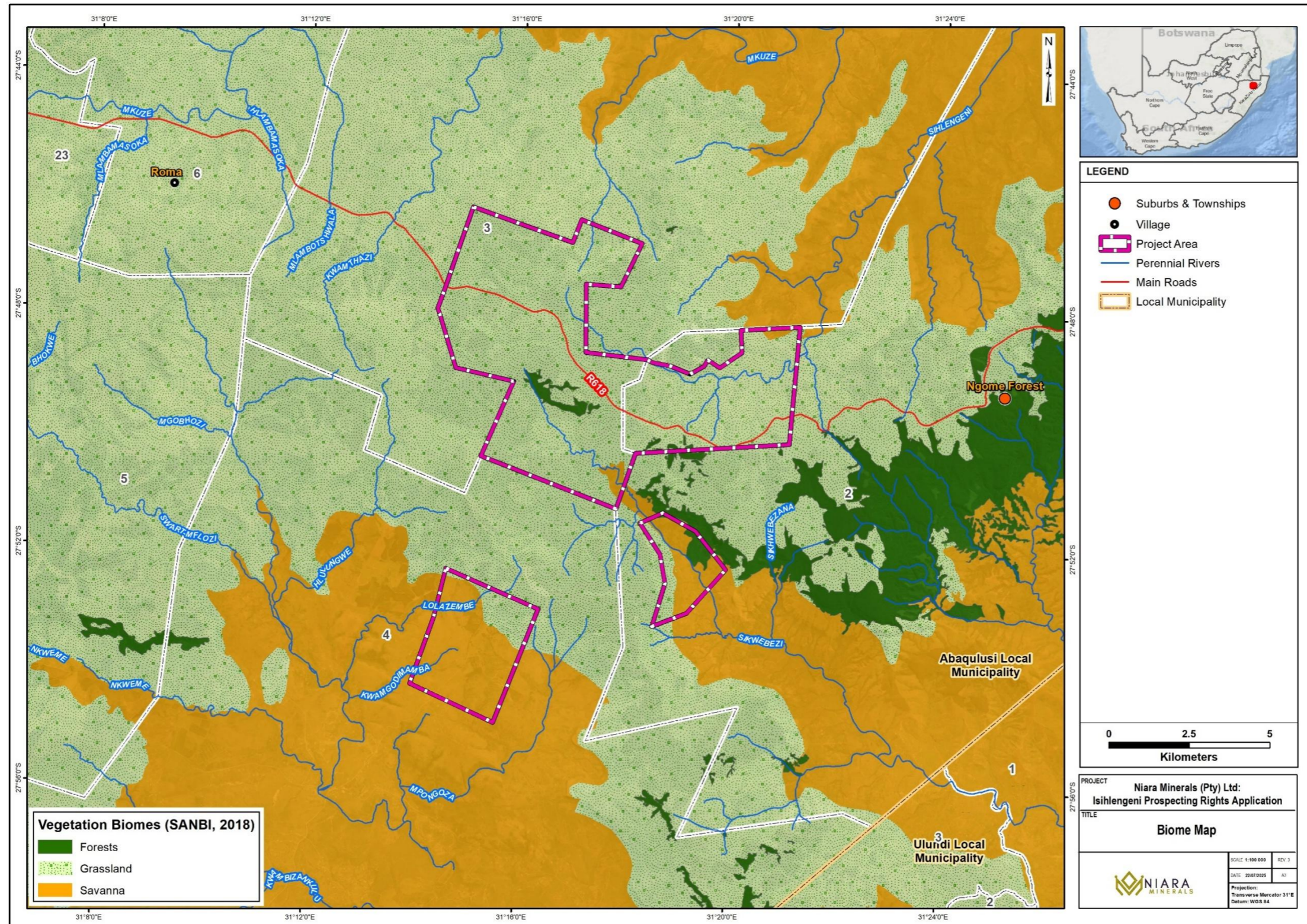


Figure 9-11 Biome Map

9.4.5.7 Vegetation Type

The vegetation within the project area is predominantly characterized by Northern Zululand Misbelt Grassland, with Northern Zululand Sourveld forming the second largest vegetation type. Small portions of Income Sandy Grassland occur along the northern boundary of the project area, while a narrow strip of Southern Misbelt Forest is also present, as illustrated in Figure 9-12.

- Northern Zululand Misbelt Grassland

Northern Zululand Misbelt Grassland dominates the project area and is typically found on undulating terrain with moderate to high rainfall. This vegetation type is characterized by a mixture of mid to tall grasses, often interspersed with scattered shrubs and small trees, reflecting a transition between grassland and savanna ecosystems. Common grasses include Themeda triandra and Hyparrhenia hirta, which play an important role in supporting grazing wildlife and livestock (Mucina & Rutherford, 2006).

- Northern Zululand Sourveld

The Northern Zululand Sourveld occupies the second largest area within the project and is characterized by sour, nutrient-poor soils with a high diversity of grass and forb species. This vegetation type is typically found in areas with higher rainfall and cooler temperatures, supporting dense, tufted grasses such as Andropogon and Aristida species. The sourveld serves as an important habitat for biodiversity and acts as a key resource for sustainable grazing (Mucina & Rutherford, 2006).

- Income Sandy Grassland

Along the northern boundary of the project area lies a smaller portion of Income Sandy Grassland. This vegetation type is found on flat terrain with poorly drained, sandy soils, supporting tussock-dominated sourveld grasslands with scattered woodlands. Characteristic species include Aristida congesta, Cynodon dactylon, and Microchloa caffra, with tree species such as Vachellia sieberiana and V. karroo present in better-drained areas (Mucina & Rutherford, 2006).

- Southern Misbelt Forest

A narrow strip of Southern Misbelt Forest occurs within the project area, representing an important ecological niche. These forests are typically dense with a canopy of indigenous tree species, providing critical habitat for numerous bird and insect species and serving as important carbon sinks. The presence of forest patches contributes to the ecological diversity of the broader landscape (Mucina & Rutherford, 2006).

- Ecological Importance and Conservation

The combination of Northern Zululand Misbelt Grassland, Northern Zululand Sourveld, Income Sandy Grassland, and Southern Misbelt Forest creates a mosaic of habitats that support a rich biodiversity and provide essential ecosystem services, including soil stabilization, carbon sequestration, and water regulation. These vegetation types are sensitive to land-use changes and environmental pressures, making conservation and sustainable management critical.

Prospecting activities within the area are planned with stringent environmental management measures in place to minimise disturbance and protect sensitive vegetation communities. Rehabilitation protocols, erosion control, and ongoing ecological monitoring will ensure that the integrity of these vegetation types is maintained, supporting both biodiversity conservation and sustainable land use (Mucina & Rutherford, 2006).

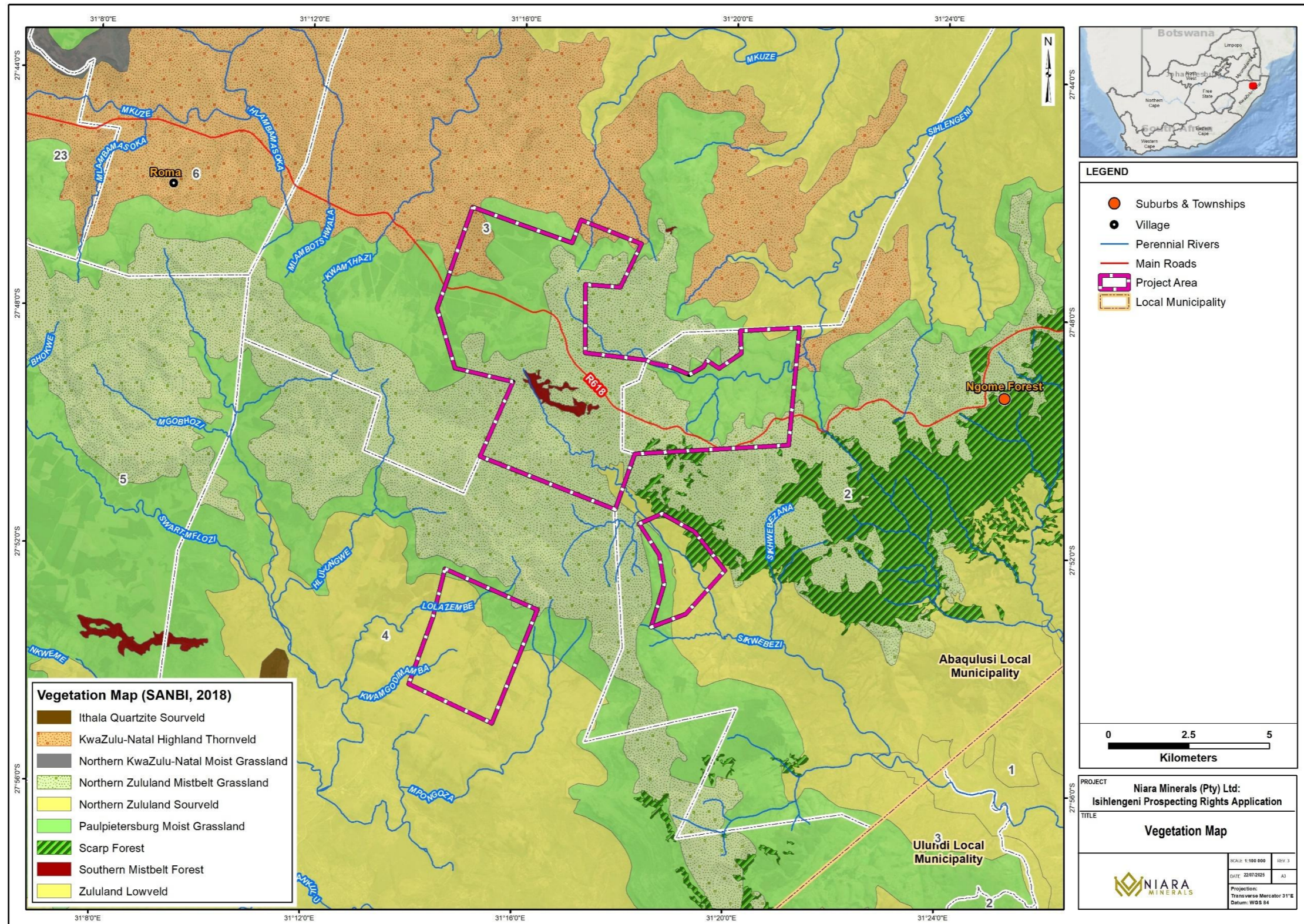


Figure 9-12 Vegetation type

9.4.5.8 Conservation Plan

The project area falls within Critical Biodiversity Areas (CBAs), specifically classified as KZN CBA Irreplaceable and KZN CBA Optimal, with important wetlands and rivers also present, as illustrated in Figure 9-13

- Critical Biodiversity Areas (CBAs)

CBAs are regions identified through systematic conservation planning as essential for maintaining the persistence of biodiversity and ecological processes within KwaZulu-Natal. These areas are categorized into Irreplaceable and Optimal CBAs, each playing a distinct but complementary role in conservation efforts (Mucina & Rutherford, 2006).

- KZN CBA Irreplaceable

Irreplaceable CBAs represent areas of the highest conservation priority that cannot be substituted or replicated elsewhere due to their unique biodiversity features, endemic species, or critical habitats. These areas often contain rare or threatened ecosystems and species that are highly sensitive to disturbance. Conservation in Irreplaceable CBAs focuses on strict protection and minimal impact to ensure the survival of biodiversity that is not found elsewhere (Mucina & Rutherford, 2006).

- KZN CBA Optimal

Optimal CBAs are vital regions that complement Irreplaceable areas by supporting broader landscape connectivity, ecosystem services, and resilient habitats. These areas have high biodiversity value but may tolerate some sustainable resource use under careful management. The goal in Optimal CBAs is to maintain ecological processes such as pollination, seed dispersal, and hydrological regulation while balancing conservation with responsible land use (Mucina & Rutherford, 2006).

- Wetlands and Rivers

Wetlands and river systems within the project area are also recognized as critical components of biodiversity and ecosystem function. These aquatic habitats provide essential services including water filtration, flood regulation, and habitat for aquatic and terrestrial species. Protection of these water features within CBAs is fundamental to sustaining overall ecological integrity and maintaining downstream ecosystem health (Mucina & Rutherford, 2006).

- Influence of Prospecting Activities

Prospecting activities in CBAs have the potential to impact biodiversity through habitat disturbance, soil erosion, and water quality changes. However, when conducted responsibly and with stringent environmental controls, prospecting can be managed to minimize negative effects. The implementation

of environmental management plans, including buffer zones, controlled access routes, and rehabilitation protocols, helps to reduce habitat fragmentation and preserve ecological connectivity. Furthermore, continuous environmental monitoring ensures that any unforeseen impacts are detected early and mitigated effectively (SANBI, 2024).

By incorporating adaptive management and stakeholder engagement, prospecting operations can coexist with biodiversity conservation objectives. These measures not only protect critical habitats but can also promote awareness and investment in local conservation initiatives. Overall, responsible prospecting, aligned with environmental mitigation measures, contributes to sustainable resource development while safeguarding the ecological integrity of KZN's Irreplaceable and Optimal CBAs and associated wetlands and rivers (Mucina & Rutherford, 2006).

- Conservation and Management Strategies

Effective conservation within KZN CBAs requires an integrated approach that includes policy support, sustainable land management, and stakeholder engagement. Environmental management plans incorporate mitigation measures to minimize impacts from prospecting and other development activities, ensuring that biodiversity values, especially in Irreplaceable and Optimal CBAs, are safeguarded. Restoration efforts, monitoring, and adaptive management form key components of these strategies to enhance ecosystem resilience and support long-term conservation goals (SANBI, 2024; Mucina & Rutherford, 2006).

9.4.6 Soil, Land Use, And Agriculture sensitivity

Pardus Solutions was appointed to conduct a Site Sensitivity Verification and Soil, Land Use, And Agricultural Compliance Statement in July 2025. The purpose of the soil, land use, and land capability assessment is to ensure that the proposed development complies with the relevant provisions of the Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983). CARA seeks to safeguard South Africa's agricultural resources by promoting the sustainable management of soil, water, and vegetation, and by regulating the control of invasive and alien plant species. Accordingly, the assessment undertaken by Pardus Solutions (2025) aims to evaluate the potential impacts of the development on local soil conditions, current land use, land capability, and agricultural viability. In addition, it seeks to identify any areas within the site that may be classified as environmentally or agriculturally sensitive (Pardus Solutions, 2025). Their findings inform this section of the BAR.

9.4.6.1 Soil PH

The soils within the study area exhibit a pH range spanning from strongly acidic to slightly acidic, specifically between 0 and 6.4. This acidity can be influenced by various factors, including the nature of the parent material, depletion of organic matter, nutrient removal through crop harvesting, surface soil erosion, and the application of nitrogen and sulfur-based fertilizers. Although this pH range remains generally acceptable for soil health, it may result in increased bioavailability and toxicity of aluminium and manganese to vegetation, while simultaneously reducing the availability of essential nutrients such as calcium, phosphorus, and magnesium (Pardus Solutions, 2025).

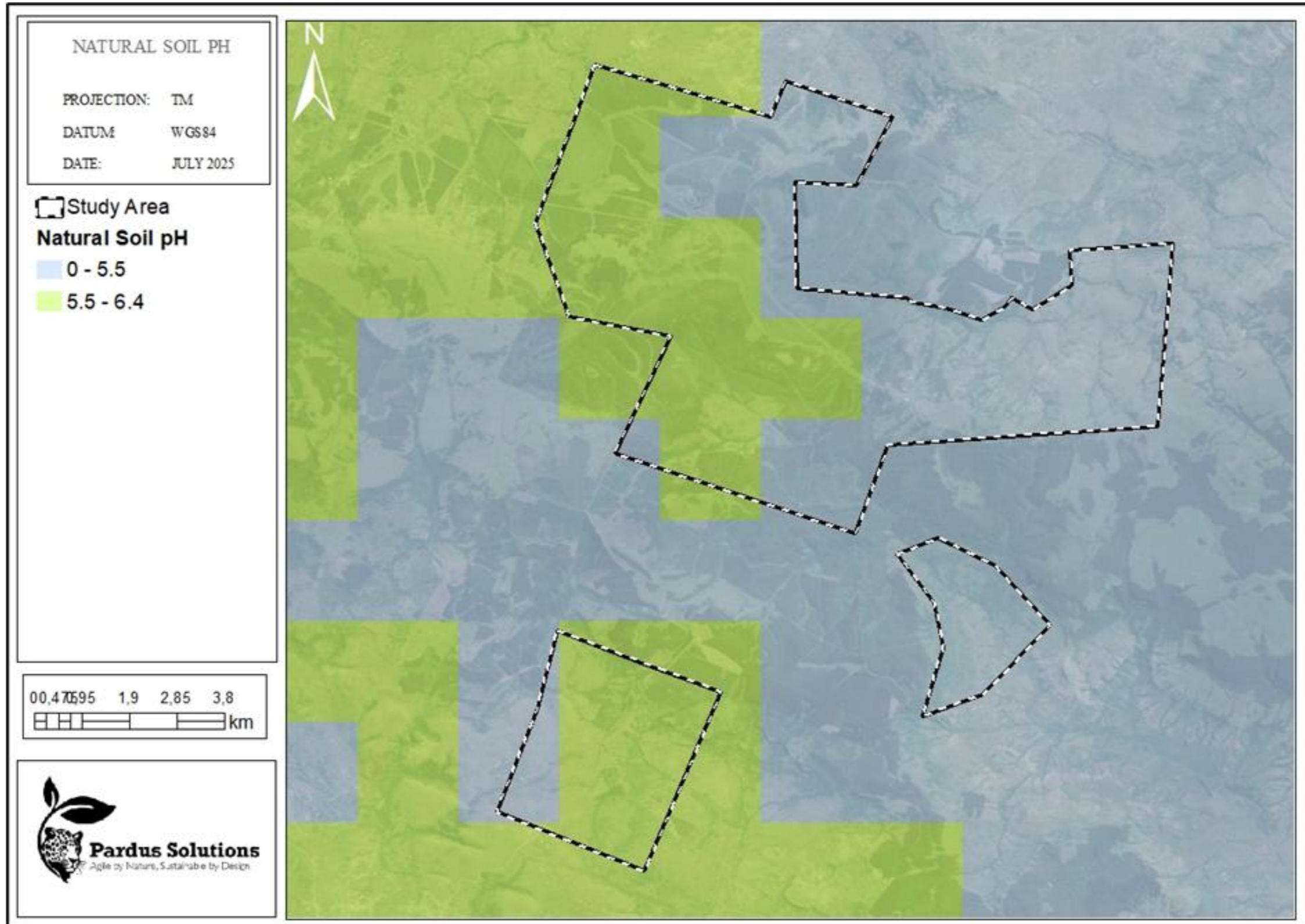


Figure 9-14 Soil pH associated with the study area (source : Pardus Solutions, 2025)

9.4.6.2 Soil and Terrain (SOTER) Dominant Soils

The study area is predominantly underlain by dystrophic regosols, which are characterised by loosely consolidated, fragmented rock material and shallow, poorly developed soils overlying the bedrock. These soil types are typically found in mountainous terrains. Their common land uses include low-intensity grazing, harvesting of forest products, and, in certain cases, capital-intensive irrigated agriculture (Pardus Solutions, 2025).

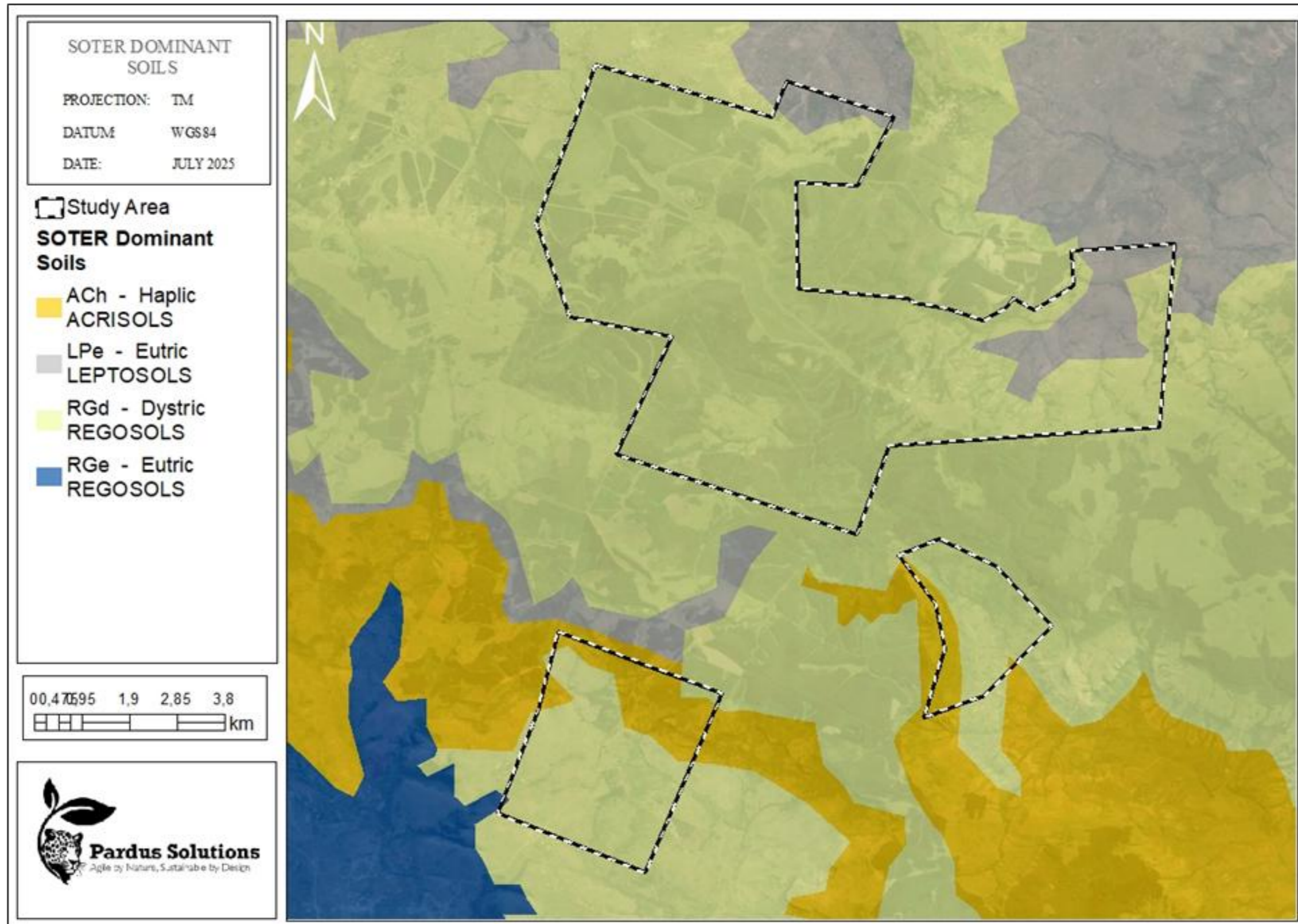


Figure 9-15 SOTER dominant soils associated with the study area (source : Pardus Solutions, 2025)

9.4.6.3 Soil Depth

Soil depths throughout the study area predominantly range between 450 mm and 750 mm, with some areas exhibiting depths less than 450 mm. These soil depths are generally regarded as suitable for cultivating a variety of crops, as deeper soils have a greater capacity to retain water and essential nutrients compared to shallower soils with comparable textures (Pardus Solutions, 2025).

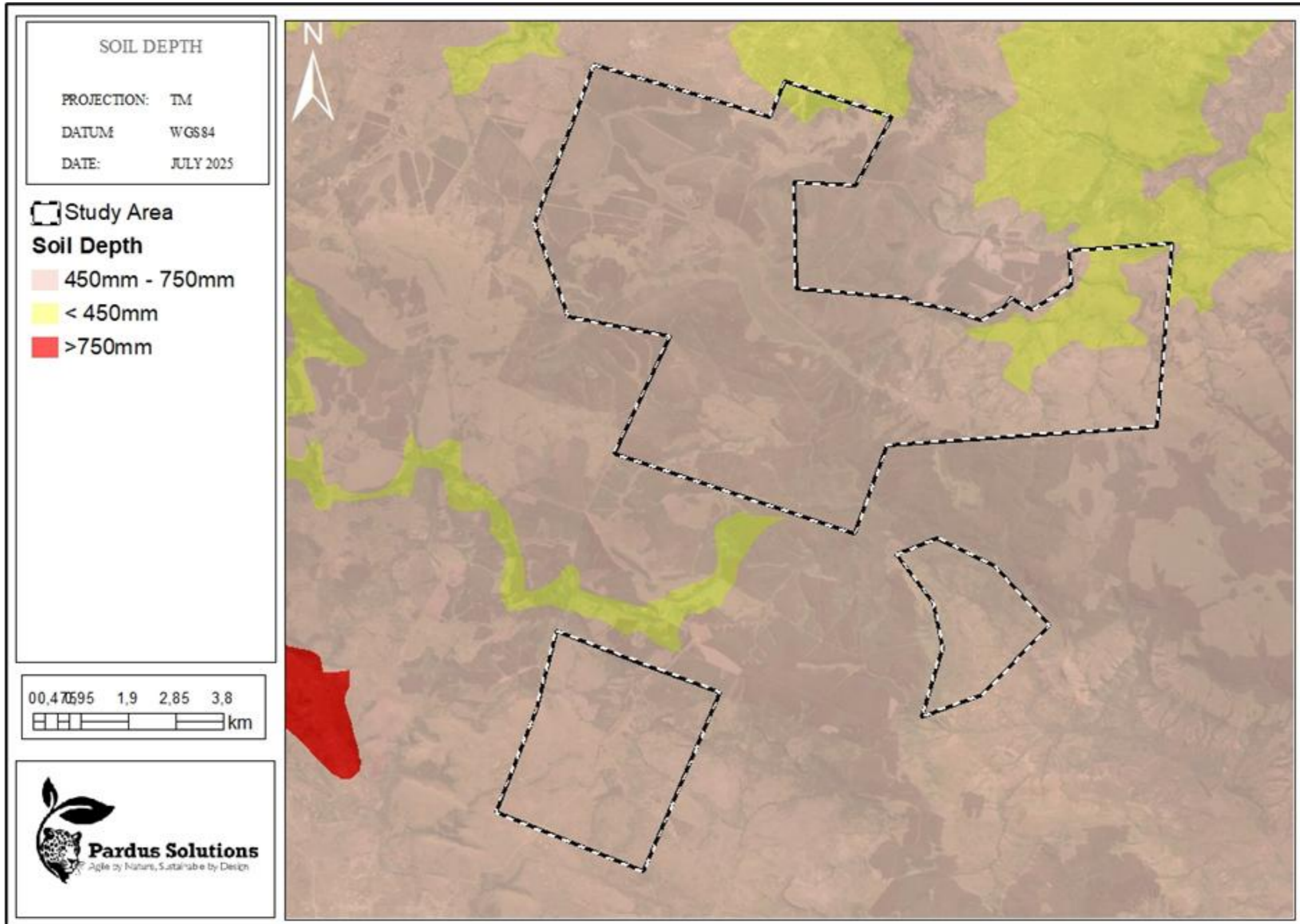


Figure 9-16 Soil depth of soil associated with the study area (source : Pardus Solutions, 2025)

9.4.6.4 *land uses within the study area*

The predominant land use within the study area consists of commercial forestry plantations, which serve multiple purposes including the production of firewood, timber, medicinal plants, and recreational activities. Additionally, livestock grazing and subsistence farming were noted in proximity to residential settlements. Evidence of land degradation, particularly erosion gullies, was also identified within the area (Pardus Solutions, 2025).



Figure 9-17 Land uses within the study area (source : Pardus Solutions, 2025)

9.4.6.5 soil forms in the study area

The study area consists of the following soil forms

- Mispah/Glerosa
- Nkonkoni
- Cartref
- Dundee
- Witbank/Johannesburg

Table 9-1 Soil forms in hectares (ha) occurring within the study area.

Study Area				
Soil Forms	Area (Ha)	Percentage (%)	Land Capability	Agricultural Potential
Nkonkoni/Vaalbos	420.4	6.1	Arable (Class IV)	Moderate
Cartref	123.9	1.8	Watercourse (Class V)	Very Low
Dundee	347.7	5.1		
Mispah/Glenrosa	5809.3	84.9	Grazing (Class VI)	Low
Witbank/Johannesburg	140.4	2.1	Wilderness (Class VIII)	Very Low
Total Enclosed	6841.7	100		

Table 9-2: Land capability (DAFF, 2017) associated with the soils occurring within the study area.

Soil Form	Land Capability Groups	DAFF (2017) Classification
Nkonkoni/Vaalbos	Arable Land	8. Moderate
Cartref	Watercourse	3. Very Low to Low
Dundee		
Mispah/Glenrosa	Grazing Land	5. Very Low to Low
Witbank/Johannesburg	Residential Areas	1. Very Low

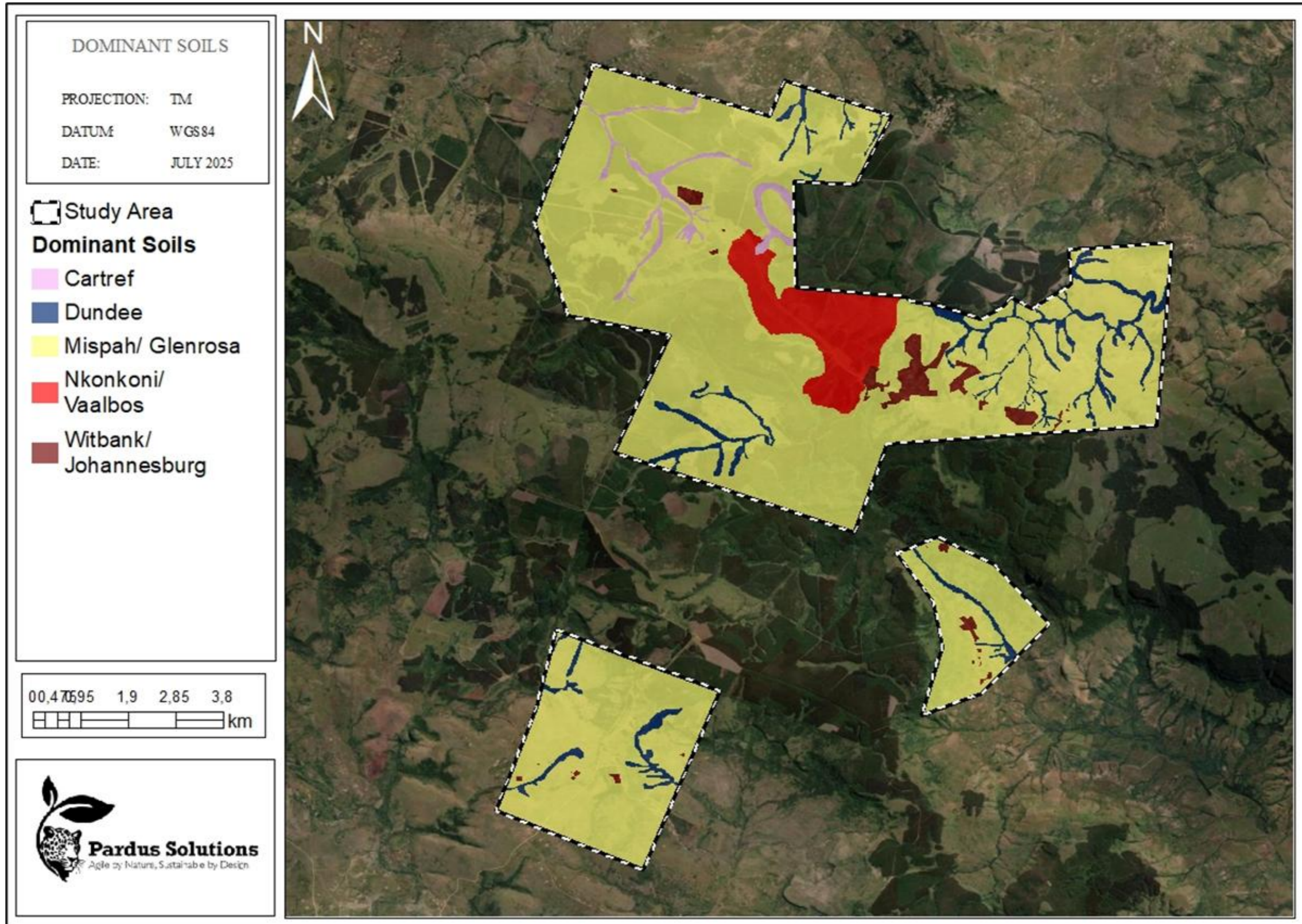


Figure 9-18 Dominant soils form within the study area (source : Pardus Solutions, 2025)

9.4.6.6 Mitigation measures

According to Pardus Solutions (2025), the following mitigation measures are recommended to address potential impacts related to soil, land use, and agricultural compliance during the proposed development:

Soil Contamination Management

- Contamination prevention measures should be integrated into the Environmental Management Programme (EMPr) and consistently implemented, ensuring accessibility for contractors and construction personnel on site.
- Adequate portable toilets must be provided for workers, with regular sewage collection and disposal at authorised wastewater treatment facilities.
- A spill prevention and emergency response plan, alongside dust suppression and fire prevention plans, should be developed to guide construction activities.
- An emergency contingency plan must be in place to manage spill clean-ups and prevent contamination.
- The burial of waste, including rubble, domestic waste, and empty containers, on site is strictly prohibited; all construction waste must be removed to approved disposal sites (Pardus Solutions, 2025).
- Soil Erosion and Dust Management
 - Vegetation removal should be avoided until soil stripping is required; exposed surfaces should be stabilised or re-vegetated as soon as practically possible.
 - Construction vehicles must be well-maintained and regularly inspected to prevent chemical spills (e.g., diesel or oil) that could harm the environment.
 - Post-installation, the ground should be seeded with indigenous grasses or native vegetation to restore cover.
 - Vegetation clearance and construction activities should be scheduled during low rainfall periods to reduce erosion risk from stormwater and wind.
 - Vegetation clearance should be avoided before prolonged inactivity periods.
 - Disturbed areas adjacent to the development site should be re-vegetated with an indigenous grass or vegetation mix to re-establish protective cover and minimise erosion.

- Temporary erosion control measures must be implemented during construction until vegetation is adequately established (Pardus Solutions, 2025).

9.4.6.7 *Palaeontology*

A Palaeontological Impact Assessment (PIA) was undertaken by Prof. Marion Bamford in July 2025 to evaluate the potential impacts of the proposed development on palaeontological heritage resources. The purpose of the assessment was to determine the sensitivity of the underlying geological formations and to identify any potential fossil-bearing strata that may be disturbed during construction activities. This assessment forms part of the compliance requirements set out in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), which mandates the protection and management of South Africa's palaeontological heritage. The findings of the PIA inform appropriate mitigation measures to ensure the conservation of any significant fossil material that may occur within the project area (Bamford, 2025).

9.4.6.7.1 *Palaeontological Context*

According to Bamford (2025), the proposed prospecting area intersects geological units of varying palaeontological sensitivity. These include the highly sensitive Vryheid Formation, as well as the moderately sensitive Mbizane and Pietermaritzburg Formations.

The underlying Dwyka Group consists of seven distinct facies, deposited under a range of glacial and marine conditions during the Permo-Carboniferous period (Visser, 1986; Visser, 1989; Johnson et al., 2006). In the northern and eastern regions, this unit is represented by the Mbizane Formation, while in the southern and western areas, it is known as the Elandsvlei Formation. The seven facies include:

- **Massive diamictite facies**, comprising dense, clast-poor material deposited in subglacial or subaqueous environments.
- **Stratified diamictite facies**, characterised by alternating layers of diamictite, mudrock, sandstone, and conglomerate, formed by rapid sediment gravity flows with some glacial reworking.
- **Massive carbonate-rich diamictite facies**, formed through the rainout of debris, with carbonates likely precipitated from interstitial waters.
- **Conglomerate facies**, ranging from single boulder beds to poorly sorted granule-rich conglomerates, associated with glacial lodgement or water-reworked sediment gravity flows.
- **Sandstone facies**, interpreted as turbidite deposits.
- **Mudrock with stones facies**, representing iceberg rainout in distal marine environments.

- **Mudrock facies**, made up of dark, carbonaceous mudstone, shale, or rhythmite formed by fine sediment settling in quiet water conditions. This is the only facies within the Dwyka Group that is known to be fossiliferous.

In Bamford's (2025) report, the overlying Pietermaritzburg Formation, part of the Ecca Group, is described as comprising dark silty mudrocks that grade upward into bioturbated sandy and silty beds. This stratigraphic sequence is interpreted as the result of a major post-glacial marine transgression, followed by the progradation of a shoreline. Subaqueous carbonate concretions are noted to have formed along an unstable shelf environment. According to Bamford (2025), invertebrate trace fossils have been identified in the upper parts of the formation, though direct surface exposure is limited due to lithological weathering and regional climatic factors. Consequently, the understanding of this unit's palaeontological potential is largely based on borehole data.

Bamford (2025) further notes that, although the Dwyka Group is extensively exposed across the region, fossil material is rare. *Glossopteris* flora, typical of the Permian period, has only been identified sporadically, and exclusively within the mudrock facies. Fossil plant fragments have thus far only been documented in the Douglas area, despite the group's wide geographic extent. This rarity underscores the low probability of encountering significant fossil assemblages in most of the Dwyka facies, except in the specific conditions represented by the carbonaceous mudrocks.

In her assessment, Bamford (2025) notes that the Pietermaritzburg Formation is characterised by only sparse and fragmentary fossil evidence. Plant remains, primarily *Glossopteris* leaves, have been reported, along with invertebrate trace fossils indicative of marine environments, such as *Helminthopsis*. According to Bamford (2025), the presence of such ichnofossils, in conjunction with sedimentary facies, supports interpretations by Bordy et al. (2017) that the formation was deposited in a low-energy, northerly shallowing marine shelf environment. This setting experienced an initial deepening followed by gradual shallowing during the Middle Permian. Additional trace fossils, including *Skolithos* and evidence of widespread bioturbation, further confirm the influence of marine conditions during deposition.

The Vryheid Formation, as described in Bamford's (2025) report, occupies varying stratigraphic positions. It rests unconformably on pre-Karoo or Dwyka Group rocks in the northern and northwestern portions of the project area, while in the central and eastern sections it directly overlies the Pietermaritzburg Formation. The Vryheid Formation exhibits a range of deltaic facies, consisting of thick, upward-coarsening sequences. According to Bamford (2025), these facies represent delta-front and delta-plain environments, with sedimentary evidence for delta switching and fluvial influences such as meandering and braided river systems, interfluves, and abandoned channels. Coal seams within the formation originated in extensive peat swamps that developed across abandoned alluvial plains, indicating significant organic accumulation under wet, low-energy conditions.

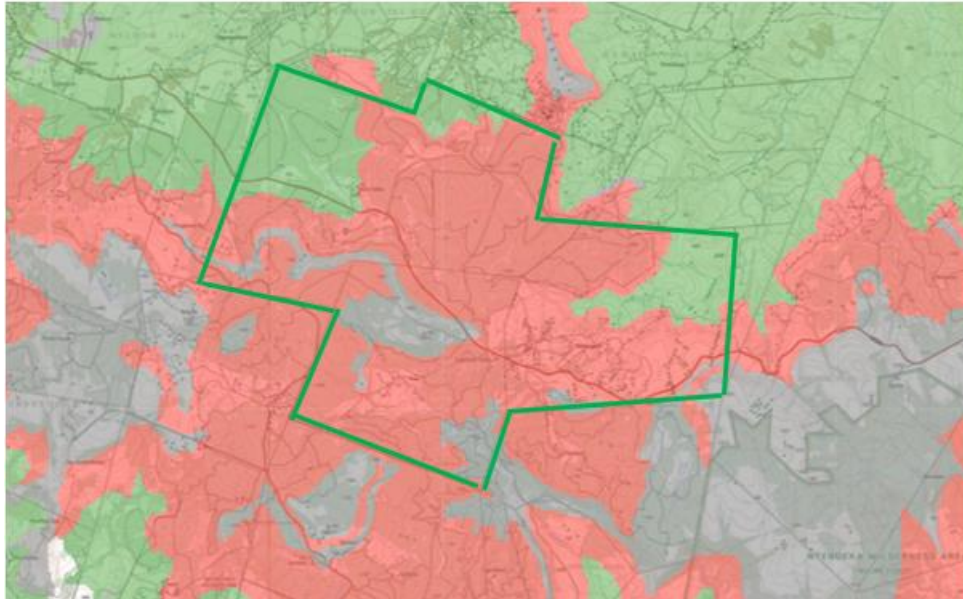


Figure 9-19: SAHRIS palaeosensitivity map for the main section for the prospecting right application shown within the green rectangle. (Source Bamford 2025)

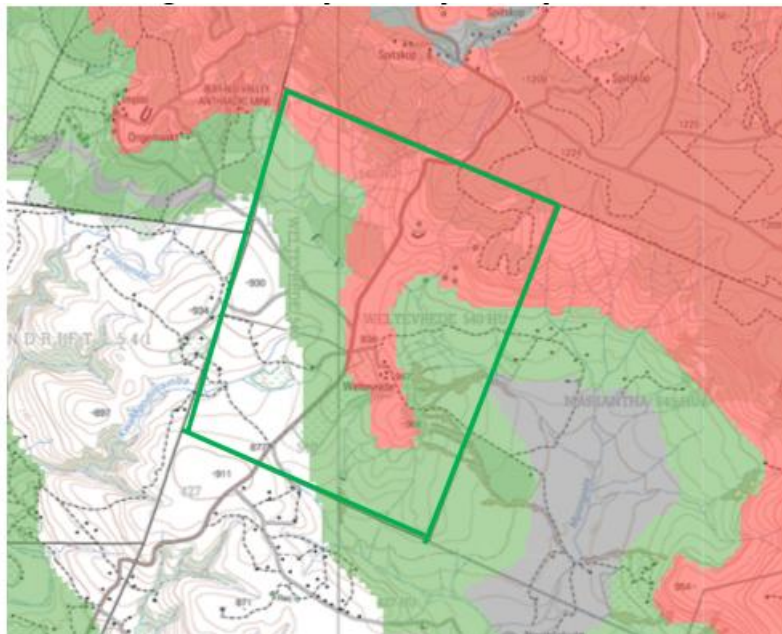


Figure 9-20 SAHRIS palaeosensitivity map for the southwest section on Farm Weltevrede 540 HU. (Source Bamford 2025)

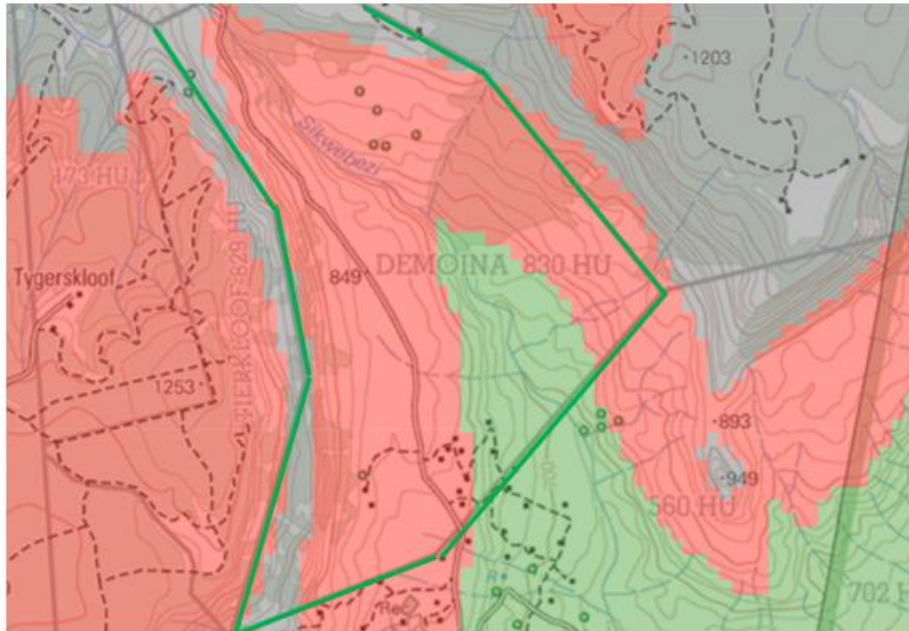


Figure 9-21 SAHRIS palaeosensitivity map for the southeast section on Farm Demoine 830 HU (Source Bamford 2025)

Based on the SAHRIS palaeosensitivity mapping, as referenced in Bamford’s (2025) report, the study area is predominantly classified as having very high palaeontological sensitivity, corresponding to the presence of the Vryheid Formation. This formation is well-documented for containing coal seams and is considered palaeontologically significant. In contrast, the Dwyka Group and Pietermaritzburg Formation are rated as moderately sensitive due to their more limited fossil content. Areas underlain by dolerite and granite are classified as having negligible to zero palaeontological sensitivity, as these intrusive igneous rocks are not fossiliferous and do not host coal seams (Bamford, 2025).

According to Bamford (2025), although no fossils were observed during the site assessment due to soil cover, the geological formations present within the development footprint are of a suitable age and type to potentially preserve fossil material. As such, surface-disturbing activities associated with the proposed development may pose a risk to palaeontological heritage if fossil-bearing strata are encountered. Since fossil material is unlikely to be visible until after topsoil removal, a **Fossil Chance Find Protocol** has been incorporated into the report to guide appropriate procedures in the event that fossil material is uncovered during construction (Bamford, 2025).

9.4.6.8 Fossil Chance Find Protocol

As outlined in Bamford’s (2025) report, a palaeontological monitoring protocol must be implemented once ground-disturbing activities, such as excavation, drilling, or mining, commence within the development footprint. This programme is precautionary in nature and will only be activated if fossil material is encountered during the course of construction. The procedures below form part of the Fossil Chance Find Protocol

- Monitoring is only triggered if fossils are observed on the surface or encountered during sub-surface activities.
- Upon initiation of excavations, the site's environmental control officer (ECO), or another suitably designated individual, must conduct a preliminary visual inspection of exposed rock and spoil material. Any fossiliferous material, such as plant remains, insect impressions, vertebrate bones, or coalified fragments, should be carefully set aside in a protected area, ensuring construction work continues uninterrupted.
- Reference images of potential fossil types, including plants, invertebrates, vertebrates, and trace fossils (e.g. in shales and mudstones), should be made available to the developer and incorporated into the Environmental Management Programme (EMPr) training and awareness initiatives.
- Any suspected fossil finds must be photographed and forwarded to the appointed palaeontologist for an initial assessment.
- Should the palaeontologist determine that the material warrants further investigation, a site visit will be arranged to inspect the finds and, where possible, review discarded material stockpiles or dumps.
- Fossils deemed scientifically significant must be collected, catalogued, and curated at an appropriate accredited repository or institution, pending the issuance of a permit from the provincial heritage authority, Amafa aKwaZulu-Natali. Annual reporting obligations to Amafa must be fulfilled in accordance with the terms of the permit.
- If no scientifically valuable fossils are identified, additional site inspections by the palaeontologist will not be necessary.
- A final compliance report must be submitted to Amafa upon project completion, but only in the event that fossil material was recovered during the development.
- Should no fossil material be discovered and all excavations are concluded, no further palaeontological monitoring will be required (Bamford, 2025).

9.4.7 Heritage

Agri Civils was appointed to conduct a desktop Heritage assessment and their findings inform this section of the BAR. The primary objective of the heritage assessment was to contextualise the designated study area to assess the potential presence and significance of heritage resources that may be encountered during the prospecting phase. This contextual analysis forms the basis for guiding future heritage investigations and provides informed

recommendations for the appropriate management and protection of such resources throughout the prospecting process (Agri Civils, 2025).

9.4.7.1 Study Area Archaeo History

Vryheid

According to the heritage assessment compiled by Agri Civils (2025), the historical development of Vryheid is deeply rooted in the political fragmentation of Zululand following the Anglo-Zulu War of 1879. In an effort to weaken the Zulu kingdom, British authorities divided Zululand into thirteen smaller chiefdoms. However, this division resulted in intensified rivalry and conflict among the fragmented entities.

As outlined in the report, one of the most notable conflicts arose in 1884 between Zibhebhu and Dinuzulu. In response, Dinuzulu sought military assistance from a group of European mercenaries, offering land as compensation for their support (Agri Civils, 2025). The report further notes that despite various attempts to restore peace in the region, stability remained elusive. With the ZAR (Zuid-Afrikaansche Republiek) restricted from direct involvement due to the conditions of the Pretoria-London Convention, local farmers chose to align themselves with Dinuzulu in pursuit of both peace and land acquisition.

Agri Civils (2025) explains that with the assistance of these mercenaries, Dinuzulu achieved victory over Zibhebhu during the Battle of Ghost Mountain. Subsequently, approximately 800 individuals claimed entitlement to land for their involvement, though Dinuzulu lacked the means to fulfill all promises. British intervention ultimately led to a land grant being issued to the mercenaries in the northern region of the territory. This area was declared the “New Republic” on 5 August 1884, with Vryheid designated as its capital. As documented in the report, the New Republic was incorporated into the South African Republic in 1887, and following the Anglo-Boer War, the region was absorbed into the Natal province. Vryheid was formally recognised as a municipality in 1912 (Agri Civils, 2025).

Nongoma

The Nongoma area is characterised by a significant archaeological landscape, as detailed by Agri Civils (2025). Previous research has identified key heritage resources, particularly within the Hluhluwe-iMfolozi Nature Reserve, approximately 58 km southeast of the proposed Isihlengeni Prospecting Right area. Archaeological findings in this reserve include sites from the Early, Middle, and Later Stone Ages, as well as distinctive rock art sites. Notably, Middle Stone Age sites dominate the record, though most occur in disturbed, open-air contexts. The local rock art, although less prominent than Drakensberg examples, may be older in origin (Prins, 2014).

Outside the reserve, isolated ESA, MSA, and LSA sites have been documented near Nongoma, along with a recorded Iron Age engraving. The area also reflects successive waves of Iron Age settlement, beginning around

1,700 years ago. These early agro-pastoralist communities, associated with Matola pottery, utilised the fertile inland dune soils. Subsequent groups introduced Msuluzi, Ndongondwane, and Ntshekane ceramic traditions, largely within the Tugela River Basin (Agri Civils, 2025).

Historically, the region is closely tied to the early 19th-century formation of the Zulu Kingdom. Important heritage landmarks such as the emaKhosini Valley and King Dingane's capital near Ulundi highlight this legacy. Additionally, the Gqikazi settlement of King Cetshwayo is located nearer to Nongoma. The area also contains sites linked to the Anglo-Zulu War of 1879 and later colonial incursions, including early British and Voortrekker settlements (Agri Civils, 2025).

Battlefields

The Battle of Hlobane, which took place on 28 March 1879 during the Anglo-Zulu War, occurred approximately 27 km northwest of the proposed project area. As part of a broader diversion strategy to support British relief operations at Eshowe, Colonel Evelyn Wood launched an assault on abaQulusi strongholds atop Hlobane Mountain from his position at Khambula, near present-day Vryheid (Agri Civils, 2025; Von der Heyde, 2013).

Wood's multi-pronged force included Imperial Mounted Infantry, colonial volunteers, African auxiliaries, and Zulu allies under Chief Hamu. The plan was to ascend the mountain from both the eastern and western ends, herd captured livestock, and regroup. While Buller's eastern column succeeded in breaching abaQulusi defences, the western route proved impassable for horses and cattle. A miscommunication caused the Border Horse unit to become separated, and they were subsequently redirected into conflict, during which two of Wood's associates, translator Llewelyn Lloyd and Captain Ronald Campbell, were killed by defenders hidden in caves (Von der Heyde, 2013).

As the British forces attempted to withdraw, a larger Zulu army advanced from the south to support the abaQulusi. The Border Horse, retreating via the eastern pass, encountered Zulu reinforcements and suffered casualties, though some reached the plains and escaped toward Khambula. Simultaneously, Buller's forces faced renewed resistance while attempting to descend the mountain's western side. Wood, observing from a distance, received no reinforcements from Lieutenant Colonel Russell, who claimed to have misunderstood his orders and was already nearing Khambula (Agri Civils, 2025).

Despite the British withdrawal, Buller's leadership earned him the Victoria Cross. Nevertheless, the Battle of Hlobane is remembered as one of Britain's most significant defeats during the war, surpassed only by the loss at Isandlwana (Von der Heyde, 2013).

9.4.7.2 *Statement of significance*

The proposed Isihlengeni PRA is located within a region of considerable archaeological and historical richness. The area is potentially associated with heritage resources spanning multiple time periods, including the Early, Middle, and Later Stone Ages, as well as Iron Age settlements, rock art, and more recent historical sites (Agri Civils, 2025).

Due to the likelihood that certain heritage features, such as burial sites, may no longer be visible on the surface, often due to land disturbance, precautionary measures are necessary during prospecting activities. A 500 m buffer zone surrounding all perennial and non-perennial watercourses has been identified as potentially sensitive, as heritage sites are frequently located in proximity to such features. Significantly, most of the study area falls within this sensitive buffer (Agri Civils, 2025).

Although cultivated land is generally assumed to have lower heritage sensitivity due to prior disturbance, the cultivated portions of the study area are often linked to homesteads. This suggests a higher probability of underlying or adjacent heritage resources. In addition, various structures and infrastructure observed in the area may be older than 60 years and could therefore be protected under relevant heritage legislation (KwaZulu-Natal Amafa and Research Institute Act, Act No. 5 of 2018).

The presence of numerous rural settlements across the study area further elevates its heritage sensitivity. Notably, all human graves, regardless of age, are afforded statutory protection. Older graves, particularly those exceeding 60 years, are legally protected under multiple frameworks, including the KwaZulu-Natal Amafa and Research Institute Act (Act No. 5 of 2018), the Human Tissues Act (Act No. 65 of 1983), and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) (Agri Civils, 2025).

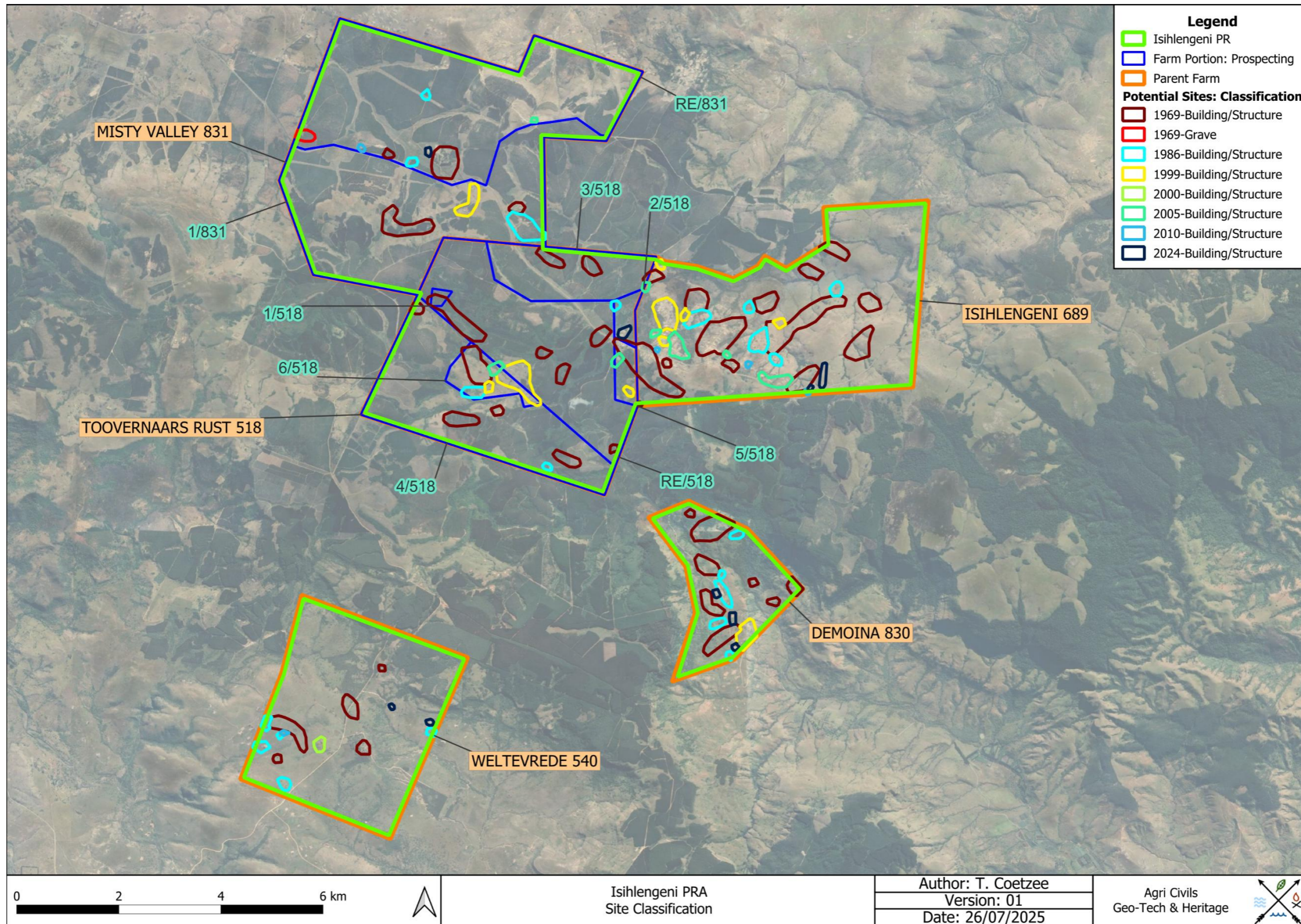


Figure 9-22 Site sensitivity map (Source Agri Civils)

9.4.7.3 *Heritage Management Recommendations*

To prevent potential damage to heritage resources within the demarcated prospecting area, several precautionary measures have been proposed:

- Although significant portions of the area are covered by plantations, the presence of historical and contemporary infrastructure indicates a densely settled landscape. Such areas are often linked to both marked and unmarked graves, which are considered highly sensitive and are protected by heritage legislation. These infrastructure zones and any identified graves should therefore be excluded from all prospecting activities (Agri Civils, 2025).
- Given the scale of the proposed activities (>0.5 ha) and the heritage sensitivity of the area, a Phase 1 Heritage Impact Assessment (HIA), including a systematic pedestrian survey, is recommended once the 15-hectare prospecting footprint is finalised (Agri Civils, 2025).
- The 500 m buffer zone around perennial and non-perennial rivers and streams is regarded as sensitive due to the frequent association of heritage sites with water sources. Even in previously disturbed cultivated areas within this buffer, the potential for cultural material remains, and caution should be applied during any prospecting work (Agri Civils, 2025).
- As subsurface archaeological material may only become visible during earth-moving activities, there is a possibility that culturally significant artefacts could be encountered. Should this occur, all prospecting must cease immediately, and further assessment must be conducted by a qualified archaeologist. In the event that human remains are uncovered, all activities must be halted and the Provincial Heritage Resources Authority (PHRA) must be notified without delay, in accordance with the KwaZulu-Natal Amafa and Research Institute Act (Act No. 5 of 2018) (Agri Civils, 2025).

9.4.8 **Socio-economic**

9.4.8.1 *KwaZulu-Natal Province*

KwaZulu-Natal is situated in the south-eastern part of South Africa, sharing its eastern boundary with the Indian Ocean. The province also borders the Eastern Cape, Free State, and Mpumalanga provinces, as well as the independent countries of Lesotho, Eswatini (Swaziland), and Mozambique. Often referred to as the “Garden Province,” KwaZulu-Natal features a diverse landscape, ranging from lush subtropical coastline in the east to savanna grasslands and the imposing Drakensberg Mountain Range in the west.

With a land area of approximately 94,361 km², KwaZulu-Natal is the third-smallest province in South Africa by size. However, it is the second most populous, with an estimated population of 11.07 million people. The provincial capital is Pietermaritzburg, while Durban serves as the largest city and a major economic hub. Other significant urban centres include Richards Bay, Port Shepstone, Newcastle, Estcourt, Ladysmith, and Richmond.

Economically, KwaZulu-Natal is a vital contributor to South Africa's GDP, particularly through its manufacturing sector, the largest in the country by contribution. The city of Richards Bay plays a central role in the province's industrial profile, serving as the base of South Africa's aluminium industry and home to the Richards Bay Coal Terminal, which supports the country's global position as one of the largest exporters of steam coal.

Agriculture also remains a cornerstone of the provincial economy. The coastal belt is dominated by extensive sugar cane plantations, which are the mainstay of the sector. This region also produces subtropical fruits, while inland areas focus on vegetable cultivation, dairy farming, and livestock production. Forestry contributes significantly to the rural economy, with plantations concentrated around Vryheid, Eshowe, Richmond, Harding, and Ngome.

Administratively, KwaZulu-Natal is divided into one metropolitan municipality, eThekweni and ten district municipalities. These are further subdivided into 43 local municipalities, reflecting a complex governance structure intended to facilitate local development and service delivery. These are illustrated in the Figure below.

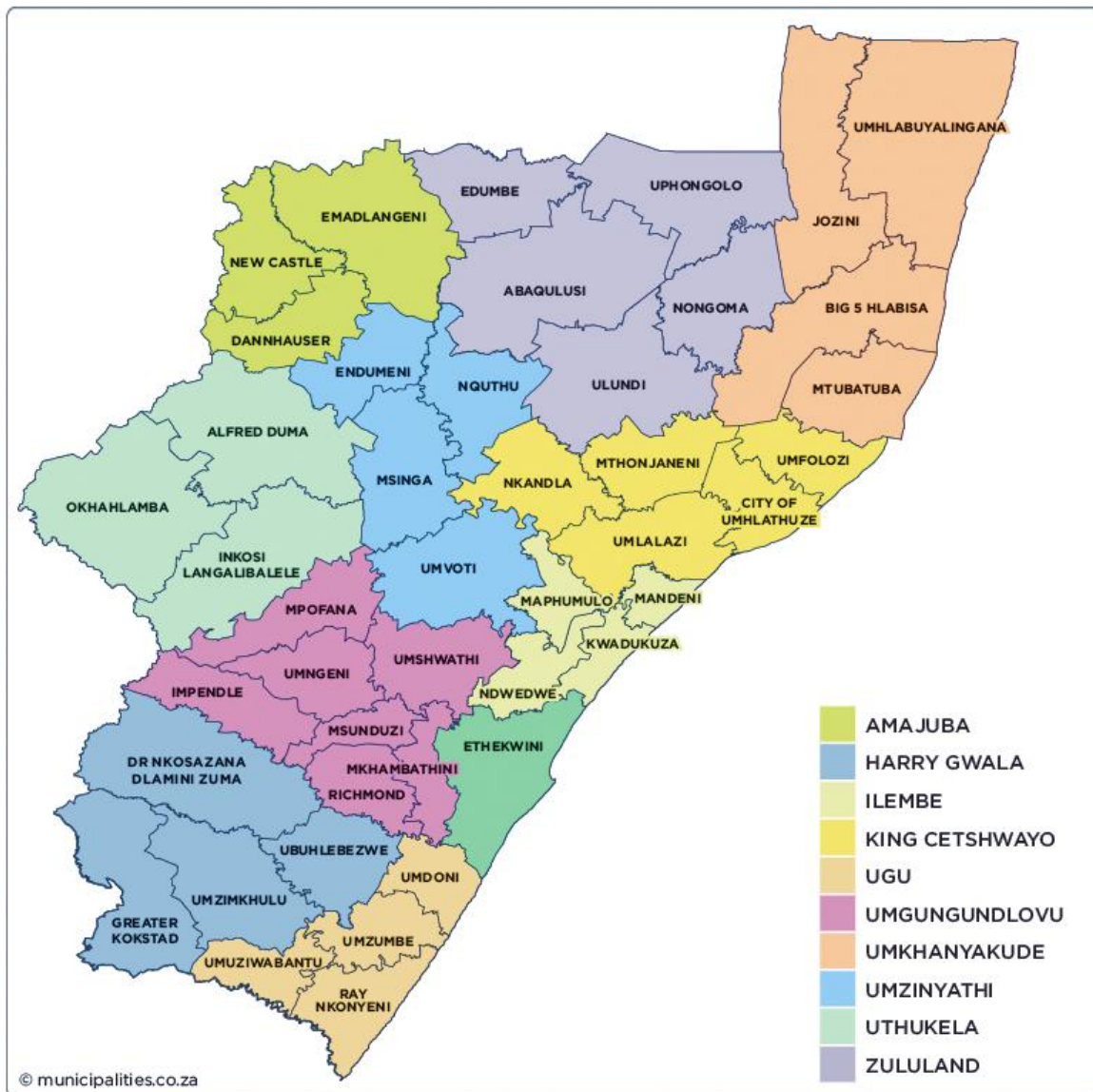


Figure 9-23 The DMs and LMs of the Kwa-Zulu Natal Province (Municipalities of South Africa, 2024)

9.4.8.2 Demographics

KwaZulu-Natal (KZN) is South Africa’s second most populous province, home to approximately 11.07 million people and contributing around 16% to the national GDP. With a land area of 94,361 km², it is the third-smallest province geographically but plays a significant economic and demographic role. The province records a Human Development Index (HDI) of approximately 0.714, placing it fifth nationally and categorised under high human development. Despite this, socio-economic disparities persist: nearly 46% of households live below the international poverty threshold, with 9% considered among the poorest. Unemployment remains high at 30.6%, with youth unemployment (ages 15–34) estimated between 50% and 60%. Education access has improved, with

74% enrolment among individuals aged 5–24, and 45.9% of adults having completed Matric or higher. However, child health indicators remain concerning, with an under-five mortality rate of 44 per 1,000 and stunting affecting 30.6% of children. Crime and social unrest also present major challenges, with over 13,000 contact crime arrests and 1,428 murders recorded in late 2024. Despite these issues, the province is experiencing strong infrastructure investment, particularly in sanitation, energy, and economic zones such as Dube TradePort and Richards Bay, positioning KZN as a region of both challenge and opportunity within South Africa’s development landscape.

Demographic Overview of KwaZulu-Natal

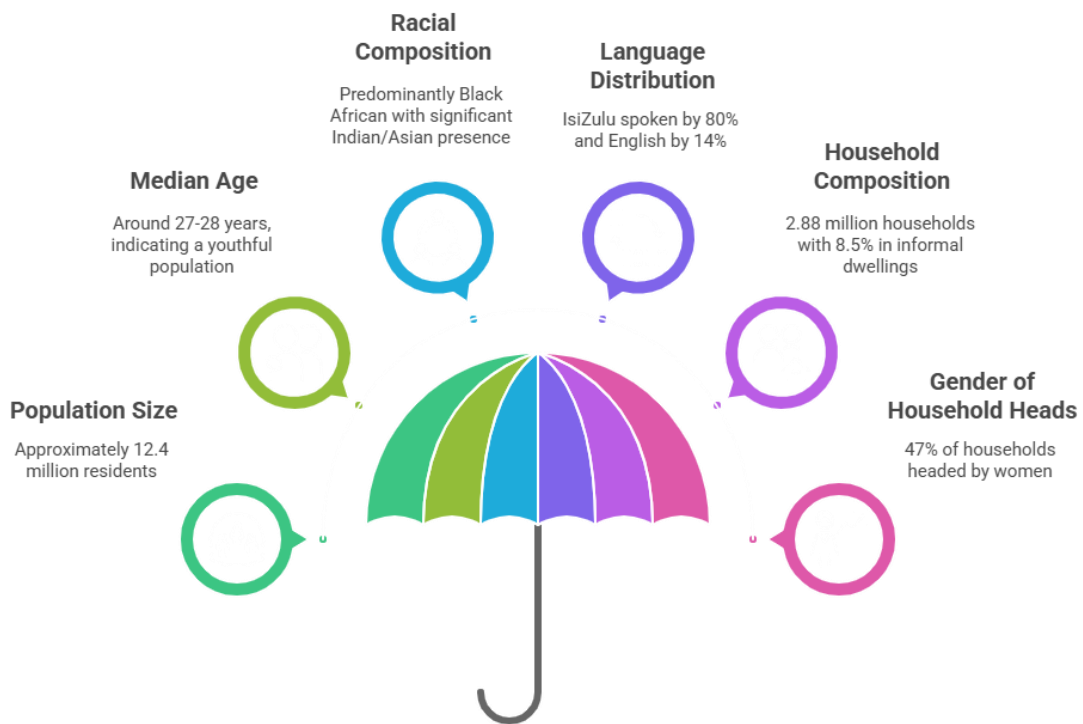


Figure 9-24 KwaZulu Natal Province Key Statistics

KwaZulu-Natal Province Key Statistics

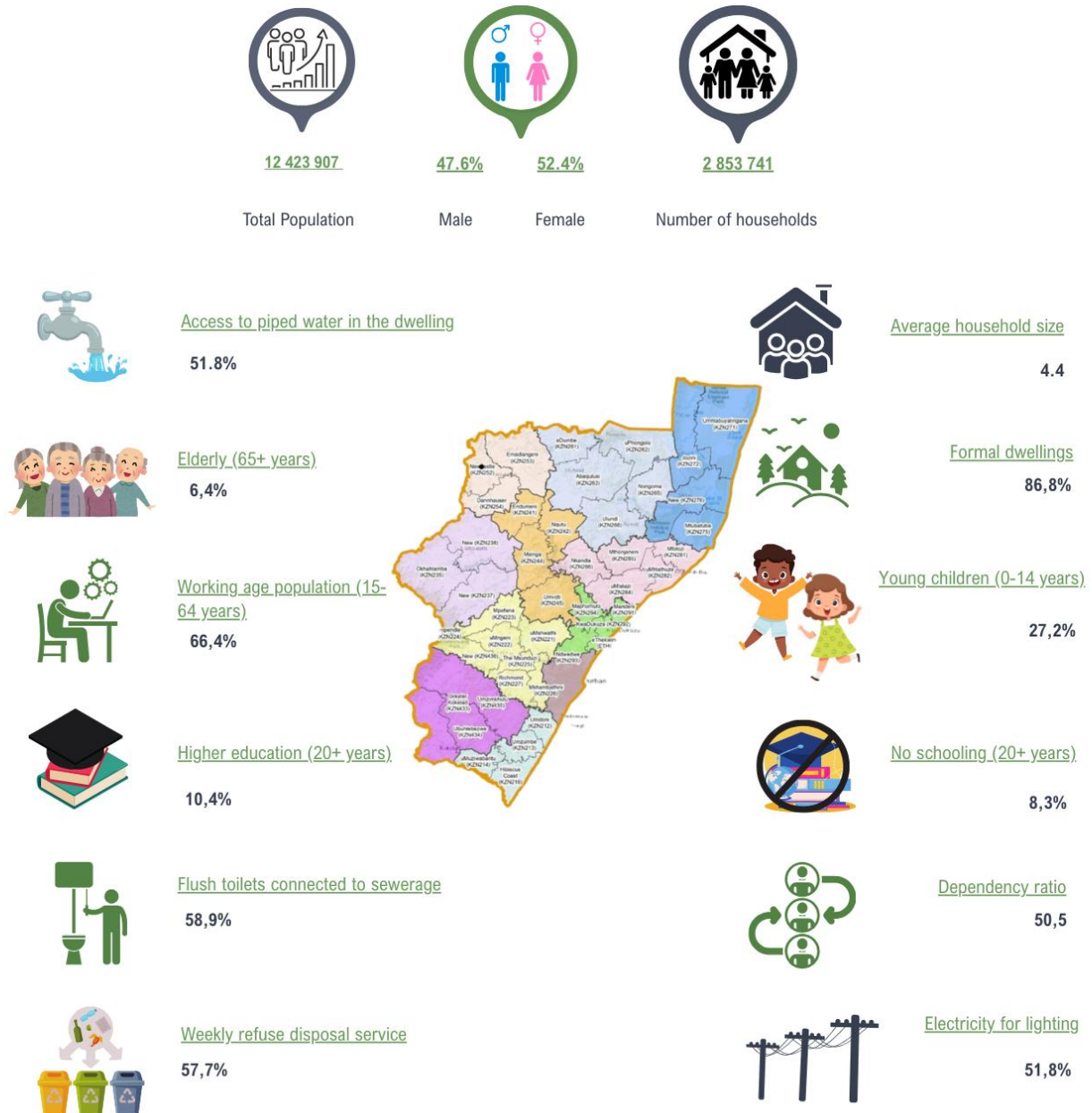


Figure 9-25 Kwa-Zulu Natal province Key statistics

9.4.8.3 Zululand District Municipality

The Zululand District Municipality is one of the ten district municipalities within KwaZulu-Natal and is situated in the north-eastern part of the province. It covers an area of approximately 15,307 km² and comprises five local municipalities: Abaqulusi, eDumbe, uPhongolo, Nongoma, and Ulundi. The district is predominantly rural in character, with scattered settlements and a high reliance on communal land governed under traditional leadership structures.

The district's administrative seat is Ulundi, which also holds historical significance as a former capital of the Zulu Kingdom. Other key towns include Vryheid (in the Abaqulusi Local Municipality), Nongoma, and Pongola. The region is characterised by its rich cultural heritage, scenic landscapes, and a population estimated at just over 900,000 people.

Economically, Zululand faces several developmental challenges, including high levels of poverty, unemployment, and limited access to infrastructure and basic services. The economy is largely driven by agriculture, forestry, tourism, and limited mining activities. Livestock farming and subsistence agriculture dominate the rural economy, while commercial agriculture, particularly sugarcane and timber production, exists in more developed areas.

The district is also endowed with mineral resources, including coal, which has attracted interest for prospecting and mining. However, economic growth is constrained by factors such as poor road infrastructure, limited investment, and fragmented land ownership patterns. Despite these challenges, Zululand holds significant potential for rural development, particularly through the responsible use of its natural resources, heritage tourism, and targeted infrastructure expansion.

Socially, the district contends with high levels of youth unemployment, low literacy rates in remote areas, and a dependency on social grants. Service delivery remains uneven across the district, with some areas experiencing challenges in water access, sanitation, and healthcare provision. Local government, in collaboration with traditional authorities and provincial stakeholders, plays a critical role in addressing these socio-economic disparities through integrated development planning.

Zululand District Key Statistics

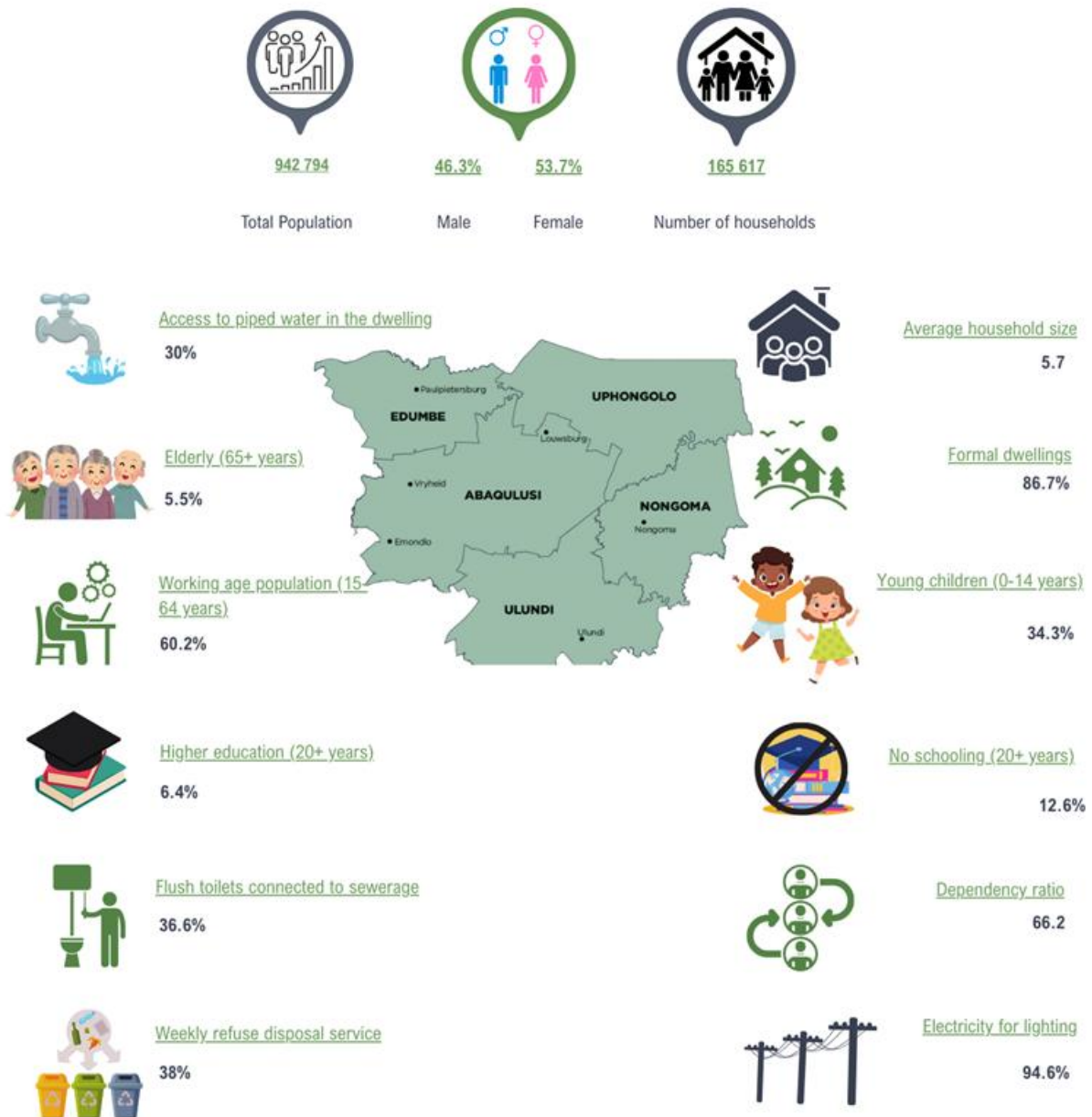


Figure 9-26 Zululand District Statistics



Figure 9-27 Plan illustrating Zululand DM (and its Local Municipalities)

9.4.8.4 Abaqulusi Local Municipality

Abaqulusi Local Municipality is one of five local municipalities that form part of the Zululand District Municipality in the north-eastern region of KwaZulu-Natal. The municipal area spans approximately 4,070 km² and includes the key urban centre of Vryheid, along with smaller settlements such as Hlobane, Louwsburg, Ngome, and Coronation. The municipality lies at the intersection of the R34 and R69 regional routes and serves as a strategic service and economic node within the largely rural Zululand District.

With an estimated population of over 211,000 people (Stats SA, 2022), Abaqulusi reflects a predominantly rural demographic, with many households residing in traditional dwellings on communal land governed under the Ingonyama Trust. The spatial distribution of settlements is widely dispersed, making access to basic services and economic opportunities a significant challenge. A large portion of the population is concentrated in outlying areas,

placing pressure on the municipality to deliver infrastructure and services across difficult terrain and low-density settlements.

Economically, Abaqulusi's activity is anchored in agriculture, public sector employment, and small-scale trade. Commercial farming is active in areas surrounding Vryheid, particularly in cattle farming, maize, and timber production. Former coal mining activities in Hlobane and surrounding areas have left a legacy of underutilised industrial land and socio-economic vulnerability following mine closures. The municipality currently lacks significant formal industrial development, but small-scale businesses, spaza shops, and informal trading form the backbone of household income generation, especially in peri-urban and rural areas.

The municipality faces pronounced socio-economic challenges. Unemployment is high, particularly among youth and unskilled adults. According to the Zululand District IDP (2022), youth aged 18–35 represent a significant portion of the population, but formal employment opportunities remain scarce, contributing to high levels of out-migration and dependency on social grants. Education attainment levels are generally low outside urban areas, with limited access to post-secondary institutions. Health services are stretched across widely scattered clinics and community health centres, and access to healthcare is further complicated by poor road infrastructure and transport limitations.

Infrastructure backlogs remain a key constraint to development. Many rural households still lack access to piped water, formal sanitation, and electrification. In some areas, residents rely on streams, boreholes, or rainwater harvesting for household water, while access to safe sanitation is limited to pit latrines. Road conditions, particularly gravel roads connecting remote settlements, are poor, especially during the rainy season, which hampers access to services and markets.

Despite these challenges, Abaqulusi has notable development potential. Its location at the intersection of key transport corridors offers opportunities for agro-processing, logistics, and tourism development, particularly if infrastructure investment and economic diversification are prioritised. Furthermore, strong traditional leadership structures and cultural heritage assets, including sites associated with Zulu history, position the area as a potential cultural tourism destination. Local development strategies increasingly emphasise small enterprise development, rural agriculture, and youth empowerment as pathways to inclusive growth.

The municipal administration has committed to addressing service delivery gaps and promoting local economic development through its Integrated Development Plan (IDP), although implementation is often constrained by financial, institutional, and capacity limitations. Strategic partnerships with provincial and national departments,

private investors, and traditional councils will be essential to unlock the area’s socio-economic potential while ensuring inclusive, community-led development.

AbaQulusi Local Municipality Key Statistics

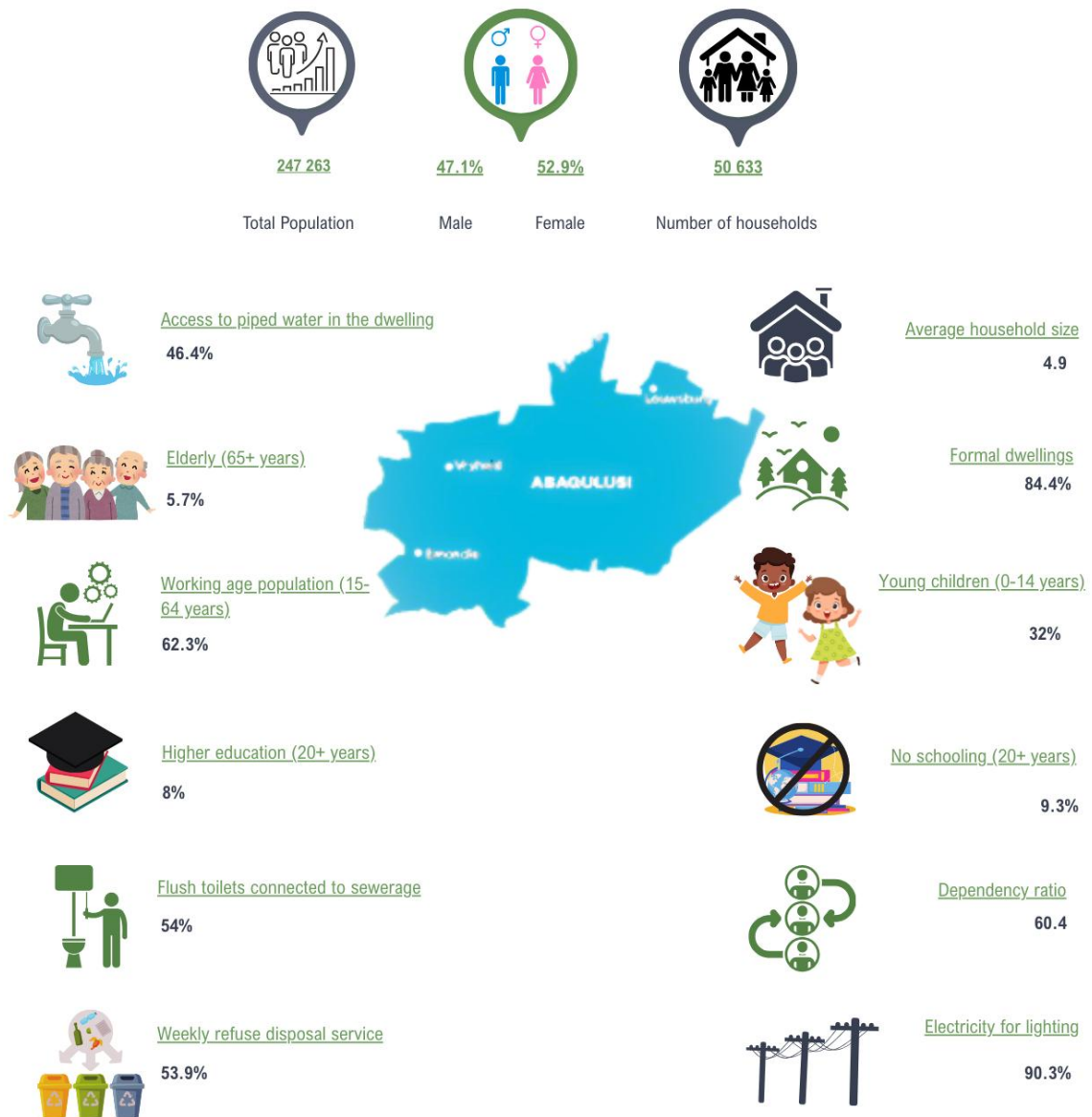


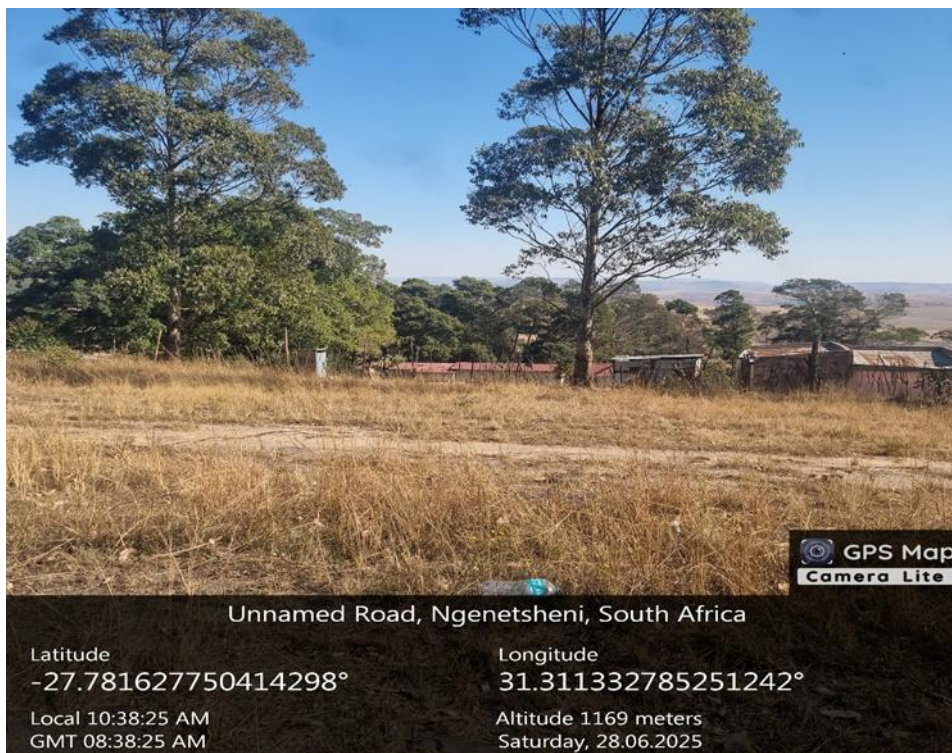
Figure 9-28: Abaqulusi Local Municipality Statistics

9.4.8.5 Socio-Economic Baseline: Primary Zone

The Primary Zone refers to the immediate vicinity or directly affected areas surrounding the proposed project site. It is described as the area likely to experience social impacts associated with the physical intrusion by Project infrastructure and Project-related activities. A social Impact assessment was conducted by Temvelo Consultants and informs this part of the BAR.

9.4.8.5.1 Housing

The primary zone is predominantly characterised by low-density, scattered rural homesteads, constructed using a mix of traditional materials (mud and thatch) and more modern alternatives such as concrete blocks and corrugated iron. Housing in this area reflects both cultural heritage and economic constraints, with limited formal planning or regulation. The prevalence of informal structures and incomplete dwellings may indicate systemic poverty and a lack of formal housing finance.



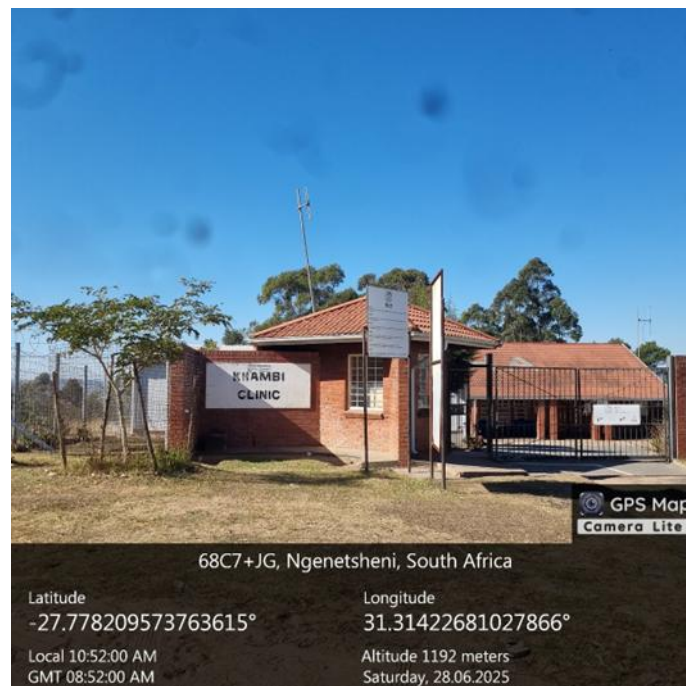
The image reflects a typical household in the Ngenetsheni area, comprising a main brick structure and multiple back rooms constructed from corrugated iron sheets, with a pit latrine located adjacent to the dwelling. This built environment illustrates a common rural housing typology, where formal and informal structures coexist within a single homestead. The presence of informal extensions such as tin back rooms often indicates overcrowding or multi-generational occupancy, highlighting underlying socio-economic challenges such as limited access to affordable housing or government-subsidised accommodation (Stats SA, 2022). The reliance on a pit latrine,

positioned in close proximity to living quarters, suggests restricted access to basic sanitation infrastructure, which may raise public health concerns particularly regarding groundwater contamination and disease transmission (WHO, 2019).

The proposed prospecting activities may lead to indirect impacts, such as increased stress on already limited-service delivery especially water, sanitation, and waste management systems. The introduction of exploration-related activity could influence settlement patterns and service needs in the area. On the other hand, prospecting could be a precursor to potential development that may bring employment opportunities or stimulate local infrastructure upgrades, if appropriately managed. However, without inclusive planning and community engagement, such benefits often bypass the most vulnerable groups (Lahiri-Dutt, 2014).

9.4.8.5.2 Access to Basic Services

Access to electricity, sanitation, and waste removal is inconsistent across the primary zone. While electrification has reached some households, load-shedding and cable theft pose regular disruptions. Many homes continue to rely on pit latrines, and formal refuse collection is generally absent, resulting in backyard dumping or open burning of waste. These gaps underscore spatial inequalities in service delivery, a common feature of former homeland areas and rural settlements in post-apartheid South Africa (Stats SA, 2022; Municipal Demarcation Board, 2023).



The image of Khambi Clinic illustrates a well-maintained government health facility within the Ngenetsheni area. The presence of both pedestrian and vehicle gates, clear signage, and a security guard stationed in a designated room reflects a structured and regulated environment an encouraging sign of accessible, accountable primary

healthcare provision. In many rural parts of South Africa, clinics like Khambi are the first and often only point of medical contact for large catchment areas, making their role in public health particularly important (Day & Gray, 2020).

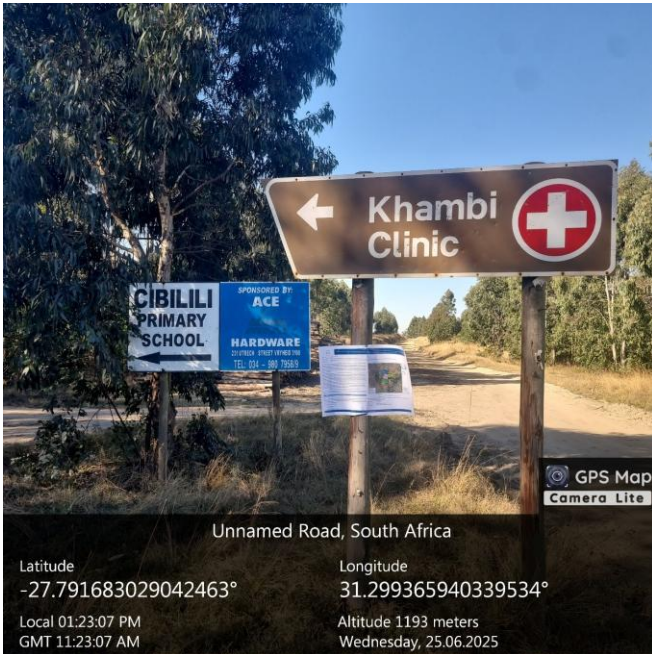
These clinics are tasked with handling everything from minor injuries to chronic disease management, maternal health, HIV/AIDS treatment, and child immunisations. They also serve as key information centres for health education and public health surveillance. However, such facilities are often under pressure due to limited staff numbers, medicine stock-outs, and aging infrastructure, particularly in the face of growing populations and fluctuating local economies (Gray et al., 2017).

If prospecting is introduced in the surrounding area, increased foot and vehicle traffic, short-term employment activity, or the presence of contractors could result in a spike in service demand, even during the exploration phase. Clinics such as Khambi may experience added strain without corresponding increases in resources or personnel. Additionally, increased dust and emissions from vehicles and equipment common in such phases could exacerbate respiratory or allergic conditions among patients, many of whom may already be vulnerable due to age, HIV status, or pre-existing chronic illnesses.

However, prospecting can also be a platform to strengthen the resilience of the local healthcare system. Health-focused community development initiatives may include infrastructure upgrades, supply chain support (e.g., backup power or refrigeration), funding for additional staff, or mobile clinic support to outlying areas. More importantly, engaging clinic staff in ongoing risk communication and health surveillance can ensure that community wellbeing remains at the heart of the exploration process. A collaborative approach between the project proponent, municipal health officials, and community health forums will be critical to maintain service quality while navigating the temporary disruptions of prospecting.

9.4.8.5.3 Schooling

Educational infrastructure in the primary zone consists primarily of public primary and secondary schools, many of which face infrastructure, staffing, and resource constraints. Access to quality education remains a challenge, with long walking distances to school and overcrowded classrooms common in the Project area. Schooling interruptions, such as absenteeism and high dropout rates, especially among girls, may also be prevalent due to socio-economic conditions. Tertiary education facilities are absent in the immediate area, limiting access to advanced learning.



The image of directional signage in the Ngenetsheni area, indicating routes to both Cibilili Primary School and Khambi Clinic, reflects a basic yet essential element of rural infrastructure that facilitates accessibility to critical social services. The presence of clear signage signifies some level of spatial organisation and government or municipal oversight in the area. For rural communities, wayfinding systems such as these are crucial for enhancing mobility, particularly for vulnerable populations including children, the elderly, and those seeking healthcare (Mchunu & Nzimande, 2021).

The proximity and visibility of signage pointing to both educational and health institutions underscore the significance of these services within the community's socio-economic fabric. However, prospecting-related development can alter local road networks, create detours, or cause damage to signage due to increased vehicle movement or surface disturbances. Disruption in access whether through physical obstruction or confusion arising from relocated or damaged signage can have tangible impacts on school attendance, healthcare access, and community safety. If carefully managed, infrastructure upgrades associated with prospecting could also include improved road signage and routing, supporting better long-term connectivity and service delivery.

9.4.8.5.4 Safety and Security

Community safety in the primary zone is largely maintained through informal systems, including social cohesion, traditional authority oversight, and community policing forums. There is a limited visible presence of formal law enforcement, and the nearest police station is often located several kilometres away, resulting in extended response times. Concerns around livestock theft, substance abuse, and petty crime are common in such rural settings (KZN Department of Community Safety, 2020). Households typically rely on self-fortification measures, such as fencing and gated yards, for security.



Ngome Police Station serves as a key law enforcement hub for the broader Ngenetsheni, Isihlengeni, and surrounding areas. Police stations

in rural settings like this are often responsible for vast geographical areas with limited resources and are expected to maintain order, respond to crimes, and facilitate conflict resolution with a small team and minimal infrastructure (Newham, 2020). Nonetheless, their symbolic and practical value in fostering community safety is substantial.

In addition to responding to criminal activity, rural police stations play a preventative and peacekeeping role, often working closely with traditional leaders and community policing forums. They manage everything from livestock theft and domestic disputes to road safety and public unrest. Given these wide-ranging responsibilities, any shift in local social dynamics such as those that could be introduced through prospecting requires proactive coordination with SAPS.

If prospecting is initiated, the station may experience increased demands on its capacity due to heightened vehicle traffic, temporary in-migration of contractors, or changes in land access patterns. While prospecting does not involve extraction or large-scale land alteration, even minimal infrastructure development can give rise to social tensions, particularly if expectations of employment or community benefits are unmet or misunderstood. The station may be called upon to mediate disputes or respond to safety concerns arising from exploration-related activities or stakeholder engagement processes.

To ensure Ngome Police Station is not overburdened during this period, a clear communication and cooperation framework is recommended. Prospecting applicants can engage SAPS early to establish incident reporting protocols, shared community messaging, and coordinated patrol planning if needed. This will also allow SAPS to proactively address public safety concerns, support conflict prevention, and strengthen relationships with community leadership. Beyond immediate needs, opportunities exist to support policing capacity such as improving station infrastructure, enhancing vehicle availability, or sponsoring community education programmes focused on safety, rights, and responsibilities. Done thoughtfully, these efforts can contribute to a safer, more informed environment for all parties involved.

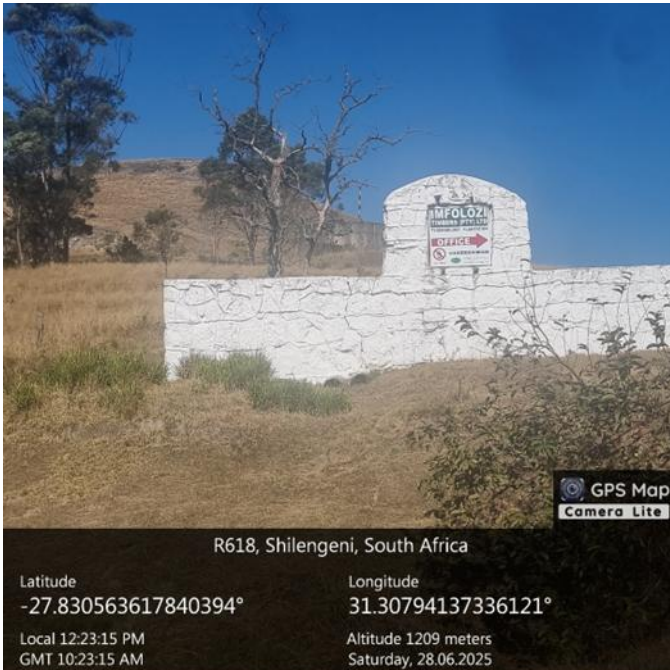


The image portrays a cluster of local shops in the Ngenetsheni area, offering a range of essential goods including food items and locally harvested honey. These informal or semi-formal businesses are characteristic of rural economies, often operated by local entrepreneurs or families. Such enterprises serve as key access points for daily necessities in areas where large retail outlets are absent and transportation is limited. The sale of locally sourced honey reflects the community’s dependence on natural resources for livelihoods and trade and may also indicate small-scale agroecological or beekeeping activities that are culturally and economically significant (FAO, 2018).

The proposed prospecting phase poses both risks and opportunities for this local retail ecosystem. On the one hand, increased economic activity and population influx could lead to a rise in demand, potentially boosting local trade and creating spin-off markets. On the other hand, exploration activities may disrupt existing commercial patterns through dust pollution, road use, or land-use conflicts, especially if prospecting occurs near community trading zones (Esteves et al., 2012). Displacement of local vendors by external suppliers linked to the prospecting project is also a possibility without deliberate economic inclusion. To protect local economic resilience, support mechanisms such as preferential procurement, market access, and enterprise development should be included in social management planning.

9.4.8.5.5 Agriculture

Subsistence agriculture remains a cornerstone of local livelihoods in the primary zone. Residents cultivate maize, beans, and vegetables on communal or family-owned plots, and livestock, primarily cattle and goats, are grazed on shared land. However, agricultural productivity is constrained by poor soil quality, limited access to irrigation, and lack of mechanisation (Department of Agriculture, 2022). Climate variability and land degradation further threaten the sustainability of agricultural practices in the area.

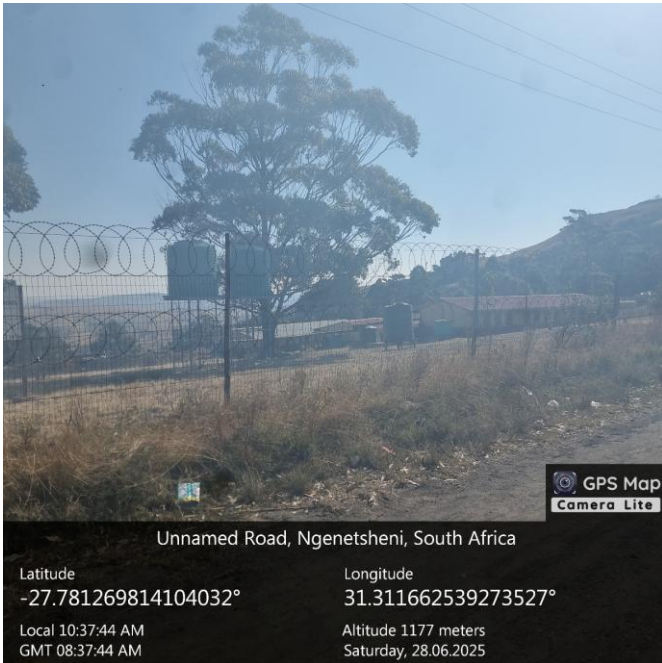


The image of signage for Imfolozi Timber signifies the presence of commercial forestry operations in the Ngenetsheni and surrounding areas, pointing to an active local timber economy. The visible branding and formal signage reflect the institutionalised nature of timber-related businesses in the region, suggesting the use of surrounding land for plantation forestry, timber harvesting, or wood processing. The prevalence of such businesses is likely tied to the area's rich natural resources and fertile land, which support both large-scale commercial operations and smaller community-based forestry initiatives. This sector contributes significantly to local employment and revenue generation (DWAF, 2005).

The existing presence of timber enterprises introduces an important dynamic in assessing the proposed prospecting activity. Land-use competition may arise, as both forestry and prospecting exploration are resource-intensive industries with spatial footprints that could overlap. Exploration may also disturb ecosystems supporting forestry operations, raising the risk of operational conflict or productivity loss. However, if carefully managed, the coexistence of prospecting and forestry industries could diversify the local economy and offer resilience against sector-specific downturns. Fair labour practices, transparent land access, and community engagement remain key to avoiding socio-economic tensions.

9.4.8.5.6 Access to Water

Households in the primary zone rely on a combination of communal standpipes, rainwater harvesting, rivers, and boreholes for water. While some communities are connected to the municipal water grid, intermittent supply and infrastructure failure are frequent, necessitating reliance on unsafe or informal sources (DWS, 2022; COGTA KZN, 2021). Water scarcity, particularly during dry seasons, often leads to competition and conflict at communal points and poses risks to human health and sanitation.

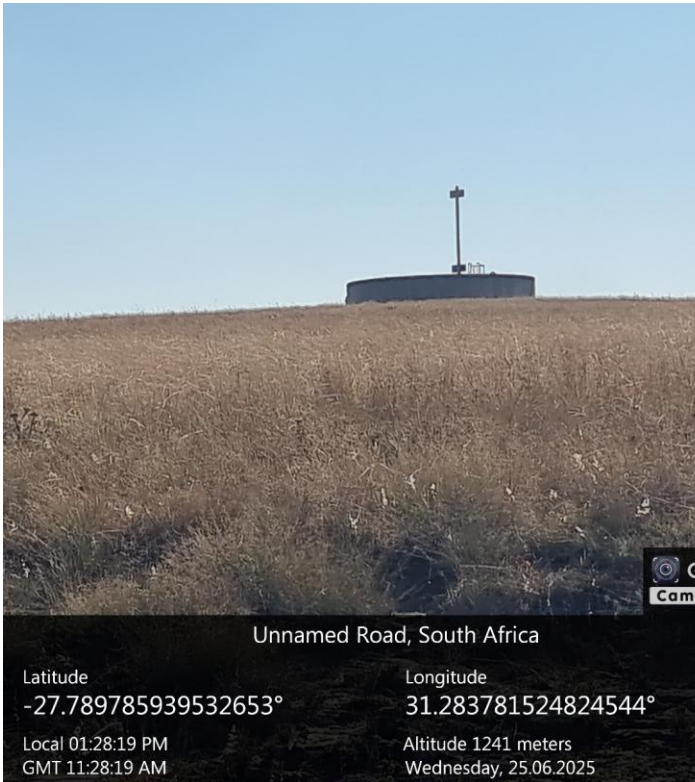


The image of Cibilili Primary School, framed by a backdrop of smoke from veld fires, offers a revealing snapshot of rural education infrastructure in the Ngenetsheni area. The school appears to be operational and functional, with visible JoJo water tanks elevated on sturdy pillars likely installed to ensure consistent access to water for sanitation and hygiene, especially where piped services may be unreliable or absent. In many rural South African settings, such tanks are community-funded, donor-provided, or part of municipal support schemes and play a crucial role in sustaining school operations (UNICEF, 2020).

Schools like Cibilili are not only sites of learning but also critical community assets. They often serve as local meeting venues, voting stations, feeding scheme hubs, and places of safety for children during emergencies. The visible impact of veld fires in the surrounding area raises health and safety concerns, especially considering the open layout and limited barriers between schools and environmental hazards. Dust, smoke, and debris can affect children’s respiratory health and learning capacity issues that are already prevalent in low-resource environments (WHO, 2019).

If prospecting activities are authorised nearby, the presence of heavy vehicles, increased dust generation, and noise may temporarily disrupt teaching and learning. The psychological impact of unfamiliar machinery and personnel in a child-focused space must also be considered, as rural schools often function as emotional and social sanctuaries. Moreover, infrastructure like JoJo tanks is vulnerable to damage from vibration or accidental collision and must be protected to ensure continuity in hygiene and nutrition services.

At the same time, there is strong potential for positive contribution through education-focused development partnerships. A prospecting applicant could engage with the Department of Basic Education, School Governing Bodies, and community members to provide support beyond compliance such as refurbishing classrooms, sponsoring educational materials, upgrading sanitation, or introducing digital learning tools. Initiatives like these contribute toward the goals of the National Development Plan (2030), which identifies education as the foundation for eliminating poverty and reducing inequality. Any engagement must, however, be inclusive, transparent, and designed in alignment with the school’s unique needs and context.



reservoirs are typically used to facilitate gravity-fed distribution, especially in rural or semi-rural areas where electricity access and pumping infrastructure may be inconsistent (DWAF, 2009).

The proposed prospecting activities could place this already scarce water infrastructure under significant pressure. While prospecting may not consume water at the same level as extraction, dust suppression, site clearing, and exploratory drilling can still lead to competition over local water resources. Disruption to water access whether through contamination, land disturbance, or vehicle movement could affect community health and livelihoods, particularly for women and children responsible for water collection (UN-Water, 2021). If responsibly managed, prospecting could serve as a catalyst for water infrastructure investment, provided planning is participatory and benefits are equitably shared.

The image of a solitary water reservoir positioned atop a hill in the Ngenetsheni area suggests the presence of a centralised but limited water storage system serving nearby communities. Elevated

9.4.8.5.7 Roads and Transportation

The area is served primarily by gravel and dirt roads, many of which are in poor condition, especially during rainy seasons. Limited maintenance, erosion, and the absence of drainage infrastructure contribute to restricted mobility and isolation during adverse weather. Public transport is largely informal, relying on minibus taxis or bakkies, which are often irregular and costly relative to income levels (Department of Transport, KZN, 2023). The poor state of road infrastructure has implications for access to markets, schools, clinics, and employment opportunities.

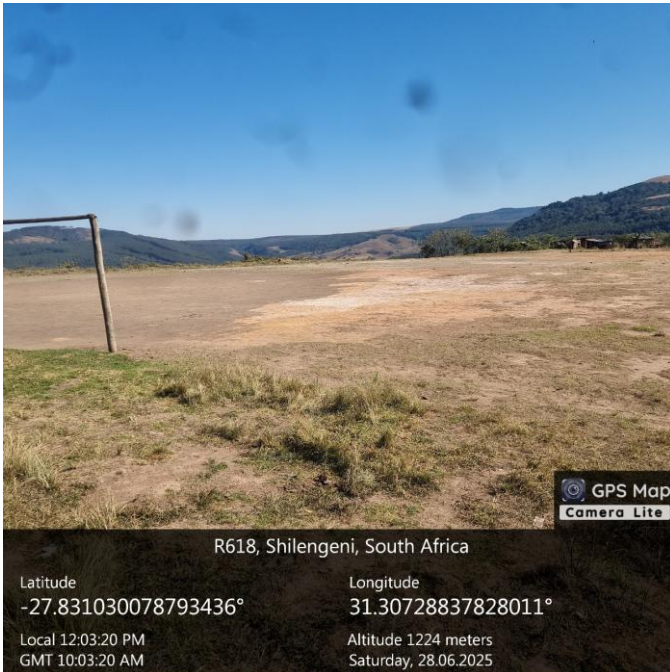


of visible power lines confirms the availability of electricity in the region, suggesting a certain level of infrastructural development and service provision. Such roads are essential for mobility, trade, and access to services in remote areas.

The prospecting phase could impact the existing road network either positively or negatively. On the one hand, access routes required for exploration could enhance regional connectivity. On the other hand, increased heavy vehicle traffic and dust emissions during prospecting work could degrade road quality, pose pedestrian safety risks, and disrupt forestry operations. Power demand for exploration camps or equipment may also strain local electricity supply unless carefully planned. Infrastructure improvements could be realised if community needs are integrated into the project's planning and benefit-sharing arrangements.

9.4.8.5.8 Recreational Facilities

Recreational infrastructure in the primary zone is sparse. There are few, if any, formally designated parks, sports fields, or youth centres. Open spaces are occasionally used for informal soccer matches or cultural gatherings, but these are not equipped or maintained. The absence of recreational amenities may contribute to youth disengagement and lack of structured after-school activities, reinforcing social vulnerability and potential behavioural issues (KZN Youth Development Strategy, 2021).



The image depicts a dusty football field, with no grass, with rudimentary wooden goalposts, likely a shared recreational space in the Isihlengeni area. Despite its informal structure, this field holds deep socio-cultural value. In rural South Africa, where formal recreational facilities are rare or underfunded, such open fields serve as vital social spaces, particularly for young people. They provide more than just an outlet for physical activity, they offer safe environments that foster community cohesion, informal mentorship, and mental wellbeing (Burnett, 2015). These spaces also play a preventative role, diverting youth from high-risk behaviours by enabling structured social engagement through sport.

The condition of the field: ungrassed, uneven, and dusty reflects broader trends of infrastructure underinvestment in historically disadvantaged areas. In the context of rural development, such spaces are often created and maintained by community members themselves or supported through school-based initiatives yet receive minimal support from municipal recreational services. This speaks to a wider theme of resilience and social capital, as communities continue to create social value in the absence of formal infrastructure.

Should prospecting be authorised in the area, increased traffic, dust emissions, or temporary land use changes could reduce the field's usability. Though exploration activities may be limited in footprint compared to later phases of development, even short-term disruptions can have long-lasting social effects when they interrupt regular, positive youth routines. The introduction of machinery, transport trucks, or security fencing near these informal spaces may also create perceived or real safety risks, deterring participation.

There is, however, an opportunity here. As part of its Social and Labour Plan or broader community development commitments, the prospecting applicant could invest in formalising and enhancing this site, levelling the surface, planting grass, installing durable goalposts, and even involving youth in sports development programming. These improvements not only create tangible legacy impacts but align with broader national objectives, such as those outlined in the National Sport and Recreation Plan and the National Youth Policy. To ensure success, community voices must drive this process, particularly those of young people, educators, and local leaders who use and protect these spaces daily.

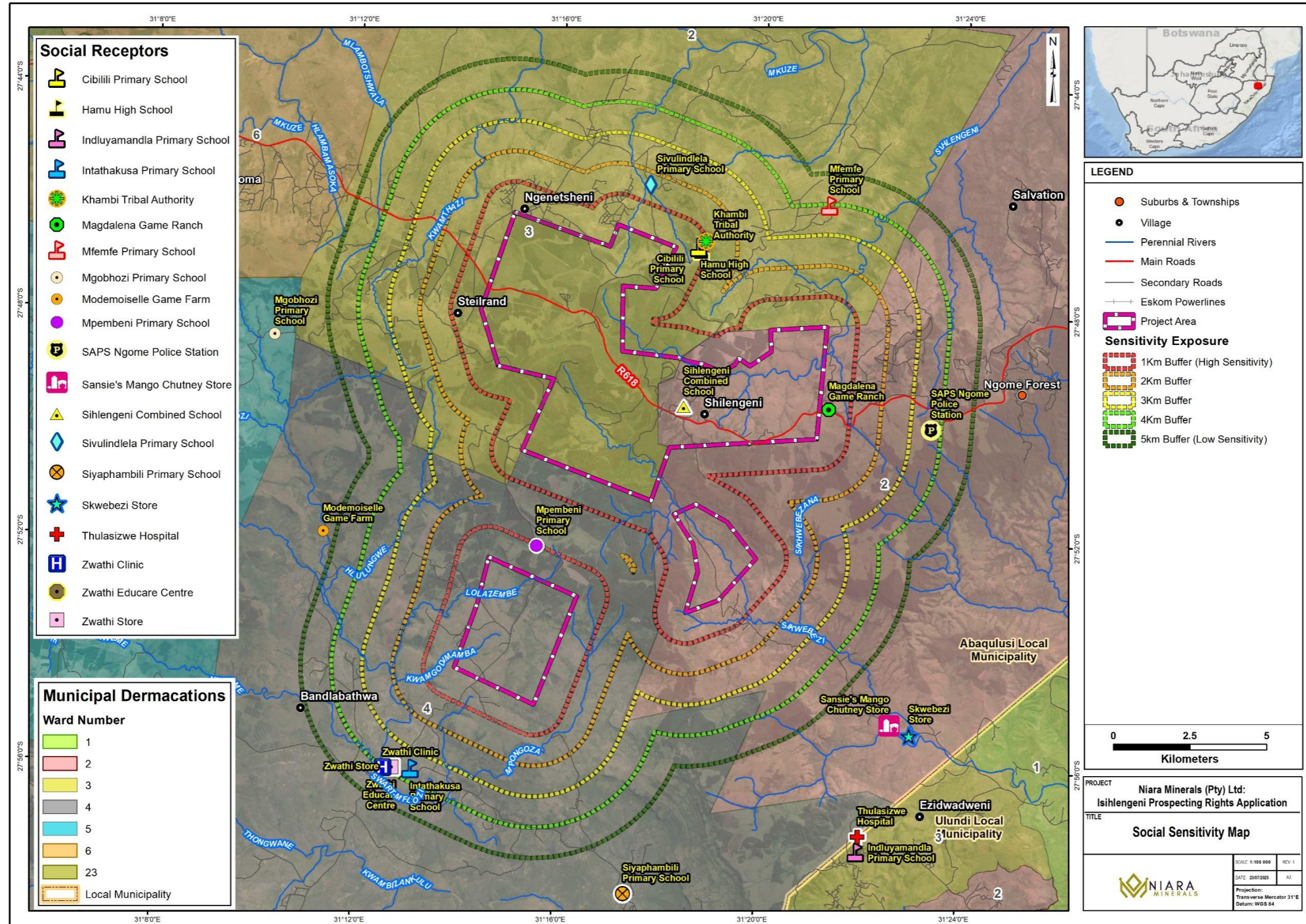


Figure 9-29 Social Sensitivity Map

9.5 Description of the Current Land Uses

The current land uses within and surrounding the project area encompass a diverse mix of activities and landscape features, see Figure 12 below. The predominant land use within the project boundary consists of commercial plantations, which form extensive, managed forestry areas. These are interspersed with scattered woodlands, adding to the area's ecological diversity and contributing to natural habitat connectivity.

In addition to forestry, there are patches of cultivated land used for agricultural purposes, primarily located near the periphery of the project area. Just south of the project site, a landing strip is present, serving limited aviation activities in the region. Although low-density urban development does not fall within the project boundary itself, such settlements are located in close proximity and contribute to the area's socio-economic profile.

Important infrastructure features in the broader landscape include the R618 regional road, which provides access to and from the area, facilitating transport and logistics. Furthermore, wind pumps and reservoirs, though located outside the immediate project boundary, support local water management systems and agricultural productivity.

Prospecting activities, if well-managed, can be integrated into this land use matrix with minimal long-term impact. These activities are temporary and site-specific in nature, and are generally non-invasive compared to full-scale mining. By implementing strict environmental management plans, including measures such as topsoil conservation, erosion control, controlled access, and post-prospecting rehabilitation, potential disturbances can be significantly reduced. Importantly, environmental monitoring will be conducted throughout the prospecting phase to ensure compliance with best practices and to mitigate impacts on surrounding land uses, particularly in sensitive areas like plantations, woodlands, and nearby agricultural zones.

Moreover, prospecting can contribute positively by providing baseline environmental data that inform future land-use planning, biodiversity management, and water conservation strategies. It also has the potential to create short-term local employment opportunities, thereby supporting rural livelihoods without compromising the integrity of existing land uses.

In summary, while prospecting introduces a new layer of activity to the area, its impacts are manageable, reversible, and mitigated through rigorous environmental safeguards, ensuring compatibility with surrounding land uses and broader sustainability goals.

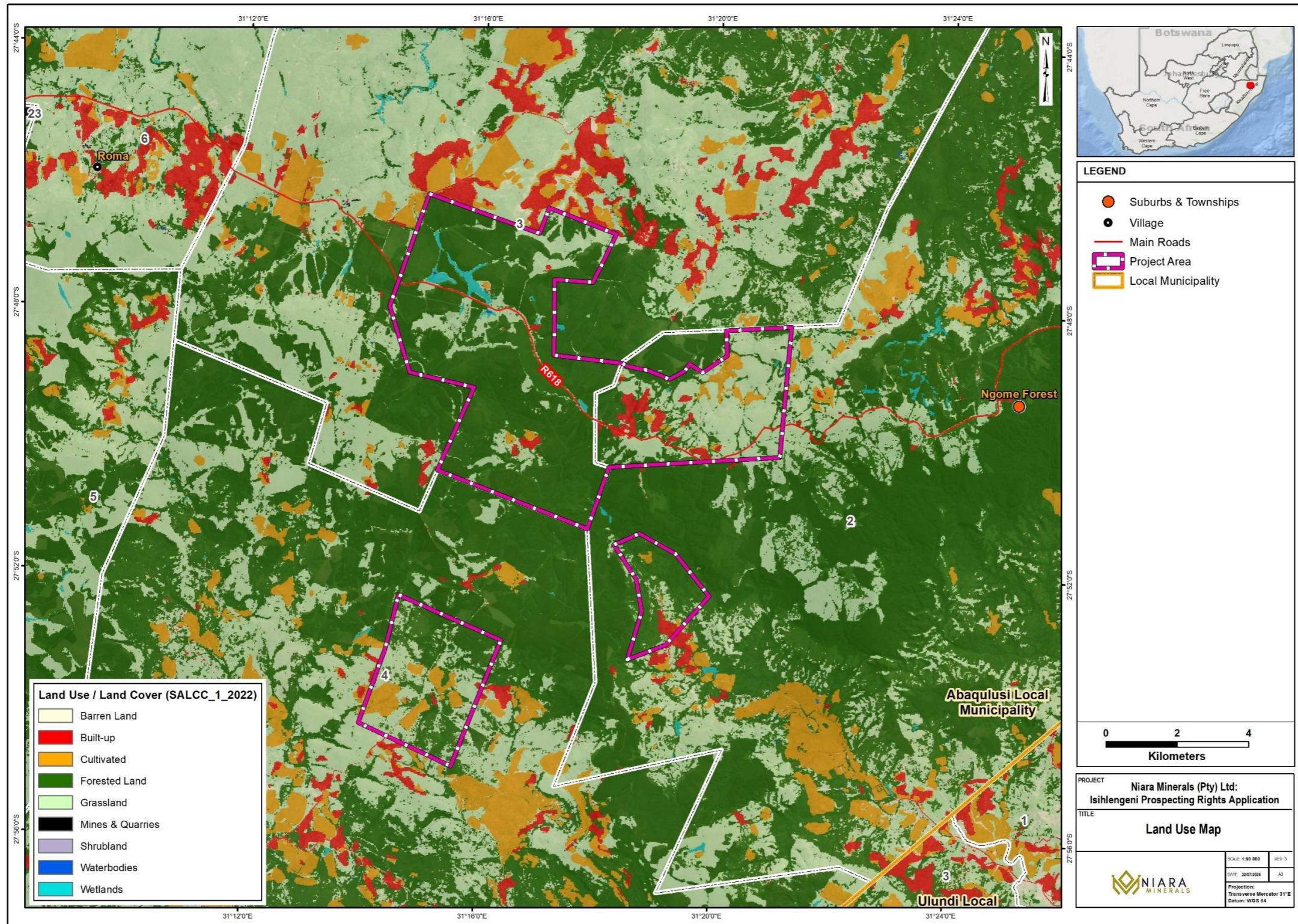


Figure 9-30 Current Land Use Map

9.6 Description of specific environmental features and infrastructure on the site

The proposed prospecting site is located within a complex and ecologically significant landscape that supports a mosaic of land uses, biodiversity features, sensitive ecosystems, and conservation-priority areas. These aspects are discussed below and illustrated in Figure 9-30, Figure 9-11, Figure 9-12, Figure 9-13

- Land Use

The dominant land use within the project area is commercial plantation forestry, which constitutes the primary form of landscape transformation. These plantations are interspersed with scattered woodlands, contributing to local biodiversity and ecological connectivity.

Other land uses in and around the project area include:

- Cultivated lands used for crop production and livestock grazing.
- A low-density urban settlement situated close to the project boundary, contributing to local economic activity and labor availability.
- A landing strip located just south of the project footprint, supporting limited aviation functions.
- Several wind pumps and reservoirs outside the boundary, which are essential for groundwater abstraction and water storage for both agricultural and domestic use.
- The R618 regional road, which provides vital transport connectivity to and from the area.

These land uses support livelihoods, resource efficiency, and rural development but also create pressures on natural habitats through land transformation, water abstraction, and potential habitat fragmentation.

- Biomes

The project area spans two major biomes:

- Grassland Biome (Dominant): Characterized by open grasslands with limited tree cover, this biome is key to ecosystem services like carbon sequestration, soil retention, and pollination. The biome experiences moderate seasonal rainfall and is prone to fire and drought, which maintain ecological balance.
- Savanna Biome (Local Extent): This biome comprises a mix of woody and grassy vegetation, hosting a diverse range of species adapted to variable rainfall and grazing pressure.

- Vegetation Types

Two distinct vegetation types are present:

- Income Sandy Grassland: Found on poorly drained sandy soils, this vulnerable vegetation unit hosts sourveld grasses and scattered woodland patches dominated by Vachellia species. Due to agricultural expansion, only 27% of its original extent remains.
- KwaZulu-Natal Highland Thornveld: A transitional vegetation type between grassland and savanna, this unit contains thorny trees and grass understorey, offering ecosystem services like water infiltration, habitat for fauna, and carbon storage.

- Critical Biodiversity Areas (CBAs)

The project area falls within Critical Biodiversity Area (CBA) 2 – Optimal, and is surrounded by areas classified as CBA Irreplaceable, according to the KwaZulu-Natal Biodiversity Sector Plan (2020) .

CBAs are identified through systematic biodiversity planning (Mucina & Rutherford, 2006; SANBI, 2024) and represent areas that:

- Are vital for maintaining biodiversity and sustaining ecological processes;
- Support essential functions such as seed dispersal, pollination, and hydrological regulation;
- Are relatively undisturbed and suitable for conservation-compatible land uses;
- Facilitate climate resilience, species migration, and ecosystem connectivity.

CBAs require strict land-use controls, especially where sensitive ecosystems overlap with development activities. Prospecting within a CBA must therefore comply with biodiversity management frameworks and environmental authorization requirements.

- Wetlands and Rivers

The project area contains wetlands and is proximal to riverine systems that provide vital ecosystem services such as flood attenuation, water purification, and biodiversity habitat. These systems are sensitive to land disturbance and require buffer zones, careful site planning, and ongoing ecological monitoring to prevent degradation.

Wetlands will be avoided as part of the site selection process for drilling and infrastructure. Where proximity to wetlands is unavoidable, buffer zones will be enforced, and activity-specific mitigation measures (e.g., sediment control, no-go zones) will be implemented in line with the National Water Act and wetland delineation protocols.

- Prospecting Activities and Anticipated Infrastructure

Prospecting activities will be temporary, site-specific, and subject to an Environmental Management Programme (EMPr). These activities will be guided by a strong emphasis on environmental mitigation, biodiversity preservation, and rehabilitation.

Key infrastructure and activities include:

- **Access Roads:** Temporary roads will follow existing tracks where possible to minimize habitat clearance. Roads will be decommissioned and rehabilitated post-prospecting.
- **Borehole Drilling:** The invasive phase includes drilling boreholes to collect sub-surface geological samples for analysis. A total of approximately 10 to 15 boreholes are proposed. Each borehole will disturb a relatively small surface footprint. The final locations of the boreholes will be identified following the completion of desktop geological studies, field mapping, and geophysical surveys. These boreholes will be strategically distributed within the 15-hectare application area to ensure minimal environmental impact while ensuring representative geological sampling.
- **Temporary Site Offices and Ablution Facilities:** Non-permanent structures will be installed to accommodate project personnel. All facilities will be removed after project closure and sites rehabilitated.
- **Waste Management Area:** A dedicated area for temporary waste segregation and storage will be established. All waste will be removed and disposed of in line with legal requirements, with the site rehabilitated afterward.

- Influence of Prospecting Activities and Environmental Justification

While prospecting activities introduce temporary land disturbance, they offer significant value when responsibly managed:

- They are non-permanent and can be conducted with minimal footprint.
- They generate critical baseline environmental data that informs long-term land-use planning, conservation priorities, and mineral resource development.
- Local employment and procurement opportunities during the prospecting phase can boost community development.
- Mitigation measures (e.g., site rehabilitation, wetland avoidance, dust suppression, waste management) will ensure the protection of sensitive ecosystems, including CBAs, wetlands, and vulnerable vegetation types.

- Environmental controls will be monitored through EMPr compliance audits and stakeholder consultation to ensure transparency and accountability.

In conclusion, the proposed prospecting activities are designed to be environmentally responsible, temporally limited, and aligned with regional conservation priorities, including the protection of biodiversity assets such as KZN CBAs, wetlands, rivers, and vulnerable vegetation types. With stringent mitigation in place, the project can proceed with minimal long-term impact while supporting ecological stewardship and sustainable resource use.

9.7 Environmental and current land use map

(Show all environmental, and current land use features).

The environmental and current land use of the proposed area is shown in Figure 9-30 above as well as described in heading 9.5 and 9.6 above

10 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts.

This section provides a detailed assessment of the potential impacts and risks associated with the proposed activities, as required for the BA Report. The evaluation considers the nature, significance, consequence, extent, duration, and probability of the identified impacts, as well as the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.

The analysis aims to quantify both the positive and negative outcomes of the project, with a focus on minimizing adverse effects while enhancing potential benefits. The impacts are categorized based on their occurrence during the operational, and closure phases of the project as shown in Table 10-1.

10.1 Assessment of each Identified Potentially Significant Impact and Risk

Table 10-1: Assessment of each Identified Potentially Significant Impact and Risk

Phase	Aspect	Potential Impact Description	Nature	Pre-Mitigation (M+E+R+D)xP=S							Pre-Rating	Mitigation Measures	Post-Mitigation (M+E+R+D)xP=S						Post-Rating
				M	E	R	D	P	S	M+			E+	R+	D+	P+	S+		
Construction, operational & decommission phase	Soil and Land Capability	Soil disturbance, compaction, erosion, and contamination during site clearance and Drilling. Loss of topsoil can affect future land use.	Negative	2	2	3	3	3	30	Low (-30)	Strip and stockpile topsoil separately for rehabilitation. - Avoid working during heavy rainfall to prevent erosion. - Rehabilitate disturbed areas progressively. - Limit footprint to only necessary areas.	2	1	1	3	2	14	Negligible (-14)	
Construction, operational & decommission phase	Flora	Removal of natural vegetation during site establishment, leading to habitat loss and potential invasion by alien species.	Negative	2	2	3	3	3	30	Low (-30)	- Minimise vegetation clearance to operational areas only. - Avoid protected or sensitive plant species. - Rehabilitate with indigenous vegetation post-activity. - Implement invasive species management.	1	1	1	3	2	12	Negligible (-12)	
Construction, operational & decommission phase	Fauna	Displacement of fauna due to noise, machinery, and habitat loss; risk of harm to small, slow-moving species.	Negative	2	2	3	3	3	30	Low (-30)	- Conduct pre-activity walk-throughs to relocate fauna. - Avoid night-time activities to reduce wildlife disturbance. - Educate staff on wildlife protection protocols. - Minimise unnecessary movement of machinery.	1	1	1	3	2	12	Negligible (-12)	
Construction, operational & decommission phase	Surface Water	Potential contamination from hydrocarbon spills, erosion, and sedimentation during prospecting activities near watercourses.	Negative	2	2	3	3	3	30	Low (-30)	Avoid prospecting within 100m of watercourses. - Install silt fences and berms to prevent runoff. - Store fuels and chemicals in bunded areas. - Maintain spill kits on-site.	2	1	1	3	2	14	Negligible (-12)	
Construction, operational & decommission phase	Groundwater	Potential contamination from fuel spills and seepage from disturbed soil. Possible alteration of recharge patterns due to soil compaction.	Negative	2	2	3	3	3	30	Low (-30)	- Implement spill prevention and rapid response plans. - Maintain machinery to prevent leaks. - Use impermeable lining in temporary fuel storage. - Avoid drilling near boreholes or known aquifers.	2	1	1	3	2	14	Negligible (-14)	
Construction, operational & decommission phase	Air Quality	Dust generation from clearing, drilling, and vehicle movement; possible vehicle exhaust emissions.	Negative	2	2	3	1	3	24	Low (-24)	- Regularly water down dust-generating surfaces. - Limit vehicle speed on unpaved roads. - Use well-maintained, low-emission machinery. - Avoid clearing during high wind periods.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Noise	Noise pollution from heavy machinery operation and vehicular movement affecting local communities and wildlife.	Negative	2	2	3	1	3	24	Low (-24)	- Restrict work hours to daylight periods. - Use well-maintained, quieter equipment. - Maintain buffer zones from sensitive receptors. - Notify communities of prospecting schedule.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Heritage	Disturbance of archaeological or cultural heritage resources during ground-breaking activities.	Negative	2	2	3	1	3	24	Low (-24)	- Conduct a pre-activity heritage assessment. - If artefacts are uncovered, cease work and notify a heritage specialist. - Train personnel to recognize heritage materials. - Avoid known heritage sites.	2	1	1	1	2	10	Negligible (-10)	

Phase	Aspect	Potential Impact Description	Nature	Pre-Mitigation (M+E+R+D)xP=S							Pre-Rating	Mitigation Measures	Post-Mitigation (M+E+R+D)xP=S						Post-Rating
				M	E	R	D	P	S	M+			E+	R+	D+	P+	S+		
Construction, operational & decommission phase	Visual	Temporary visual impact from cleared areas, machinery, and stockpiles, particularly if near sensitive receptors or public roads.	Negative	2	2	3	1	3	24	Low (-24)	- Limit extent of clearing and use natural screening where possible. - Restore site post-activity with vegetation. - Position equipment to reduce skyline impact. - Ensure neat, organised site layout.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Safety	Risk of accidents due to drilling, machinery, vehicle movement, and unauthorised access to the site.	Negative	2	2	3	1	3	24	Low (-24)	- Erect clear signage and fencing around work areas. - Provide safety induction and PPE to workers. - Maintain strict access control. - Develop an emergency response plan.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Health	Worker health risks from dust inhalation, noise exposure, and handling of hazardous substances.	Negative	2	2	3	1	3	24	Low (-24)	- Provide appropriate PPE (dust masks, ear protection). - Ensure regular health and safety training. - Monitor air quality and noise levels. - Store hazardous materials safely.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Waste	Generation of domestic, hazardous, and general waste, including from sampling and maintenance activities	Negative	2	2	3	1	3	24	Low (-24)	- Implement a waste management plan. - Separate, label, and safely store waste streams. - Recycle where possible. - Use licensed waste disposal contractors.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Traffic	Increased vehicle movement leading to road safety concerns and dust generation on access routes.	Negative	2	2	3	1	3	24	Low (-24)	- Use existing roads where feasible. - Limit vehicle movement to off-peak hours. - Enforce speed limits on site and access roads. - Maintain vehicles to avoid leakage and emissions.	2	1	1	1	2	10	Negligible (-10)	
Construction, operational & decommission phase	Economic Development	Potential identification of economically viable coal deposits, which may lead to future mining projects, investment, and economic growth.	Positive	3	3	1	2	5	45	moderate(+ 45)	- Share findings with relevant authorities and stakeholders. - Ensure transparent and compliant prospecting practices to support future applications and approvals.	3	3	1	2	5	45	moderate (+45)	
Construction, operational & decommission phase	Employment Opportunities	Creation of short-term employment for local residents during prospecting operations (e.g., machine operators, labourers, security).	Positive	3	3	1	2	5	45	moderate(+ 45)	- Prioritise local hiring and skills development. - Collaborate with local municipalities to advertise opportunities. - Provide training where feasible.	3	3	1	2	5	45	moderate (+45)	

11 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

11.1 Criteria to Consider when Determining Severity of impacts:

The ranking of impacts/determination of significance is estimated using two criteria, namely Consequence and Probability. These consider the contributing factors / criteria listed in the legislation. The definitions of each are provided below.

- The **Consequence** of an impact resulting from an aspect is expressed as a combination of:
 - **Nature** of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).
 - **Extent** of impact: A spatial indication of the area impacted (i.e., how far from activity the impact is realised).
 - **Duration** of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period of time.
 - **Frequency** of the impact occurring: An indication of how often an aspect, as a result of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs. It applies only to the aspect. For example, driving takes place daily whilst other activities take place monthly while the resultant frequency of the impacts occurring will vary based on a number of factors.
- **Magnitude/Severity** of an impact determines to what extent will the environment be destroyed or its functions be altered by the activity.
- **Significance** of the impact is an indication of the importance of the impact in terms of both the physical extent and the time scale. It indicates the level of mitigation required.

Table 11-1: Consequences and Significance Rating

Nature of Impact:				
CONSEQUENCE	Low	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are not affected.	1	
	Low-Medium	Impacts affect the environment in such a way that natural, cultural And / or social functions and processes are affected insignificantly.	2	
	Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are altered.	3	
	Medium-High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered. Impacts affect the environment in such a way that natural, cultural	4	
	High	and / or social functions and processes will temporarily or permanently cease.	5	
	Scale/Extent of Impact:			
	Local	The impacted area will only extend as far as the activity being conducted, e.g., the activity footprint	1	
	site	Impact occurs within a 20km radius of the site.	2	
	Regional	Impact occurs within a 100km radius of the site.	3	
	National	Impact occurs within South Africa.	4	
	Duration of Impact:			
	Short-term	The impact will either disappear with mitigation or will be mitigated through the natural processes in shorter time span.	1	
	Medium-term	The impact will last up to the end of the project phases, where after it will be negated. The impact will cease within 5 years if the activity is stopped.	3	
	Long-term	The impact will last for the entire operational phase and after the operational life of the operation but will be mitigated by direct human action or by natural processes thereafter.	4	
	Permanent	Intervention will not occur in such a way or in such a time span that the impact can be considered transient.	5	

	Nature of Impact:		
	Frequency of the Occurrence of the Impact:		
	Annually or less	Impact occurs at least once in a year or less frequently.	1
	6 months	Impact occurs at least once in 6 months.	2
	Monthly	Impact occurs at least once a month.	3
	Weekly	Impact occurs at least once a week.	4
	Daily	Impact occurs daily.	5
PROBABILITY	Probability of the Occurrence of the impact:		
	Improbable	The possibility of the impact materializing is very low either because of design or historic experience.	1
	Probable	The possibility of the impact materializing will occur to the extent that provision must be made thereof.	2
	Highly Probable	It is most	4
	Definite	The impact will occur regardless of any prevention measures.	5
	Magnitude of the impacts:		
	Low	The impact alters the affected environment in such a way that the natural processes are not affected.	2
	Medium	The affected environment is altered; however, the functions and processes continue in a modified way.	6
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	8
SIGNIFICANCE	Significance of the impact: Sum (Duration, Extent, Magnitude) x Probability		
	Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	< 20
	Low	The impact is limited in extent, with low to medium intensity and whatever the probability of the occurrence may be, the impact will not have a material effect on the decision and is likely to require the management intervention with increased costs.	< 40

Nature of Impact:			
	Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	< 60
	High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation	> 60

This rating system is weighted in such a way as to set impacts that are very likely to occur, but have very little consequence, as Low significance. Similarly, impacts with serious consequences but that are unlikely to occur are rated lower, than impacts with serious consequences that are likely to occur.

11.2 The positive and negative impacts that the proposed activity and alternatives will have on the environment and the community that may be affected

The impacts assessed has highlighted potential risks, important management strategies and control measures associated with the Project. It is considered that there are opportunities to substantially enhance and improve the potential impacts by undertaking a well-planned and effective operation. The project has associated positive and negative impacts. Such impacts are described in Table 11-2 .

Table 11-2: Positive and negative impacts of the proposed activity

Impact Category	Positive Impacts	Negative Impacts	Alternative Considered
Soil and Land Capability	<ul style="list-style-type: none"> Short-term disturbance with rehabilitation potential. Soil erosion control measures will improve site resilience. 	<ul style="list-style-type: none"> Risk of erosion, compaction, and contamination from construction activities. Acidic dystrophic regosols may be degraded if not managed carefully. 	<ul style="list-style-type: none"> Careful route planning to avoid high-erosion zones. Use of dry-season scheduling to limit disturbance.

Impact Category	Positive Impacts	Negative Impacts	Alternative Considered
Vegetation	<ul style="list-style-type: none"> Controlled vegetation clearance allows for eventual restoration. – Environmental induction will raise awareness of sensitive ecosystems. 	<ul style="list-style-type: none"> Loss of threatened Mistbelt Grasslands and SCC habitats. Degradation of riparian zones and wetlands if not avoided. 	<ul style="list-style-type: none"> Use of existing roads and disturbed land to limit clearance. 100 m buffer around wetlands and sensitive vegetation.
Animal Life	<ul style="list-style-type: none"> Temporary avoidance measures reduce disturbance to fauna. Potential for long-term biodiversity improvement post-rehabilitation. 	<ul style="list-style-type: none"> Disruption to bird and amphibian populations in Important Bird Area (IBA). Noise and movement may alter animal behaviour patterns. 	<ul style="list-style-type: none"> Schedule works during dry/off-peak breeding seasons. Maintain ecological buffers to protect sensitive fauna.
Surface Water	<ul style="list-style-type: none"> No permanent abstraction; natural flow will be maintained. 	<ul style="list-style-type: none"> Potential contamination of FEPA rivers (Sihlengeni & Sikwebezi) from spills or sedimentation. Wetland hydrology may be altered without adequate protection. 	<ul style="list-style-type: none"> No-go zones around wetlands and river buffers. Bunded storage areas and drainage planning to prevent runoff.
Groundwater	<ul style="list-style-type: none"> No groundwater extraction is planned. 	<ul style="list-style-type: none"> Potential contamination from hydrocarbon leaks and poor sanitation practices. 	<ul style="list-style-type: none"> Use of sealed storage for chemicals. EMPr provisions for spill prevention and wastewater disposal.
Air Quality	<ul style="list-style-type: none"> Long-term improvement possible if native vegetation is restored. 	<ul style="list-style-type: none"> Temporary increase in dust and emissions from machinery and traffic. 	<ul style="list-style-type: none"> Use of water spraying for dust control. Selection of low-emission vehicles and proper maintenance.

Impact Category	Positive Impacts	Negative Impacts	Alternative Considered
Noise	<ul style="list-style-type: none"> Environmental training may increase awareness of noise-sensitive times. 	<ul style="list-style-type: none"> Potential disturbance to communities and fauna from equipment and vehicle noise. 	<ul style="list-style-type: none"> Time restrictions on high-noise activities. Use of noise-dampening machinery and acoustic shielding.
Heritage	<ul style="list-style-type: none"> Discovery of heritage resources may result in their protection and conservation. 	<ul style="list-style-type: none"> Possible disturbance to Stone Age/Iron Age artefacts, graves, or sacred sites near watercourses and settlements. 	<ul style="list-style-type: none"> Phase 1 HIA and pedestrian surveys to precede activity. Work stoppage protocol in case of heritage finds.
Visual	<ul style="list-style-type: none"> Visual impact will be short-term, as rehabilitation is planned. 	<ul style="list-style-type: none"> Temporary aesthetic disturbance from roads, spoil heaps, and equipment. 	<ul style="list-style-type: none"> Infrastructure placement in visually inconspicuous areas. Screening and vegetation barriers where feasible.
Safety	<ul style="list-style-type: none"> Implementation of site safety plans will improve awareness and accident prevention. 	<ul style="list-style-type: none"> Construction activities pose physical risks to workers and the public. 	<ul style="list-style-type: none"> Mandatory use of PPE and daily toolbox talks. Site access control and hazard identification.
Health	<ul style="list-style-type: none"> Enhanced hygiene practices (e.g. sanitation enforcement) may improve site health standards. 	<ul style="list-style-type: none"> Risk of respiratory issues from dust and exposure to hazardous materials. 	<ul style="list-style-type: none"> Onsite health and safety officer to monitor compliance. Medical surveillance and first-aid readiness.
Waste	<ul style="list-style-type: none"> Structured waste separation and disposal will reduce environmental footprint. 	<ul style="list-style-type: none"> Risk of hazardous waste leaks (e.g. hydrocarbons, sewage) during construction. 	<ul style="list-style-type: none"> Onsite waste management system and spill contingency plans. Approved disposal at registered facilities.

Impact Category	Positive Impacts	Negative Impacts	Alternative Considered
Traffic	<ul style="list-style-type: none"> Local economy may benefit from increased transport activity (fuel, food, services). 	<ul style="list-style-type: none"> Increased risk of traffic congestion and road safety concerns, particularly in rural areas. 	<ul style="list-style-type: none"> Traffic management plan and community notice of peak movement periods. Use of existing access points to reduce new road creation.

11.3 The possible mitigation measures that could be applied and the level of risk.

All possible mitigation measures that could be applied to risks regarding the site layout are discussed and considered as part of the BA process. The proposed mitigation measures for the assumed risks are discussed in detail under section 10 and 13 of this report.

11.4 Motivation where no alternative sites were considered.

The prospecting activities are intended to be conducted in search of the minerals that are being applied for. These minerals occur in specific areas depending on the geology of the area. The historical data shows that there could be the occurrence of such minerals in the area, and therefore, the prospecting activities are ought to be undertaken in the proposed site. The proposed site has existing access roads that will be used during the operational phase of the project and minimal infrastructure will be established due the project requirements and the site location.

11.5 Statement motivating the alternative development location within the overall site

Based on the different studies conducted and the outcome from the public consultation during the public participation process, it has been concluded that all invasive prospecting activities will not be undertaken in sensitive areas wherein considerate buffer zones (100m) will be created from all identified environmental sensitive and 'no-go' area.

11.6 Description of aspects to be assessed as part of the BA process

The BA Phase will assess the overall environmental aspects affected by the proposed project in relation to listed project activities. The identified listed and specified activities for the project are the prospecting activities which include the following:

- Establishment of the office and equipment storage site.
- Installation of mobile offices and ablution facilities.
- Construction of temporal access road to the camp;
- Drilling and Sampling; and
- Rehabilitation and closure.

11.7 Aspects to be assessed by specialists

The following Specialist Impact Assessments will be undertaken as part of the BA Phase:

- Archaeology and Heritage Impact Assessment;
- Ecological Impact Assessment;
- Paleontological Impact assessment;
- Agriculture and soil impact assessment;
- Social Impact Assessment ;
- Hydrological Investigations (including Flood line delineation)

11.8 Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

11.8.1 Environmental Impact Assessment (EIA)

The purpose of the draft BAR was to investigate the potential negative and positive impacts of a proposed project activities on the environment. The potential impacts were quantified to assess the significance that an impact may pose on the receiving environment. The objectives of the BAR process were to:

- Ensure that the project activities to be undertaken do not have a substantial detrimental impact on the environment by presenting management and mitigation measures that will avoid and/or reduce those impacts.

- Ensure that I&APs are informed, including the landowner, about the proposed Project and the public participation process is properly followed.
- Ensure that I&APs are given an opportunity to raise concerns, and make input to understand their needs and expectations; and
- Provide a process aimed at enabling authorities to make an informed decision, especially in respect of their obligation to take environmental and social considerations into account when making those decisions.

The BA process assessed the overall aspects that will be affected by the proposed project in relation to the activities to be conducted. A sensitivity report has been conducted to determine the sensitivity of the proposed area to make sound decision on the consideration and implementation of the mitigation measures of the impacts posed by the proposed activity.

11.8.2 Extreme

These are unacceptable risks primarily critical in nature in terms of consequences in terms of the extensiveness and long-term environmental harm, permanent sacred site damage, fatality, and massive economic impacts that are effectively considered a possibility to almost certain to occur. Such risks significantly exceed the risk acceptance threshold and require comprehensive control measures, and additional urgent and immediate attention towards the identification and implementation of measures necessary to reduce the level of risk.

11.8.3 High

Typically relate to significant to critical consequences including a major amount of environmental or heritage damage, and considerable safety, social or economic impacts that are inclined to cut across the possible to almost certain likelihood ratings. These are also likely to exceed the risk acceptance threshold and although proactive control measures have been planned or implemented, a very close monitoring regime and additional actions towards achieving further risk reduction is required.

11.8.4 Medium

As suggested by the classification, medium level risks span a group of risk combinations varying from relatively low consequence / high likelihood to mid-level consequence / likelihood to relatively high consequence / low likelihood scenarios across environmental, social, and economic areas. These risks are likely to require active monitoring as they are effectively positioned on the risk acceptance threshold.

11.8.5 Low

These risks are below the risk acceptance threshold and although they may require additional monitoring in certain cases are not considered to require active management. In general, such risks represent relatively low likelihood and low to mid-level consequence scenarios.

11.8.6 Very Low

Impacts risks that are below the risk acceptance threshold and would at the most require additional monitoring and in many cases would not require active management. These risks can include unlikely to rare events with minor consequences and in essence relate to situations around very low probabilities of relatively minor impacts occurring.

Likelihoods have been categorised around the probability of occurrence, within the context of reasonable timeframes and frequencies given the nature of the anticipated project life. Levels of likelihood and the severity for the types of consequences that make up the risk rating determination are defined in the Table below:

Table 11-3: Likelihood rating system

Rating	Likelihood	Definitions
5	Almost Certain	The event is expected to occur in most circumstances (The event is likely to occur once per year).
4	Likely	The event will probably occur in most circumstances (The event is likely to occur once every 1 – 2 years).
3	Possible	The event might occur at some time (The event is likely to occur once every 2 – 5 years).
2	Unlikely	The event could occur at some time (The event is likely to occur once every 5 – 10 years).
1	Rare	The event may occur only in exceptional circumstances (The event is unlikely to occur in any 10-year period).

11.9 Risk Analysis Matrix

The risk controls are linked to the level of risk and opportunity for reduction to meet the project rehabilitation objectives and goals linked to an environmentally and socially responsible operation, and those requirements are part of the regulatory obligations and impact assessment guidelines. The table below provides a summary of the qualitative risk matrix adopted and the levels of risk for the various consequence and likelihood combinations.

Table 11-4: Risk Analysis Matrix

		Severity of Consequence				
		Critical (5)	Major (4)	Significant (3)	Moderate (2)	Minor (1)
Likelihood of Consequence	Almost Certain (5)	Extreme	Extreme	High	High	Medium
	Likely (4)	Extreme	High	High	Medium	Medium
	Possible (3)	Extreme	High	Medium	Medium	Low
	Unlikely (2)	High	Medium	Medium	Low	Very Low
	Rare (1)	Medium	Medium	Low	Low	Very Low

The impact assessment will focus on the invasive activities of the project since they will have the potential to impact on the biophysical and the social environment of the proposed area. These activities include:

- Establishment of the office and equipment storage site;
- Installation of mobile offices and ablution facilities;
- Construction of temporal access road (if needed);
- Drilling and Sampling;
- Processing of materials; and
- Rehabilitation and closure.

12 Details of the Public Participation Process to be followed during the BA process

The Public Participation Process (PPP) is undertaken in terms of the regulatory requirements as required in terms of Chapter 5 of NEMA. The PPP enables stakeholders to partake and submit comments, suggestions or issues of concern. This section outlines the PPP followed for this prospecting right application process.

12.1 Announcement Phase

I&APs were notified about the Project, as well as provided with an opportunity to provide comments on the draft BAR and EMP. The announcement phase included the activities detailed below.

12.1.1 Newspaper advertisement

A newspaper advertisement was placed in the Northern Natal news newspaper on the 12th of June 2025 to announce the Project and invite potential stakeholders to register as I&APs. A second advertisement will be published following receipt of a decision from the CA.

12.1.2 Background Information Document and Letters of Invitation

The compilation and distribution of background information documents (BID) containing a summary of the Project and inviting the public to register as I&APs was distributed to the public and identified authorities. Letters (with an attached BID) was distributed to surrounding landowners, municipal ward councillors, the local municipality and any organ of the state having jurisdiction over any aspect of the proposed Project.

12.1.3 Site Notices

Site notices were placed around the proposed mining site in accordance with Regulation 41(2)(a), (3), and (4) of the Environmental Impact Assessment (EIA) Regulations Published under Government Notice R982 in Government Gazette 38282 of 4 December 2014 (as amended). Site notices were printed in English and IsiZulu languages along the project route and other public places.

12.2 Basic assessment (BA) phase

The project is currently in the Basic Assessment (BA) Phase. A Draft BA Report, including the impact assessment and proposed mitigation measures, was made available on the Niara website www.temveloconsultants.co.za for public review for a period of 30 days. During this time, registered I&APs and other stakeholders have the opportunity to review the report and submit additional comments.

All inputs received during the EIA phase will be documented in an updated Comments and Responses Report, which will accompany the Final BA Report to be submitted to the DMRE for decision-making.

12.3 Decision Making Phase

Following DMRE's appraisal, all registered I&APs will be notified of the decision within 14 days of the DMRE's Record of Decision.

12.4 Summary of Issues Raised by I&APs

A comments and response report will be developed to record and document the concerns, comments, viewpoints and questions (collectively referred to as 'issues') raised by the stakeholders and authorities during the PPP. The comments and response report list's all the concerns / issues together with the project teams' responses and will be included in the final BAR.

13 Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

The following table provides a summary of the potential impacts associated with the project, the aspects of the environment or operation that are affected, the significance of each impact, the proposed mitigation measures to address the impacts, and the residual risk after implementing the mitigation measures. This table is a key component in assessing and managing the environmental risks associated with the project to ensure compliance with regulations and minimize negative consequences.

Phase	Aspect	Potential Impact Description	Nature	Rating pre-Mitigation measures	Mitigation Measures	Rating post Mitigation measures
Construction, operational & decommission phase	Soil and Land Capability	Soil disturbance, compaction, erosion, and contamination during site clearance and drilling. Loss of topsoil can affect future land use.	Negative	Low (-30)	Strip and stockpile topsoil separately for rehabilitation. - Avoid working during heavy rainfall to prevent erosion. - Rehabilitate disturbed areas progressively. - Limit footprint to only necessary areas.	Negligible (-14)
Construction, operational & decommission phase	Flora	Removal of natural vegetation during site establishment, leading to habitat loss and potential invasion by alien species.	Negative	Low (-30)	- Minimise vegetation clearance to operational areas only. - Avoid protected or sensitive plant species. - Rehabilitate with indigenous vegetation post-activity. - Implement invasive species management.	Negligible (-12)
Construction, operational & decommission phase	Fauna	Displacement of fauna due to noise, machinery, and habitat loss; risk of harm to small, slow-moving species.	Negative	Low (-30)	- Conduct pre-activity walk-throughs to relocate fauna. - Avoid night-time activities to reduce wildlife disturbance. - Educate staff on wildlife protection protocols. - Minimise unnecessary movement of machinery.	Negligible (-12)
Construction, operational & decommission phase	Surface Water	Potential contamination from hydrocarbon spills, erosion, and sedimentation during prospecting activities near watercourses.	Negative	Low (-30)	Avoid prospecting within 100m of watercourses. - Install silt fences and berms to prevent runoff. - Store fuels and chemicals in bunded areas. - Maintain spill kits on-site.	Negligible (-12)
Construction, operational & decommission phase	Groundwater	Potential contamination from fuel spills and seepage from disturbed soil. Possible alteration of recharge patterns due to soil compaction.	Negative	Low (-30)	- Implement spill prevention and rapid response plans. - Maintain machinery to prevent leaks. - Use impermeable lining in temporary fuel storage. - Avoid drilling near boreholes or known aquifers.	Negligible (-14)
Construction, operational & decommission phase	Air Quality	Dust generation from clearing, drilling, and vehicle movement; possible vehicle exhaust emissions.	Negative	Low (-24)	- Regularly water down dust-generating surfaces. - Limit vehicle speed on unpaved roads. - Use well-maintained, low-emission machinery. - Avoid clearing during high wind periods.	Negligible (-10)
Construction, operational & decommission phase	Noise	Noise pollution from heavy machinery operation and vehicular movement affecting local communities and wildlife.	Negative	Low (-24)	- Restrict work hours to daylight periods. - Use well-maintained, quieter equipment. - Maintain buffer zones from sensitive receptors. - Notify communities of prospecting schedule.	Negligible (-10)
Construction, operational & decommission phase	Heritage	Disturbance of archaeological or cultural heritage resources during ground-breaking activities.	Negative	Low (-24)	- Conduct a pre-activity heritage assessment. - If artefacts are uncovered, cease work and notify a heritage specialist. - Train personnel to recognize heritage materials. - Avoid known heritage sites.	Negligible (-10)

Phase	Aspect	Potential Impact Description	Nature	Rating pre-Mitigation measures	Mitigation Measures	Rating post Mitigation measures
Construction, operational & decommission phase	Visual	Temporary visual impact from cleared areas, machinery, and stockpiles, particularly if near sensitive receptors or public roads.	Negative	Low (-24)	<ul style="list-style-type: none"> - Limit extent of clearing and use natural screening where possible. - Restore site post-activity with vegetation. - Position equipment to reduce skyline impact. - Ensure neat, organised site layout. 	Negligible (-10)
Construction, operational & decommission phase	Safety	Risk of accidents due to drilling, machinery, vehicle movement, and unauthorised access to the site.	Negative	Low (-24)	<ul style="list-style-type: none"> - Erect clear signage and fencing around work areas. - Provide safety induction and PPE to workers. - Maintain strict access control. - Develop an emergency response plan. 	Negligible (-10)
Construction, operational & decommission phase	Health	Worker health risks from dust inhalation, noise exposure, and handling of hazardous substances.	Negative	Low (-24)	<ul style="list-style-type: none"> - Provide appropriate PPE (dust masks, ear protection). - Ensure regular health and safety training. - Monitor air quality and noise levels. - Store hazardous materials safely. 	Negligible (-10)
Construction, operational & decommission phase	Waste	Generation of domestic, hazardous, and general waste, including from sampling and maintenance activities	Negative	Low (-24)	<ul style="list-style-type: none"> - Implement a waste management plan. - Separate, label, and safely store waste streams. - Recycle where possible. - Use licensed waste disposal contractors. 	Negligible (-10)
Construction, operational & decommission phase	Traffic	Increased vehicle movement leading to road safety concerns and dust generation on access routes.	Negative	Low (-24)	<ul style="list-style-type: none"> - Use existing roads where feasible. - Limit vehicle movement to off-peak hours. - Enforce speed limits on site and access roads. - Maintain vehicles to avoid leakage and emissions. 	Negligible (-10)
Construction, operational & decommission phase	Economic Development	Potential identification of economically viable coal deposits, which may lead to future mining projects, investment, and economic growth.	Positive	Moderate (+ 45)	<ul style="list-style-type: none"> - Share findings with relevant authorities and stakeholders. - Ensure transparent and compliant prospecting practices to support future applications and approvals. 	Moderate (+45)
Construction, operational & decommission phase	Employment Opportunities	Creation of short-term employment for local residents during prospecting operations (e.g., machine operators, labourers, security).	Positive	Moderate (+ 45)	<ul style="list-style-type: none"> - Prioritise local hiring and skills development. - Collaborate with local municipalities to advertise opportunities. - Provide training where feasible. 	Moderate (+45)

14 Summary of Specialist Reports

14.1 DFFE Screening tool

A Screening Report for Environmental Authorisation was generated from the Department of Environment, Forestry and Fisheries (DFFE) Web-based Environmental Screening Tool in terms of NEMA: EIA Regulations 2014 (as amended). The following is a summary of the environmental sensitivities of the site where the proposed prospecting activities are to be undertaken. The Screening Tool enables the generating of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014 (as amended) whereby a Screening Report is required to accompany any application for Environmental Authorisation and as such the tool has been developed in a manner that is user friendly and no specific software or specialised GIS skills are required to operate this system (DFFE, 2021). Consequently, the prospecting activities will be undertaken on an area where there are no sensitivities.

Table 14-1: Environmental Sensitivity of the proposed area

THEME	Very sensitivity	High	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X				
Animal Species Theme			X		
Aquatic Biodiversity Theme	X				
Archaeological and Cultural Heritage Theme					X
Paleontology	x				
Plant Species Theme			x		
Terrestrial Biodiversity Theme	X				

As indicated above, a low rating indicates that the impacts are unlikely to occur. A medium rating indicates that the impact is likely/almost likely to occur, and a high rating means that the impact is possible/almost certain. A very high rating indicates that the impact on the proposed environment is certain to occur.

The screening tool indicates that Agriculture, Paleontology ,Aquatic and Terrestrial Biodiversity themes of the proposed site are very high, indicating that the likelihood of the impact occurring is high. The Archaeological and Cultural Heritage sensitivities on site are low.

14.2 Summary of specialist studies informing BAR

Table 14-2 Summary of specialist reports

Specialist Report	Key Findings	Impacts	Mitigation Measures	Residual Impacts
Ecological Assessment(Arid Cactus Consulting, 2025)	<ul style="list-style-type: none"> • Presence of Endangered and Vulnerable ecosystems (e.g. Mistbelt Grasslands) • Overlap with Important Bird Area (IBA) • Presence of SCC and sensitive habitats • FEPA rivers (Sihlengeni & Sikwebezi) in natural state • Wetlands with hydrophytic vegetation and hydromorphic soils 	<ul style="list-style-type: none"> • Loss or degradation of sensitive habitats • Disruption to wetland and riparian functionality • Erosion and pollution during construction • Disturbance to fauna, especially birds and amphibians 	<ul style="list-style-type: none"> • Avoid watercourses and wetlands • 100 m ecological buffer around sensitive habitats • Use existing access routes • Conduct works in dry season • Store chemicals in bunded areas • Rehabilitate disturbed soil • Environmental induction and sanitation enforcement 	<ul style="list-style-type: none"> • If mitigation is implemented, residual impacts are expected to be low, localised, and temporary, mainly during construction phase
Floodline Determination Study (Altra Watch (Pty) Ltd, 2025)	<ul style="list-style-type: none"> • Site drains into Mkuze and Black Mfolozi River systems • Flash flood potential due to steep slopes and shallow soils • Drainage Area 1 prone to wider inundation • Modelled using Rational Method due to no gauging data 	<ul style="list-style-type: none"> • Risk of infrastructure damage from flash floods • Localised erosion and sedimentation risk • Possible inundation in flatter zones 	<ul style="list-style-type: none"> • Avoid infrastructure within 1:50 and 1:100-year floodlines • Refine flood modelling if bridges/culverts planned • Align design to avoid flood-prone zones 	<ul style="list-style-type: none"> • With no development in flood-prone zones, residual flood risk is minimal and can be mitigated through good design
Social Impact Assessment (Temvelo consultants,2025)	<ul style="list-style-type: none"> • PRA falls under Abaqulusi Local Municipality, Wards 2, 3, and 4 (Zululand District) • Area is predominantly rural with limited formal employment opportunities • High community interest in local development and job creation 	<ul style="list-style-type: none"> • Temporary disruption from noise, traffic, and presence of construction teams • Possible community concern over access and land use • Opportunity for job creation and skills development for local residents 	<ul style="list-style-type: none"> • Prioritise local labour and ward-based employment during project implementation • Clear communication with ward councillors and traditional leadership • Implement grievance mechanisms and local information-sharing structures 	<ul style="list-style-type: none"> • Residual social impacts are expected to be net positive, with localised economic upliftment at ward level through employment, procurement, and short-term infrastructure improvement
Agriculture Impact Assessment (Pardus AgriEco Solutions,2025)	<ul style="list-style-type: none"> • Soils are mostly dystrophic regosols with depths between <450 mm and 750 mm. • Soils are acidic (pH 0–6.4), which can influence nutrient availability. 	<ul style="list-style-type: none"> • Risk of soil contamination from construction activities. • Soil erosion and compaction. • Loss of agricultural potential. 	<ul style="list-style-type: none"> • Implement EMPr with spill and fire prevention plans. • Provide portable toilets and approved sewage disposal. 	<ul style="list-style-type: none"> • Minimal if mitigation is implemented effectively. • Potential for short-term erosion and soil disturbance.

Specialist Report	Key Findings	Impacts	Mitigation Measures	Residual Impacts
	<ul style="list-style-type: none"> • Dominant land uses: commercial forestry, subsistence agriculture, and grazing. • Erosion gullies present. 		<ul style="list-style-type: none"> • Avoid early vegetation clearance; re-vegetate disturbed areas quickly. • Maintain vehicles to prevent leaks. • Use erosion control and schedule works for dry seasons. 	
Heritage Impact Assessment Agri Civils (2025)	<ul style="list-style-type: none"> • The study area is rich in heritage resources, including Stone Age, Iron Age, rock art, historical sites, and graves. High sensitivity is noted near watercourses and settlements. 	<ul style="list-style-type: none"> • Possible disturbance or destruction of archaeological material, unmarked graves, and heritage structures during prospecting. 	<ul style="list-style-type: none"> • Exclude known grave sites and infrastructure older than 60 years from prospecting. – • Conduct a Phase 1 HIA and pedestrian survey before activity begins. • Apply caution in 500 m buffer zones around watercourses. • Cease work if artefacts or remains are discovered and notify PHRA. 	<ul style="list-style-type: none"> • With proper implementation of mitigation measures, residual impacts can be minimised to low significance.
Paleontology Impact Assessment (Bamford, 2025)	<ul style="list-style-type: none"> • Area underlain by Vryheid, Dwyka, and Pietermaritzburg Formations. • Vryheid Formation has high palaeosensitivity; coal seams present. • Fossils unlikely to be visible until soil is removed. • Low probability of fossil finds, but potential exists. 	<ul style="list-style-type: none"> • Potential disturbance or destruction of fossil heritage during groundworks. 	<ul style="list-style-type: none"> • Implement Fossil Chance Find Protocol. • Train contractors to recognise fossil material. • ECO to monitor spoil for fossil evidence. • Report and safeguard any fossil finds. • Involve specialist palaeontologist as needed. • Obtain Amafa permit before fossil removal; deposit significant finds in accredited institutions. 	<ul style="list-style-type: none"> • Negligible if protocol followed. • Chance fossil finds may be lost if protocol not implemented properly

14.3 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the comprehensive impact assessment and specialist studies, the following proposed impact management objectives and outcomes are recommended for inclusion in the Environmental Management Programme (EMPr) and as conditions of environmental authorisation:

14.3.1 EMPr Objectives

- To provide clear and actionable guidance to strategically plan and implement prospecting activities in a way that avoids or minimises unnecessary social and environmental impacts;
- To ensure that all prospecting operations are carried out sustainably and in line with the principles of environmental stewardship;
- To facilitate full compliance with applicable environmental legislation, including NEMA, NEMBA, NHRA, and relevant municipal by-laws;
- To present a practical, adaptive management framework that enables effective implementation, monitoring, and continuous improvement.

14.3.2 Impact Management Outcomes

Through the implementation of the prescribed mitigation measures, the following outcomes are expected to be achieved:

- **Heritage Resources:**

Protection of archaeological sites, unmarked graves, and cultural heritage through early heritage screening (Phase 1 HIA), exclusion zones, and a clear chance-find protocol. Engagement with landowners and Amafa will ensure compliance with the NHRA.

- **Noise Impact:**

Minimised noise-related disturbances to communities and wildlife by limiting high-noise operations to daylight hours, maintaining equipment, and using noise-reduction mechanisms where feasible.

- **Visual Intrusion:**

Reduction of visual impacts through careful placement of infrastructure, temporary nature of activities, and visual screening using natural vegetation or shade cloth where appropriate.

- **Dust and Air Quality:**

Control of dust emissions by limiting vegetation clearance, applying water for dust suppression, and using well-maintained, low-emission machinery. Rehabilitation of cleared areas will also help reduce long-term dust generation.

- **Soil and Vegetation:**

Prevention of erosion and loss of soil function through dry-season scheduling, minimal clearance, rapid re-vegetation of disturbed areas with indigenous species, and use of erosion control techniques. Soil compaction and contamination will be avoided through EMPr-aligned construction practices.

- **Biodiversity and Ecological Integrity:**

Protection of SCC, sensitive habitats (Mistbelt Grasslands), FEPA rivers, and Important Bird Area zones by maintaining 100 m ecological buffers, using existing access routes, scheduling works outside peak faunal activity seasons, and enforcing environmental induction training. A terrestrial biodiversity assessment will guide site-specific protection of threatened ecosystems.

- **Surface and Groundwater:**

Avoidance of contamination of rivers, wetlands, and groundwater resources by adhering to strict chemical handling protocols, bunded fuel storage, proper sanitation facilities, vehicle maintenance, and ready availability of spill kits.

- **Flood Risk and Drainage:**

Avoidance of flood-prone areas (as modelled in the 1:50 and 1:100-year floodlines) by aligning infrastructure outside identified inundation zones. If necessary, further hydrological modelling will be undertaken prior to infrastructure development.

- **Waste Management:**

Prevention of waste-related impacts through source segregation, appropriate temporary storage, responsible disposal at registered facilities, and promotion of recycling where possible. Hazardous materials will be stored and handled in compliance with EMPr guidelines.

- **Social and Economic Considerations:**

Enhancement of local socio-economic conditions by prioritising ward-based labour and local procurement. A grievance mechanism and consultation framework with traditional leaders and ward councillors will ensure community voices are heard and respected.

- **Stakeholder Engagement and Conflict Resolution:**

Maintenance of ongoing, transparent engagement with affected parties. All site personnel will undergo induction to understand local sensitivities, with clear protocols for respectful community interaction.

- **Paleontological Resources:**

Protection of fossil heritage through implementation of a Fossil Chance Find Protocol, ECO monitoring during ground disturbance, and involvement of a specialist palaeontologist if fossils are encountered. Fossil material will only be removed with appropriate permits.

15 Final Proposed Alternatives

As the environmental studies formed the basis for the layout plan, it was already taken into account in the initial plan that the activities should be carried out in such a way that potential environmental impacts are avoided and minimised. Where impacts cannot be avoided, mitigation and management measures have been provided.

16 Aspects for inclusion as conditions of Authorisation

(Any aspects which must be made conditions of the Environmental Authorisation)

It is the opinion of the EAP that the following conditions should form part of the authorisation as well as EMPR:

- Maintain a buffer of 100m from a water course;
- Maintain a minimum 100m buffer from any infrastructure or dwelling; and
- I&APs should be engaged on a regular basis to address any complaints brought about the prospecting activities.

17 Description of any assumptions, uncertainties, and gaps in knowledge

(Which relate to the assessment and mitigation measures proposed)

The assumptions forming the basis of this report for the proposed prospecting activities by Niara Minerals are as follows;

- The assessment and proposed mitigation measures have been developed using site-specific data provided by specialist. These sources have been crucial in tailoring the proposed measures to the unique characteristics and requirements of the project area.

- At this stage, the report is still undergoing a formal public participation process. Therefore, the comments, concerns, and issues from Interested and Affected Parties (I&APs) have not yet been incorporated. This limitation will be addressed in the subsequent phases of the environmental assessment process, ensuring that community and stakeholder input is fully considered.

These assumptions provide a framework for understanding the context of the project, ensuring that the proposed activities align with both site-specific needs and broader operational considerations.

18 Reasoned Opinion as to whether the Proposed Activity should or should not be authorised

18.1 Reasons why the activity should be authorised or not

- Strategic Mineral Development:

The prospecting activity aligns with South Africa's strategic objectives for the sustainable development of its mineral resources, contributing to long-term economic growth and job creation in rural areas.

- Limited Environmental Footprint:

The proposed activities are of a low-impact nature, primarily involving non-invasive methods such as mapping, sampling, and limited drilling. The ecological and hydrological studies confirm that, with adherence to buffer zones and seasonal timing, the impacts are manageable and reversible.

- Comprehensive Mitigation Measures:

All potential impacts, particularly to wetlands, rivers, endangered vegetation, and sensitive faunal habitats, have been adequately assessed and can be mitigated through recommended measures. This includes adherence to 100 m ecological buffers and floodline restrictions, rehabilitation protocols, and environmental monitoring (Arid Cactus Consulting, 2025; Altra Watch, 2025).

- Positive Social Benefits:

The PRA area is situated in a rural part of AbaQulusi Local Municipality (Wards 2, 3 and 4), where unemployment is high. The project presents opportunities for local employment, skills development, and procurement from SMMEs, thus contributing to the local economic upliftment at ward level.

- No Irreversible Impacts Identified:

No permanent or irreversible environmental impacts have been identified during the assessment process. Where sensitive features were observed (e.g. wetlands and FEPA rivers), these are avoidable and protected through site planning and construction exclusion zones.

18.2 Conditions that must be included in the authorisation

See section 16 of this report.

19 Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised

Not Applicable. The proposed activity includes ongoing operational aspects; therefore, the environmental authorisation is required for the full duration of the mining operation, including construction, operation, decommissioning, and post-closure phases.

20 Undertaking

The EAP herewith confirms

- the correctness of the information provided in the reports;
- the inclusion of comments and inputs from stakeholders and I&APs;
- the inclusion of inputs and recommendations from the specialist reports where relevant; and
- that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.

Table 20-1 Report Compiler


Signature of the Specialist:	
Name of Specialist	Nolwazi Dlamini
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

Table 20-2 Report Reviewer

Signature of the Specialist:	<i>L. Mazibuko.</i>
Name of Specialist	Legion Mazibuko
Name of Company:	Temvelo Consultants (Pty) Ltd
Date:	July 2025

21 Specific Information required by the Competent Authority

Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998), a BA report must include consideration of socio-economic and cultural impacts. These aspects are discussed below.

21.1 Impact on the socio-economic conditions of any directly affected person

A consultation process will be conducted during the BA process. The consultation process will provide the affected persons with the opportunity to raise any potential concerns, and the possible mitigations measures will be proposed to be implemented to suit the needs and expectations of the Interested & Affected Parties. Concerns raised will be captured and addressed within the public participation section of this report to inform the decision-making process.

21.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act

The National Heritage Resources Act (NHRA) of South Africa provides a framework for the protection and management of the national estate. Section 3(2) of the Act outlines the categories of heritage resources that form part of the national estate, including places, buildings, structures, and objects of cultural significance. Any cultural or heritage sites that may be impacted by the project will be identified and protected. Should any unanticipated cultural heritage resources be discovered during the project, work must be paused in the area until a heritage specialist can assess and advise on further action

22 Other matters required in terms of Sections 24(4)(a) and (b) of the Act

Matters that are required in terms of Section 24(4)(A) and (B) of the Act have been addressed in this report under the relevant headings.

NEMA Section 24(4) Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment –

(a) must ensure, with respect to every application for an environmental authorisation,

(i) coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state; (the DMRE is the Competent Authority in terms of this Section 102 Amendment process)

(ii) that the findings and recommendations flowing from an investigation, the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in section 2 are taken into account in any decision made by an organ of state in relation to any proposed policy, programme, process, plan or project; (The general objectives of IEM and sound environmental management principles are outlined in this report)

(iii) that a description of the environment likely to be significantly affected by the proposed activity is contained in such application; (See Section 6 of this Report)

(iv) investigation of the potential consequences for or impacts on the environment of the activity and assessment of the significance of those potential consequences or impacts; and

(iv) public information and participation procedures which provide all interested and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures; and

(b) must include, with respect to every application for an environmental authorisation and where applicable,

(i) investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity;

(ii) investigation of mitigation measures to keep adverse consequences or impacts to a minimum;

- (iii) investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act;
- (iv) reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;
- (v) investigation and formulation of arrangements for the monitoring and management of consequences for or impacts on the environment, and the assessment of the effectiveness of such arrangements after their implementation;
- (vi) consideration of environmental attributes identified in the compilation of information and maps contemplated in subsection (3); and
- (vii) provision for the adherence to requirements that are prescribed in a specific environmental management Act relevant to the listed or specified activity in question.

PART B: Environmental Management Programme Report

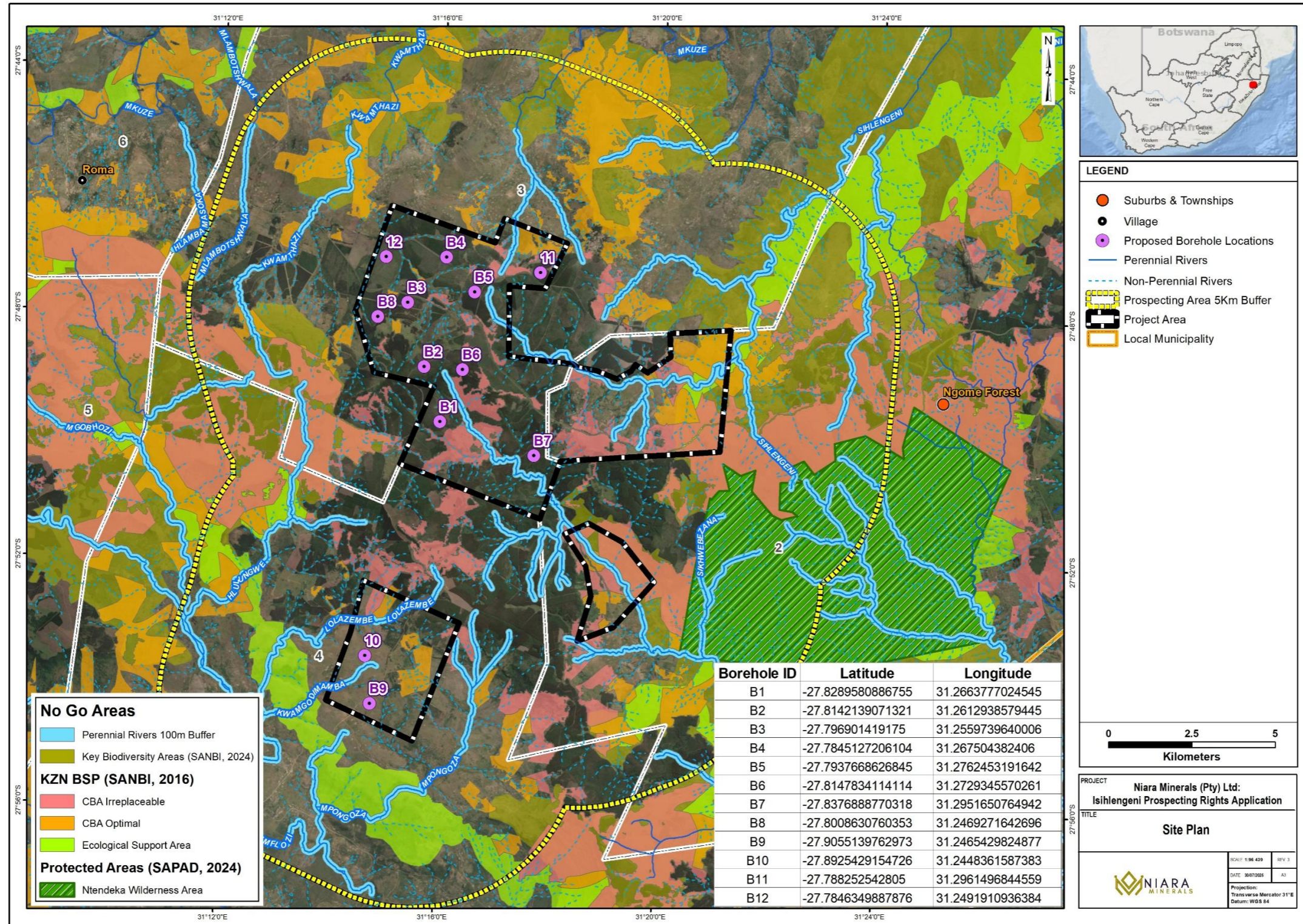
1 Details and expertise of the EAP

Details and expertise of the EAP are already included in Part A of this BAR

2 Description of the Aspects of the Activity

The requirements to describe the aspects of the activity that are required by the EMP is already included in Part A of this BAR.

3 Composite Map



4 Description of Impact Management Objectives including Management Statements and closure objectives

The successful management of environmental impacts throughout the lifecycle of the proposed project is crucial to minimizing its negative effects and ensuring the long-term sustainability of the site. This section outlines the impact management objectives, which focus on mitigating potential environmental and socio-economic impacts associated with the project. The objectives are aligned with both operational and closure phases, ensuring that the site is managed responsibly during the mining activities. Below is a table that provides a summary of the key impact management objectives, their corresponding management statements, and closure objectives for the proposed project. These objectives are aimed at achieving the overall goal of minimizing environmental harm, ensuring safety, and promoting socio-economic benefits for the surrounding communities

Table 4-1 Description of Impact Management Objectives including Management Statements and Closure Objectives

Impact Management Objective	Management Statement	Closure Objective
Minimise soil erosion and compaction	<ul style="list-style-type: none"> Limit access to designated routes, avoid sensitive areas, and rehabilitate disturbed land immediately after use. 	<ul style="list-style-type: none"> Stabilised and rehabilitated soil with restored pre-activity land capability.
Preserve vegetation and limit habitat loss	<ul style="list-style-type: none"> Avoid unnecessary vegetation clearance by using existing disturbed areas. Rehabilitate cleared areas with indigenous species. 	<ul style="list-style-type: none"> Vegetation cover restored to pre-activity condition with no invasive species present.
Reduce disturbance to wildlife	<ul style="list-style-type: none"> Schedule activities to avoid peak breeding/migratory seasons. Avoid critical habitats and use quiet, non-intrusive methods. 	<ul style="list-style-type: none"> Wildlife activity returns to baseline levels, with no significant loss of species or habitat integrity.
Protect surface water resources	<ul style="list-style-type: none"> Maintain a buffer zone around watercourses, prevent any spills, and avoid surface discharge of any contaminants. 	<ul style="list-style-type: none"> No contamination of surface water; buffers and aquatic ecosystems restored.
Safeguard groundwater from contamination	<ul style="list-style-type: none"> Store fuel and hazardous materials in bunded areas; use proper containment and handling methods. 	<ul style="list-style-type: none"> No groundwater pollution detected; contamination risks removed.

Impact Management Objective	Management Statement	Closure Objective
Limit air quality degradation	<ul style="list-style-type: none"> Apply dust suppression (e.g., water spraying), use low-emission equipment, and limit exposed surfaces. 	<ul style="list-style-type: none"> Air quality restored to baseline with no long-term dust or emissions concerns.
Control noise pollution	<ul style="list-style-type: none"> Restrict noisy operations to daytime hours and use noise-suppressing equipment. 	<ul style="list-style-type: none"> Ambient noise levels return to pre-activity conditions.
Protect heritage resources	<ul style="list-style-type: none"> Conduct pre-activity heritage screening; halt activity if unknown artefacts are found and engage specialists. 	<ul style="list-style-type: none"> All heritage sites protected or preserved; no unassessed impacts.
Limit visual impact	<ul style="list-style-type: none"> Site offices and equipment should be placed discreetly; rehabilitation should include landscaping. 	<ul style="list-style-type: none"> Visual character of the site restored; no long-term aesthetic impact.
Ensure safety for workers and public	<ul style="list-style-type: none"> Implement H&S protocols, PPE, emergency response plans, and staff training programs. 	<ul style="list-style-type: none"> No record of serious injuries; safety protocols removed responsibly post-closure.
Promote health and wellbeing	<ul style="list-style-type: none"> Manage dust, noise, and hazardous material exposure through PPE and routine monitoring. 	<ul style="list-style-type: none"> No lasting health risks; clean and safe environment post-closure.
Minimise waste generation	<ul style="list-style-type: none"> Implement waste separation, recycling, and responsible disposal throughout the project lifecycle. 	<ul style="list-style-type: none"> Site cleared of all waste and restored to a clean, natural state.
Manage traffic and access risks	<ul style="list-style-type: none"> Use designated routes, coordinate with local authorities, and time activities to avoid peak hours. 	<ul style="list-style-type: none"> No road damage or safety issues; site access restored to original condition.
Maximise local socio-economic benefit	<ul style="list-style-type: none"> Prioritise local employment, procure local services, and consult with ward representatives. 	<ul style="list-style-type: none"> Local stakeholders report benefit from project; no unresolved grievances at closure.

4.1 Has a water use licence has been applied for

A Water Use Licence has not been applied for, as the proposed prospecting activities will be conducted using dry prospecting methods, which do not involve the abstraction or use of surface or groundwater resources. No intrusive drilling or wet processing methods are proposed.

Potable water required for drinking and sanitation purposes during the course of the project will be sourced off-site and transported to the site in containers by the appointed contractor or service provider. Therefore, no water use activities as defined under Section 21 of the National Water Act (Act No. 36 of 1998) will be triggered by the proposed project, and no authorisation under this Act is currently required.

4.2 Volumes and Rates of Water Use required for the Operation

N/A, no WULA is applied for.

5 Impacts to be Mitigated in their Respective Phases; Impact Management Outcomes; Impact Management Actions

Phase	Activity	Potential Impact	Mitigation Measures	Compliance with Standard	Management Outcome	Management Actions	Time Period for Implementation
Pre-Construction	Access Road Planning	Soil disturbance and compaction; potential for erosion	Design access routes to follow existing disturbed areas; limit new road construction	DMRE guidelines; SANS standards for land disturbance	Minimal soil disturbance with controlled access	Develop detailed access road design; conduct engineering review and soil stabilisation planning	Prior to construction commencement
Pre-Construction	Baseline Data Collection	Inadequate baseline leading to misinformed planning	Conduct comprehensive baseline surveys of soil, vegetation, water, and noise levels	DMRE Environmental Guidelines; ISO 14001	Clear understanding of existing conditions	Implement detailed field surveys and integrate data into the Environmental Management Programme (EMPr)	Before site mobilisation
Construction	Borehole drilling	Disturbance to vegetation and wildlife; temporary soil erosion	Use existing clearances; schedule excavation during off-peak wildlife activity; minimise clearance widths	DMRE Environmental Management Programme (EMPr) guidelines; local biodiversity standards	Minimal habitat disruption and reduced soil erosion	Implement controlled excavation; ensure immediate re-vegetation and soil stabilisation post-activity	During excavation activities
Construction	Machinery Operation	Increased dust, emissions, and noise; potential impacts on air quality and community	Use low-emission equipment; apply water spraying for dust suppression; restrict noisy operations to daytime hours	SANS air quality standards; local noise regulations; DMRE guidelines	Improved air quality and reduced noise disturbance	Schedule regular machinery maintenance; install dust suppression systems; monitor noise levels	Throughout construction
Construction	Chemical and Waste Handling	Risk of contamination of surface water and groundwater; potential spill-related impacts	Store hazardous materials in bunded areas; employ proper waste segregation and spill response systems	National Water Act; DMRE waste management standards	No contamination; safe handling of chemicals and wastes	Train staff on chemical handling; install spill kits and conduct regular inspections	Continuous during construction
Construction	Infrastructure Placement	Visual impacts; potential risk to heritage resources	Locate temporary structures away from sensitive or visible locations; conduct heritage assessments prior to placement	DMRE Environmental Management Programme; heritage conservation guidelines	Minimal visual disturbance; heritage sites preserved	Establish site layout plans with input from heritage specialists; implement aesthetic screening measures	At initial placement and monitored throughout
Operational/Closure	Site Rehabilitation	Residual impacts to soil, vegetation, and watercourses; alteration of original landscape conditions	Immediate re-vegetation with indigenous species; bank stabilisation using gabions or re-nourishment of disturbed areas	DMRE rehabilitation criteria; local environmental quality standards	Restoration of pre-project conditions	Develop and implement a detailed rehabilitation plan; conduct post-closure monitoring and reporting	Immediately post-construction through project closure

Phase	Activity	Potential Impact	Mitigation Measures	Compliance with Standard	Management Outcome	Management Actions	Time Period for Implementation
Operational/Closure	Traffic and Site Access	Temporary congestion impacting local communities and increased vehicle emissions	Schedule site activities to avoid peak local traffic hours; coordinate with local authorities for traffic management	Local municipal traffic regulations; DMRE guidelines	Controlled traffic flow; reduced congestion and emissions	Communicate schedules to local stakeholders; enforce designated access routes and monitor traffic impacts	During construction and until site closure

6 Financial Provision

This section outlines the approach to financial provisioning for the proposed mining operations, in accordance with the applicable legislative and regulatory framework. It includes a summary of the current Financial Provisioning Regulations, the methodology used to determine the amount of financial provision required, and the calculated quantum necessary to ensure that environmental management and rehabilitation obligations are adequately funded. The financial provision is essential to safeguard the environment both during the operational phase and post-closure, ensuring that the mine can be responsibly closed and rehabilitated in alignment with national standards and best practices.

6.1 Financial Provisioning Regulations

The National Environmental Management Act, 1997 (Act No. 107 of 1998) GN R.1147 Regulations, titled Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining, or Production Operations, were initially promulgated on 20 November 2015. These regulations are currently under review and are expected to be repealed and replaced by the revised Financial Provisioning Regulations once finalized.

The closure planning document for Niara Minerals (Pty) Ltd done by Temvelo environmental consultants (Pty) Ltd in July 2025, was developed in alignment with the requirements of the NEMA Financial Provisioning Regulations 2015 (as amended). It ensures compliance with the current legislative framework while incorporating flexibility to adapt to forthcoming regulatory changes. Upon the official promulgation of the revised Financial Provisioning Regulations, this document will be updated to ensure full alignment with the final requirements, ensuring consistency with the most up to-date legal and regulatory standards.

6.2 Determination of the Amount of Financial Provision

6.2.1 Closure Cost Methodology

The closure costs for Niara Minerals were calculated based on the DMRE methodology and includes the following:

- The standard DMRE input sheet, containing quantities of the various Components;
- The standard DMRE rate sheet; and
- The standard DMRE summary sheet, summarising the closure costs.

6.2.2 Rates

The 2005 DMRE Master Rates published by the DMRE are no longer accurate. The 2005 rates have therefore been escalated using the average annual inflation rates published by StatsSA (refer to Table 6-1). The latest inflation rates were published by StatsSA on 11 December 2024 and were used to adjust the 2024 rates to the current review date, as 30 November 2024 (inflation rate reflective of November 2024).

Table 6-1 Annual Escalation Rates

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
CPIX (%)	4.7%	7.1%	11.0%	7.1%	4.3%	5.0%	5.6%	5.7%	6.1%
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
CPIX (%)	4.6%	6.4%	5.3%	4.7%	4.1%	3.3%	4.5%	6.9%	6.0%
Year	2024								
CPIX (%)	4.4%								

6.2.3 DMRE Classification

The DMRE Guideline document stipulates that a mine is classified according to factors which enables the determination of the appropriate weighting factors utilized during the quantum calculation. According to the above-mentioned statement, the following factors were crucially taken into consideration:

- The mineral mined;
- The risk class of the mine;
- Environmental sensitivity of the mining area;
- Type of mining operation; and
- Geographic location.

The following steps in the DMRE methodology were addressed. Minerals portrayed in Table 6-2 firstly had to be assigned a risk class (Class A, B or C). Secondly, the sensitivity of the area where the mine is located had to be concluded using criteria’s (Biophysical, Social or Economic) (refer to Table 6-3). Moreover, the criteria were assessed against sensitivity (Low, Medium or High). Lastly, determination of the nature of terrain and proximity to urban area was based on using the weighing factors as shown in Table 6-4 and Table 6-5.

Table 6-2 Primary Risk Class for Type of Mineral Mined (Niara minerals Class Highlighted in green)

Mineral	Ore	Size: large if > than (tpm)	Primary Risk Class			
			Large Mine		Small Mine	
			Mine & Mine Waste	Mine, Mine Waste, Plant & Plant Waste	Mine & Mine Waste	Mine, Mine Waste, Plant & Plant Waste
Antimony		1000	A	A	C	C
Asbestos		0	A	A	A	A
Base metals (Copper, Cadmium, Cobalt, Iron ore, Molybdenum, Nickel, Tin, Vanadium)	Sulphide	10 000	A	A	C	A
	Oxide	10 000	C	A	C	A
Coal		0	A	A	A	A
Chrome		10 000	C	A	C	C
Diamonds and precious stones		10 000	C	B	C	C
Gold, silver, uranium		10 000	B	A	B	A
Phosphate		10 000	C	B	C	C
Platinum		10 000	C	B	C	B
Mineral sands (Ilmenite, Titanium, Rutile, Zircon)		10 000	C	B	C	C
Zinc and Lead		10 000	C	A	C	A

Mineral	Ore	Size: large if > than (tpm)	Primary Risk Class			
			Large Mine		Small Mine	
			Mine & Mine Waste	Mine, Mine Waste, Plant & Plant Waste	Mine & Mine Waste	Mine, Mine Waste, Plant & Plant Waste
Industrial Minerals (Andalusite, Barite, Bauxite, Cryolite, Fluorspar)		10 000	C	C	C	C

Table 6-3 Criteria Used to Determine the Area Sensitivity

Sensitivity	Sensitivity Criteria		
	Biophysical	Social	Economic
Low	<ul style="list-style-type: none"> Largely disturbed from natural state, Limited natural fauna and flora remains, Exotic plant species evident, Unplanned development, Water resources disturbed and impaired. 	<ul style="list-style-type: none"> The local communities are not within sighting distance of the mining operation, Lightly inhabited area (rural). 	<ul style="list-style-type: none"> The area is insensitive to development, The area is not a major source of income to the local communities.
Medium	<ul style="list-style-type: none"> Mix of natural and exotic fauna and flora, Development is a mix of disturbed and undisturbed areas, within an overall planned framework, Water resources are well controlled. 	<ul style="list-style-type: none"> The local communities are in the proximity of the mining operation (within sighting distance), Peri-urban area with density aligned with a development framework, 	<ul style="list-style-type: none"> The area has a balanced economic development where a degree of income for the local communities is derived from the area, The economic activity could be influenced by indiscriminate development.

Sensitivity	Sensitivity Criteria		
	Biophysical	Social	Economic
		<ul style="list-style-type: none"> Area developed with an established infrastructure. 	
High	<ul style="list-style-type: none"> Largely in natural state, Vibrant fauna and flora, with species diversity and abundance matching the nature of the area, Well planned development, Area forms part of an overall ecological regime of conservation value, Water resources emulate their original state. 	<ul style="list-style-type: none"> The local communities are in close proximity of the mining operation (on the boundary of the mine), Densely inhabited area (urban/dense settlements), Developed and well-established communities. 	<ul style="list-style-type: none"> The local communities derive the bulk of their income directly from the area, The area is sensitive to development that could compromise the existing economic activity

Table 6-4 Weighting Factor 1 – Nature of Terrain

	Flat	Undulating	Rugged
Weighting factor 1: Nature of the terrain/ accessibility	1.00	1.10	1.20

Note: The DMRE definitions for each category include:

- Flat - Generally flat over the prospecting area;
- Undulating - A mix of sloped and undulating areas within the prospecting area; and
- Rugged - Steep natural ground slopes (greater than 1:6) over the majority of the prospecting area

Table 6-5 Proximity to Urban Area

	Urban	Peri-urban	Remote
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.00	1.05	1.10

Note: The DMRE definitions for each category include:

- Urban - Within a developed urban area;
- Peri-urban - Less than 150 km from a developed urban area; and
- Remote - Greater than 150 km from a developed urban area.

The classification of Niara minerals has been summarised in Table 6.6. It must be noted, however, that of the 18 closure components that exist, only three are influenced by the risk class and sensitivity; the remaining 15 have a standard multiplication factor, irrespective of the class or sensitivity.

Prospecting area	Risk Class	Sensitivity	Terrain	Proximity to Urban Area
Niara Minerals	A	Medium	Flat	Remote

7 Calculate And State the Quantum of The Financial Provision Required to Manage and Rehabilitate the Environment in Accordance with the Applicable Guideline

The 2025 closure costs were calculated according to the DMRE standard methodology for the assessment of mine closure. The cost for the unscheduled rehabilitation and closure for Niara Minerals is **R 192 162.50** (incl. VAT).

CALCULATION OF THE QUANTUM

Applicant: Niara Mineral (Pty) Ltd Evaluators: Temvelo Consultants (Pty) Ltd		Ref No.: KZN 30/5/1/1/2/11948 PR Date: Jul-25					
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	R19,31	1	1	R0,00
2 (A)	Demolition of steel buildings and structures	m2		R269,04	1	1	R0,00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	R396,48	1	1	R0,00
3	Rehabilitation of access roads	m2	0	R48,14	1	1	R0,00
4 (A)	Demolition and rehabilitation of electrified railway lines	m		R467,28	1	1	R0,00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m		R254,88	1	1	R0,00
5	Demolition of housing and/or administration facilities	m2		R538,08	1	1	R0,00
6	Opencast rehabilitation including final voids and ramps	ha	0	R273 851,94	1	1	R0,00
7	Sealing of shafts adits and inclines	m3		R144,43	1	1	R0,00
8 (A)	Rehabilitation of overburden and spoils	ha		R188 043,11	1	1	R0,00
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha		R234204.29	1	1	R0,00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	R680240.28	1	1	R0,00
9	Rehabilitation of subsided areas	ha		R157 457,78	1	1	R0,00
10	General surface rehabilitation	ha	0,75	R148 961,86	1	1	R111 721,40
11	River diversions	ha		R148 961,86	1	1	R0,00
12	Fencing	m	0	R169,92	1	1	R0,00
13	Water management	ha	0	R56 639,49	1	1	R0,00
14	2 to 3 years of maintenance and aftercare	ha	0,75	R19 823,82	1	1	R14 867,87
15 (A)	Specialist study	Sum				1	R0,00
15 (B)	Specialist study	Sum				1	R0,00
							R126 589,26

Weighing Factor 2 (Step 4.4)	1,1
Sub Total 1	R139 248,19
Preliminary and General	R15 190,71
Contingencies	R12 658,93
Subtotal 2	R167 097,83
VAT (15%)	R25 064,67
Grand Total	R192 162,50

8 The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

Monitoring Component	Method of Monitoring	Frequency	Responsible Party	Reporting Tool
Access Road Use and Soil Disturbance	<ul style="list-style-type: none"> Visual inspections of access roads and disturbed areas to ensure minimal expansion and erosion control 	<ul style="list-style-type: none"> Weekly during construction 	<ul style="list-style-type: none"> Environmental Control Officer (ECO) 	<ul style="list-style-type: none"> Inspection checklist, monthly report
Vegetation Clearance	<ul style="list-style-type: none"> Confirmation of clearance boundaries with pegging and site maps; photographic records 	<ul style="list-style-type: none"> Before and during clearance 	<ul style="list-style-type: none"> Site Supervisor & ECO 	<ul style="list-style-type: none"> Pre- and post-clearance report
Wildlife and Habitat Disturbance	<ul style="list-style-type: none"> Observation logs for wildlife activity and nesting; buffer zones verified 	<ul style="list-style-type: none"> Periodically during activity 	<ul style="list-style-type: none"> ECO 	<ul style="list-style-type: none"> Site logbook and compliance report
Waste Management	<ul style="list-style-type: none"> Waste storage, handling and disposal practices monitored on-site 	<ul style="list-style-type: none"> Weekly 	<ul style="list-style-type: none"> ECO & Contractor 	<ul style="list-style-type: none"> Waste register, audit report
Chemical and Fuel Storage	<ul style="list-style-type: none"> Inspection of bunded storage areas, spill kits, and clean-up records 	<ul style="list-style-type: none"> Weekly or after any spill 	<ul style="list-style-type: none"> ECO 	<ul style="list-style-type: none"> Spill log, weekly inspection sheet
Dust and Emissions	<ul style="list-style-type: none"> Visual inspection and dust suppression log; use of low-emission machinery 	<ul style="list-style-type: none"> Daily during dry/windy periods 	<ul style="list-style-type: none"> Site Manager & ECO 	<ul style="list-style-type: none"> Dust control log
Noise	<ul style="list-style-type: none"> Equipment logs, hours of operation, and community feedback reviewed 	<ul style="list-style-type: none"> Weekly 	<ul style="list-style-type: none"> Site Manager 	<ul style="list-style-type: none"> Activity log and incident reports
Surface and Groundwater	<ul style="list-style-type: none"> Visual checks for contamination; bund integrity and nearby watercourse monitoring 	<ul style="list-style-type: none"> Bi-weekly 	<ul style="list-style-type: none"> ECO 	<ul style="list-style-type: none"> Monitoring sheet, site audit reports

Monitoring Component	Method of Monitoring	Frequency	Responsible Party	Reporting Tool
Heritage Resources	<ul style="list-style-type: none"> Compliance with no-go heritage zones; immediate reporting if new artefacts are found 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> ECO & Field Workers 	<ul style="list-style-type: none"> Heritage compliance report
Rehabilitation	<ul style="list-style-type: none"> Vegetation growth monitored and soil stabilisation verified 	<ul style="list-style-type: none"> Monthly post-construction 	<ul style="list-style-type: none"> ECO & Rehabilitation Specialist 	<ul style="list-style-type: none"> Rehabilitation monitoring report
Traffic Management	<ul style="list-style-type: none"> Vehicle movement monitored; logbooks checked; adherence to speed limits and routes 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Logistics Supervisor 	<ul style="list-style-type: none"> Vehicle log and traffic report
Training and Induction	<ul style="list-style-type: none"> Attendance registers and content reviews for environmental awareness sessions 	<ul style="list-style-type: none"> Prior to site access & quarterly 	<ul style="list-style-type: none"> HSE Officer 	<ul style="list-style-type: none"> Training register and content summary

9 Post Closure Monitoring

This post-closure monitoring program is designed to ensure that the project site is effectively rehabilitated and that any potential environmental issues that arise post-prospecting are addressed promptly. The program will be adapted over time based on the results of ongoing monitoring activities.

Aspect	Methodology	Frequency / Duration	Performa / Success Criteria	Corrective Action
Soil Stability	<ul style="list-style-type: none"> Visual inspection of rehabilitated areas for erosion and compaction 	<ul style="list-style-type: none"> Twice during Year 1 (6-monthly) 	<ul style="list-style-type: none"> No significant erosion, no deep rills/gullies, minimal compaction 	<ul style="list-style-type: none"> Regrade, mulch or install erosion control (e.g., contour berms, vetiver grass)
Vegetation Regrowth	<ul style="list-style-type: none"> Transect walk and visual comparison of revegetated vs. undisturbed reference 	<ul style="list-style-type: none"> Annually for 2 years 	<ul style="list-style-type: none"> Minimum 60% indigenous plant cover by Year 2 	<ul style="list-style-type: none"> Replant indigenous grasses or apply seed mix, monitor water retention

Aspect	Methodology	Frequency / Duration	Performa / Success Criteria	Corrective Action
Alien Invasive Control	<ul style="list-style-type: none"> Visual checks for invasive species (within and adjacent to site) 	<ul style="list-style-type: none"> Annually for 2 years 	<ul style="list-style-type: none"> <10% invasive species cover 	<ul style="list-style-type: none"> Manual removal and/or targeted herbicide application (only as needed)
Surface Water Quality	<ul style="list-style-type: none"> Only if water bodies were within 100 m buffer (dry method used) 	<ul style="list-style-type: none"> Not applicable (dry prospecting) 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Site Access Control	<ul style="list-style-type: none"> Spot checks for fencing, signage, or evidence of illegal access 	<ul style="list-style-type: none"> Annually in Year 1 	<ul style="list-style-type: none"> No new tracks, dumping or vandalism 	<ul style="list-style-type: none"> Replace signs, block access, report to local authorities if needed
Waste Clearance	<ul style="list-style-type: none"> Visual walkthrough for presence of litter, machinery debris, or hydrocarbons 	<ul style="list-style-type: none"> Once at closure + 6-month follow-up 	<ul style="list-style-type: none"> Site clean and free from solid/hazardous waste 	<ul style="list-style-type: none"> Immediate cleanup by contractor
Visual Integration	<ul style="list-style-type: none"> Visual check from nearest community viewpoint or public access road 	<ul style="list-style-type: none"> Once per year for 2 years 	<ul style="list-style-type: none"> Site does not stand out visually; blends with natural surroundings 	<ul style="list-style-type: none"> Additional planting, screen planting or reshaping of landform
Documentation & Reporting	<ul style="list-style-type: none"> Monitoring records, photos and summary reports compiled 	<ul style="list-style-type: none"> After each monitoring round 	<ul style="list-style-type: none"> Complete and filed; ready for DMRE audit 	<ul style="list-style-type: none"> Repeat monitoring or fix data gaps if required

9.1 Monitoring of Impact Management Actions, Reporting Frequency, Responsible Persons, and Time Period for Implementing Impact Management Action

This monitoring programme ensures that all key environmental and social aspects of the project are tracked, mitigated, and reported throughout the project lifecycle.

Source Activity	Impacts Requiring Monitoring	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency & Time Periods for Implementation
Site clearance & drilling	<ul style="list-style-type: none"> Soil disturbance, erosion, compaction 	<ul style="list-style-type: none"> Inspect exposed areas for erosion, soil loss, and compaction signs 	<ul style="list-style-type: none"> Environmental Control Officer (ECO) and Site Manager 	<ul style="list-style-type: none"> Monitoring: Monthly during active site work Reporting: Monthly Implementation: During construction phase (Months 1-3)
Access road use	<ul style="list-style-type: none"> Vegetation loss, dust, compaction 	<ul style="list-style-type: none"> Monitor condition of access tracks, signs of widening, and dust suppression 	<ul style="list-style-type: none"> Contractor under supervision of ECO 	<ul style="list-style-type: none"> Monitoring: Bi-monthly Reporting: Quarterly Implementation: During all access road use (Months 1-6)
Equipment and machinery operation	<ul style="list-style-type: none"> Hydrocarbon spills, noise, safety risks 	<ul style="list-style-type: none"> Visual checks for leaks, noise levels near receptors, safety signage 	<ul style="list-style-type: none"> Site Supervisor and Safety Officer 	<ul style="list-style-type: none"> Monitoring: Weekly Reporting: Monthly Implementation: Ongoing during active prospecting phase (Months 1-3)
Temporary laydown or storage areas	<ul style="list-style-type: none"> Waste generation, improper storage 	<ul style="list-style-type: none"> Inspect waste disposal areas, bunded zones, and signage 	<ul style="list-style-type: none"> ECO and Site Manager 	<ul style="list-style-type: none"> Monitoring: Weekly Reporting: Monthly Implementation: Throughout project (Months 1-3)
Vegetation clearing	<ul style="list-style-type: none"> Alien invasive spread, habitat degradation 	<ul style="list-style-type: none"> Monitor cleared areas for alien regrowth or slow rehabilitation 	<ul style="list-style-type: none"> ECO with Vegetation Specialist (as needed) 	<ul style="list-style-type: none"> Monitoring: Twice annually Reporting: Annually Implementation: Post-closure for 2 years (Years 1-2 post-activity)
Dust-generating activities	<ul style="list-style-type: none"> Air quality, community complaints 	<ul style="list-style-type: none"> Check dust suppression (e.g., water trucks), 	<ul style="list-style-type: none"> Contractor, ECO 	<ul style="list-style-type: none"> Monitoring: Weekly during dry periods

Source Activity	Impacts Requiring Monitoring	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency & Time Periods for Implementation
		monitor wind conditions		<ul style="list-style-type: none"> Reporting: Monthly Implementation: During construction (dry months especially)
Workforce & site access	<ul style="list-style-type: none"> Littering, safety, informal trails 	<ul style="list-style-type: none"> Inspect for signs of litter, open trails, sanitation use 	<ul style="list-style-type: none"> Contractor, with ECO spot checks 	<ul style="list-style-type: none"> Monitoring: Monthly Reporting: Quarterly Implementation: During construction phase (Months 1-3)
Closure & rehabilitation	<ul style="list-style-type: none"> Revegetation, erosion control 	<ul style="list-style-type: none"> Assess soil cover, vegetation regrowth, and slope stability 	<ul style="list-style-type: none"> ECO with input from Reclamation Specialist (if required) 	<ul style="list-style-type: none"> Monitoring: Bi-annually Reporting: Annually Implementation: Years 1 and 2 post-closure

10 Environmental Awareness Plan

The purpose of this Environmental Awareness Plan is to ensure that all personnel involved in the prospecting activities, including employees, contractors, and visitors, are aware of the potential environmental impacts associated with the project and are trained to manage and mitigate these impacts responsibly.

Component	Details
Purpose of the Plan	<ul style="list-style-type: none"> To ensure all personnel and contractors are aware of the environmental risks and their responsibilities to mitigate them during the prospecting lifecycle.
Target Audience	<ul style="list-style-type: none"> All site personnel- Contractors and subcontractors Visitors to site
Induction and Training Requirements	<ul style="list-style-type: none"> Mandatory site induction before project commencement Daily toolbox talks Weekly environmental briefings Specialised training for spill response, waste handling, and safety measures
Topics to be Covered	<ul style="list-style-type: none"> Overview of the prospecting project and environmental conditions Key sensitive areas (wetlands, rivers)

Component	Details
	<ul style="list-style-type: none"> • Spill prevention and response procedures • Waste management protocols • Dust and noise control measures • Importance of avoiding off-road driving and vegetation disturbance • Heritage resource protection • Emergency response and reporting procedures
Training Materials	<ul style="list-style-type: none"> • Environmental Code of Conduct • Project-specific Environmental Management Programme (EMPr) • Posters and signage • Illustrated SOPs for non-literate workers
Communication Methods	<ul style="list-style-type: none"> • Verbal presentations (in local language where needed) • Visual aids (maps, signs) • On-site demonstrations • Distribution of printed awareness leaflets
Roles and Responsibilities	<ul style="list-style-type: none"> • ECO: Facilitate training, monitor compliance, update plan as needed • Site Manager: Ensure all personnel attend training • Contractors: Enforce daily environmental practices
Monitoring of Awareness	<ul style="list-style-type: none"> • Attendance registers for inductions and toolbox talks • Periodic knowledge assessments • Incident/non-compliance reports reviewed for training gaps
Review and Updating	<ul style="list-style-type: none"> • Annually or following an environmental incident or audit • Plan to be updated with lessons learned and any regulatory changes

11 Specific information required by the Competent Authority

No specific information requirements, other than to align with the EIA Regulations in respect of the proposed project, have been made by the competent authority at this stage.

12 Conclusion and Recommendations

This BAR provides a comprehensive evaluation of the environmental, social, and economic implications associated with the proposed prospecting activities for coal, pseudo-coal, and torbanite/oil shale across an area of approximately 15 hectares. The project spans multiple farm portions, namely the Remaining Extent of Isihlengeni No. 689, the Remaining Extent of Demoina, Portion 1 of Weltevrede No. 540, Portion 1 of Misty Valley No. 831, and Portions 0, 3, 4, and 6 of Toovernaars Rust No. 518. Situated within the Abaqulusi Local Municipality in the Zululand District of KwaZulu-Natal Province, the site is located approximately 3 kilometers south of Ngenetseni and 23 kilometers south of Louwsburg. The assessment, informed by six specialist studies, concludes that the proposed prospecting activities present limited and manageable environmental risks, provided that the recommended mitigation and monitoring measures are rigorously implemented.

The ecological assessment conducted by Arid Cactus Consulting (2025) identified the presence of Endangered Mistbelt Grasslands and Sensitive Species of Conservation Concern within the project area. However, the temporary and small-scale nature of the prospecting footprint enables effective protection of these sensitive habitats. Mitigation measures include maintaining 100-meter ecological buffers around critical areas, enforcing strict no-go zones, and implementing targeted rehabilitation using indigenous species upon completion of activities. These measures ensure that ecological integrity is preserved throughout the project's duration. Similarly, the presence of two FEPA rivers, the Sihlengeni and Sikwebezi, which are in a natural and high-ecological state, necessitates stringent safeguards. Although no direct activities are planned within these river boundaries, a minimum 500-meter buffer zone will be respected, and erosion and sediment control measures will be applied to adjacent areas to prevent any adverse impacts.

The project area also contains wetlands, particularly valley-bottom types characterized by hydrophytic vegetation and hydromorphic soils, which perform critical ecological functions. These wetlands will be fully avoided, with stormwater and sediment control measures implemented to protect their integrity. Additionally, the Floodline Determination Study by Altra Watch (2025) highlighted flash flood risks in Drainage Area 1, attributed to steep slopes and shallow soils. To mitigate these risks, all infrastructure and drilling points will be positioned outside the 1:50 and 1:100-year floodlines, safeguarding both ecological systems and project assets from potential downstream impacts. The Social Impact Assessment by Temvelo Consultants (2025) revealed positive community sentiment, particularly in Wards 2, 3, and 4, where the project is viewed as a catalyst for socio-economic upliftment through employment and procurement opportunities. This optimism is contingent upon the strict implementation of environmental safeguards and sustained engagement with local stakeholders.

From an operational perspective, the prospecting activities are designed to minimize environmental disturbance. No Water Use Licence is required, as operations are dry, and potable water will be imported to the site, ensuring

no abstraction from local rivers or wetlands. The project involves no permanent infrastructure, and all activities are fully reversible, with rehabilitation commencing immediately upon completion of prospecting. A robust management framework underpins the project, encompassing a detailed EMPr, an Environmental Awareness Training Plan for all personnel and contractors, and a Post-Closure Monitoring Framework to ensure the long-term effectiveness of rehabilitation efforts and environmental stability.

In conclusion, the proposed prospecting right, when executed in strict accordance with the outlined conditions, mitigation measures, and monitoring protocols, is not anticipated to result in significant or irreversible environmental impacts. The temporary and localized nature of the activities, combined with a comprehensive management framework, ensures that risks to biodiversity, water resources, cultural heritage, and local communities are effectively minimized. Simultaneously, the project offers meaningful socio-economic benefits to the surrounding rural areas, including job creation and economic stimulation. By balancing responsible environmental stewardship with community development, the project aligns with sustainable development principles and supports the region's long-term well-being.

12.1 Recommendations

Based on the comprehensive findings of this BAR, the outcomes of the specialist studies, and the commitments outlined in the EMP), it is recommended that the proposed prospecting right for coal, pseudo-coal, and torbanite/oil shale within the 15-hectare project area be authorized, subject to strict adherence to the following conditions to ensure environmental protection, social responsibility, and operational compliance:

- **Full Compliance with the EMPr:** The project must adhere strictly to the EMPr, which provides a detailed framework for mitigating environmental impacts. This includes maintaining 100-meter ecological buffers around wetlands, rivers (notably the Sihlengeni and Sikwebezi FEPA rivers), and sensitive habitats identified in the Ecological Assessment (Arid Cactus Consulting, 2025). Robust dust suppression measures, such as water spraying and wind barriers, must be implemented to minimize air quality impacts. Additionally, soil erosion control measures, including sediment traps and contouring, are to be applied, with prompt rehabilitation of disturbed areas using indigenous vegetation to restore ecological integrity. These measures ensure that the temporary and small-scale nature of prospecting activities minimizes disruption to the surrounding environment.
- **Exclusion from Flood-Prone Areas:** In line with the Floodline Determination Study (Altra Watch, 2025), all prospecting-related infrastructure and activities must be excluded from areas within the 1:50 and 1:100-year floodlines, particularly in Drainage Area 1, where steep slopes and shallow soils heighten flash flood risks. This precaution prevents potential damage to ecological systems and downstream water resources, ensuring that the project does not exacerbate flood-related impacts.
- **Seasonal Scheduling of Activities:** To reduce risks of erosion, sedimentation, and disturbance to aquatic and riparian ecosystems, prospecting activities should be scheduled exclusively during the dry season. This timing minimizes the potential for runoff and sediment mobilization, protecting the high-ecological-value Sihlengeni and Sikwebezi rivers and associated wetlands from unintended impacts.
- **Site-Specific Biodiversity Protection:** A tailored biodiversity protection approach must be implemented to safeguard sensitive ecological features. This includes the complete avoidance of Endangered Mistbelt Grasslands and Important Bird Areas (IBAs), as well as special attention to Species of Conservation Concern (SCC) and ecologically sensitive areas identified in the Ecological Assessment (Arid Cactus Consulting, 2025). No-go zones must be clearly demarcated and enforced, with regular monitoring to ensure compliance and protect these critical habitats throughout the project duration.
- **Continuous Environmental Monitoring and Auditing:** A rigorous environmental monitoring and auditing program, as detailed in the EMPr, must be implemented to track compliance and environmental

performance. Regular reports must be submitted to the Department of Mineral Resources and Energy (DMRE) and other relevant authorities. The program should include adaptive management responses to address any instances of non-compliance or unforeseen environmental issues promptly. Clear performance criteria for post-prospecting site rehabilitation must be established to ensure the long-term restoration of disturbed areas to a stable and ecologically functional state.

- **Support for Local Socio-Economic Development:** The project should actively contribute to the socio-economic upliftment of the surrounding communities, particularly in Wards 2, 3, and 4 of the Abaqulusi Local Municipality. This includes prioritizing ward-based employment and procurement opportunities to maximize local economic benefits. Ongoing communication with traditional leaders, ward councillors, and established community forums is essential to maintain trust and transparency. A robust grievance redress mechanism and stakeholder engagement process must be implemented to address community concerns promptly and effectively, fostering positive relationships throughout the project lifecycle.
- **Environmental and Safety Training for Personnel:** Regular environmental and safety training must be provided to all employees and contractors to ensure awareness of the site's ecological and cultural sensitivities. Comprehensive inductions should cover the ecological importance of the project area, heritage protocols (including the Fossil and Heritage Chance Find Procedures), and emergency response and spill prevention measures. This training will equip personnel to operate responsibly and respond effectively to potential environmental or safety incidents.
- **Safeguarding Heritage Resources:** Heritage resources within the project area must be protected through proactive measures, including pre-activity surveys where necessary, as recommended by the Heritage and Palaeontology Assessments (Agri Civils, 2025; Bamford, 2025). Known graves, archaeological sites, and other significant heritage features must be avoided, with clearly defined no-go zones enforced. In the event of chance finds, all work must cease immediately, and the Amafa Institute for Heritage Resources or the PHRA must be notified to ensure proper management and preservation of any discovered heritage resources.

By adhering to these conditions, the proposed prospecting activities can proceed in a manner that minimizes environmental impacts, protects sensitive ecological and cultural resources, and delivers meaningful socio-economic benefits to the local community. These recommendations ensure that the project aligns with sustainable development principles and regulatory requirements, supporting responsible exploration within the Abaqulusi Local Municipality.

13 References

- Amajuba District Municipality. (2023). *Amajuba District Development Plan*. Amajuba District Municipality.
- Arid Cactus Consulting. (2025) Ecological Assessment for the Proposed Development Project, KwaZulu-Natal. Unpublished report prepared for Niara Minerals (pty) Ltd, July 2025.
- eMadlangeni Municipality. (2023). *Integrated Development Plan (IDP) 2023-2024*. eMadlangeni Local Municipality.
- Barker, P. (2018). *The Geology of South Africa's Coal Deposits*. South African Mining Journal.
- Department of Environmental Affairs (DEA) (2015). National Biodiversity Offset Policy Framework – Draft for Comment. DEA, Pretoria.
- Department of Forestry, Fisheries and the Environment (DFFE) (2023). Environmental Impact Assessment Regulations – Listing Notices and Protocols. Government Gazette No. 46927, Pretoria.
- Department of Water and Sanitation (DWS) (2020). Wetland Delineation Guidelines – A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas. Pretoria: DWS.
- KwaZulu-Natal Biodiversity Sector Plan (2020). CBA and ESA Mapping and Guidelines. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) and Ezemvelo KZN Wildlife.
- Mucina, L., & Rutherford, M.C. (2006). *The Vegetation of South Africa, Lesotho and Swaziland*. South African National Biodiversity Institute (SANBI), Pretoria.
- SANBI (2016). *Guideline for Biodiversity Assessment and Mapping in Environmental Impact Assessments*. South African National Biodiversity Institute, Pretoria.
- SANBI (2024). National Biodiversity Assessment 2024 – Draft Datasets. South African National Biodiversity Institute. [Unpublished GIS layers and classification systems].
- South African Weather Service (SAWS) (2024). Climate Data Portal – KwaZulu-Natal Region. Retrieved for biome characterisation.
- Statistics South Africa (2011). *Census 2011 Municipal Report: KwaZulu-Natal*. Pretoria: Statistics South Africa. Available at: https://www.statssa.gov.za/?id=emadlangeni-municipality&page_id=993 [Accessed 12 Mar. 2025].
- Statistics South Africa (2016). *Community Survey 2016: Provincial Profile KwaZulu-Natal*. Pretoria: Statistics South Africa. Available at: https://www.statssa.gov.za/?id=emadlangeni-municipality&page_id=993 [Accessed 12 Mar. 2025].



Statistics South Africa (2022). Census 2022 Provincial Profile: KwaZulu-Natal. Pretoria: Statistics South Africa.
Available at: <https://www.statssa.gov.za/publications/Report-03-01-74/Report-03-01-742022.pdf> [Accessed 12 Mar. 2025].



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Appendix 1: CV of the EAP



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Appendix 2: Maps

Appendix 3: Public Participation Process

Appendix 3A: Background Information Document

Appendix 3B: Interested and Affected Parties Registration Form

Appendix 3C: Proof of Newspaper Advert

Appendix 3D: Site Notice Report

Appendix 3E: I&APs Database

Appendix 3F: Comments and Response Report (CRR)

Appendix 3G: Landowners Representatives Consultation Meeting Documentation Appendix

3H: Public Consultation Meeting Documents

Appendix 3I: Proof of Consultation with State Departments



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Appendix 4: Environmental Sensitivity Screening Report



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Appendix 5: Specialist Studies Reports



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Appendix 6a: Floodline Determination Study



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Appendix 7b: Agriculture Impact Assessment



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Appendix 8c: Heritage Impact Assessment



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Appendix 9d: Palaeontology Impact Assessment



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Appendix 10e: Ecological Assessment



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Appendix 11f: Social Impact Assessment