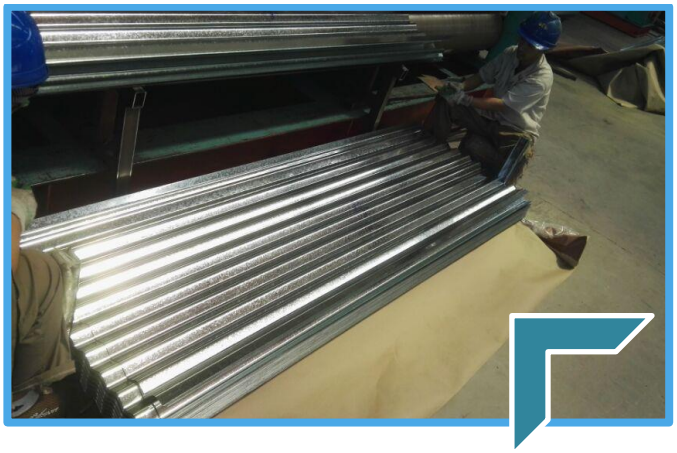
LVEC

Leratong Victim Empowerment Co-Operative Ltd

DRAFT BASIC ASSESSMENT REPORT

JULY 2021



Proposed Development of the UMzimkhulu Roof Sheet Factory

Compiled By

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IDS Geographical Information Systems and Environmental Consulting Services

A programme by

Department of Environmental Affairs, Forestry and Fisheries

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DOCUMENT DESCRIPTION

Applicant:	Leratong Victim Empowerment Co-operative Ltd
Report type:	Basic Assessment Report
Version	Draft
Project name:	Proposed Development of the UMzimkhulu Factory
IDS Reference Number:	IDS 340_035

Report details: The purpose of this Draft Basic Assessment Report is to:

Present the proposed project and the need for the project;

- Describe the study area environment with respect to the proposed development to ensure an extensive amount of information for commenting purposes and eventually decision-making
- Provision of an overview of the BA Process being followed, including public consultation;
- Assessment of the anticipated positive and negative impacts of the proposed development on the receiving environment;
- Provision of recommendations with the aim of avoiding or mitigating negative impacts whilst enhancing the positive benefits of the project;
- Provision of an Environmental Management Programme (EMPr) for the proposed project.

This Draft Basic Assessment Report is being made available to all Interested and Affected Parties (I&APs) and stakeholders for a 30-day review period. All comments submitted during the review of the BA Report will be incorporated into the finalised Basic Assessment Report as applicable and where necessary. This finalised BA Report will then be submitted to the KZN Department of Economic Development, Tourism and Environmental Affairs for decision-making.

DOCUMENT CONTROL

Compiled By	Reviewed By	Approved By
Ms. Terisa Balmith BA: Environment & Development Studies BSc Honours: Environmental Management PGCE: Natural Science & Geography	**Ms. Vanessa Nkosi** BSc Geology SACNASP Membership No 116174	**Graeme Engelbrecht** Bsc.Hons. Geography SAGC Reg No. 1275 SACNASP Membership No 116174
Date: 30th July 2021	**Date**: 30th July 2021	**Date:** 30th July 2021

PUBLIC PARTICIPATION DETAILS

Commenting period	30th July 2021 to 29th August 2021
Online Link	https://drive.google.com/drive/folders/1Psco9mP3ydRWRBGDSAHWj9_Vsno-4pN_?usp=sharing
Competent Authority	KZN Department of Economic Development, Tourism and Environmental Affairs

EXECUTIVE SUMMARY

Information Decision Systems has been appointed by the National Department of Forestry, Fisheries and the Environment (DFFE), runs the Special Needs and Skills Development Programme which is aimed at providing Environmental Services, pro-bono, to small-scale businesses. The programme offers the undertaking of a Basic Assessment for projects that require this assistance in applying for Environmental Authorisation.

Leratong Victim Empowerment Co-operative Ltd, a beneficiary of the Special Needs Programme requires Environmental Authiorisation for the proposed development of the uMzimkhulu Factory within the Nomdaphu rural area, within the UMzimkhulu Local Municipality. The UMzimkhulu Local Municipality is an administrative area in the Harry Gwala District of KwaZulu-Natal Province

The Leratong Victim Empowerment Co-operative Ltd proposes to establish a 51 019 m2 metal works factory in the uMzimkhulu Factory. In 2017 the applicant identified a need, in the metal industry for roof sheet that needs to be satisfied. That need was to manufacture roof sheet and sell directly to hardware shops, at a factory price. The products will be Corrugated iron sizes 0,25mm, 0,27mm, 0,3mm and 0,4mm (Figure 3). IBR 0,3mm and 0,4mm. At present, within a radius of 200km, there are no manufacturers of this product. That was the best option for the co-operative to grow and be independent of government.

In addition, the factory will comprise of the following structures form part of the scope of works

- Paved access road;
- Fencing;
- Garden area;
- Visitors parking;
- Staff parking;
- Stand by truck parking;
- Stormwater management;
- Two factory buildings.

This BAR follows the legislative process prescribed in the Environmental Impact Assessment (EIA) Regulations 2014 (as amended in 2017). This report constitutes the consultative Basic Assessment Report (cBAR) which details the environmental outcomes, impacts and residual risks of the proposed activity. The report aims to assess the key environmental issues and impacts associated with the development, and to document Interested and Affected Parties' (I&APs) issues and concerns.

Furthermore, it provides background information of the proposed project, a motivation and details of the proposed project, and describes the public participation undertaken to date. The objective of this report is to provide the project's I&APs, stakeholders, commenting authorities, and the Competent Authority (CA), with a thorough project description and BA process description. The outcome being to engender productive comment/input, based on all information generated to date and presented herein.

In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant portions of environmental legislation that were taken into consideration during this study and are elaborated on in this report.

The KZN Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA) is the Competent Authority for this BA process and the development needs to be authorised by this Department.

This consultative BAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. Having duly considered the project, in the Environmental Assessment Practitioner's (EAP's) opinion, the project does not pose a significant detrimental impact on the receiving environment and its inhabitants and can be mitigated significantly. The Applicant must be bound to stringent conditions to maintain compliance and ensure a responsible execution of the project.

The impacts identified and assessed by way of risk ratings, have been extensively reported herein. The report at hand (i.e., Draft BAR) is now available for additional comments from the 30th July 2021 to the 29th August 2021.

The final BAR report will, together with a comprehensive issues trail, the final draft of the EMPr, and all addenda as referred to, will be submitted to the EDTEA for decision making. The final BAR report will thus be a cumulation of scientific specialist studies' findings, public contribution via formal comment, and the drawing of conclusions by the EAP as the environmental specialist.

SUMMARY OF WHERE REQUIREMENTS OF APPENDIX 1 OF THE 2017 NEMA EIA REGULATIONS (GN R 326, AS AMENDED) ARE PROVIDED IN THIS BASIC ASSESSMENT REPORT

Appendix 1 of the Regulations	Yes/No	Section in the Basic Assessment Report
1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include-		
(a) details of – i. the EAP who prepared the report; and	YES	Section 2.7
ii. the expertise of the EAP, including a curriculum vitae;	YES	Section 2.7
(b) the location of the activity, including i) the 21 digit Surveyor General code of each cadastral land parcel;	YES	Section 3.2
(ii) where available, the physical address and farm name;	YES	Section 3.2
(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	YES	Section 3.2
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity (iii) is to be undertaken;	YES	Section 3.3
(d) a description of the scope of the proposed activity, including (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure ;	YES	Section 3.3
e) a description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and	YES	Section 5

Appendix 1 of the Regulations	Yes/No	Section in the Basic Assessment Report
(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments		
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	YES	Section 3.6
(g) a motivation for the preferred site, activity and technology alternative;	YES	Section 4
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	YES	Section 2 Section 4 Section 6 Section 7 Section 8

Appendix 1 of the Regulations	Yes/No	Section in the Basic Assessment Report
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;		
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	YES	Section 8.1
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	YES	Section 8.1
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	YES	Section 8.3.1
(l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	YES	Section 8.3
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact	YES	Section 8.3

Appendix 1 of the Regulations	Yes/No	Section in the Basic Assessment Report
management objectives, and the impact management outcomes for the development for inclusion in the EMPr;		
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	YES	Section 8.5
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	YES	Section 8.4
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	YES	Section 8.5
(q) 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;	YES	Section 8.5
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any 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; and	YES	Section 10
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	YES	Section 9
(t) any specific information that may be required by the competent authority; and	YES	N/A
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	NO	Not applicable

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

Acronyms

Acronym	Description
EDTEA	Department of Environmental Affairs, Forestry and Fisheries
EAP	Environmental Assessment Practitioner
NEMA	National Environmental Management Act
DEAT	Department of Environmental Affairs and Tourism
MEC	Member of the Executive Council
LED	Local Economic Development
EIA	Environmental Impact Assessment
SANBI	South African National Biodiversity Institute
WMA	Water Management Areas
CBA	Critical Biodiversity Areas
ESA	Ecological Support Areas
NWA	National Water Act
WUL	Water Use Licence
WULA	Water Use Licence Application
DWS	Department of Water and Sanitation
GA	General Authorisation
DWAF	Department of Water Affairs and Forestry
NHRA	National Heritage Resource Act
GIS	Geographic Information Systems

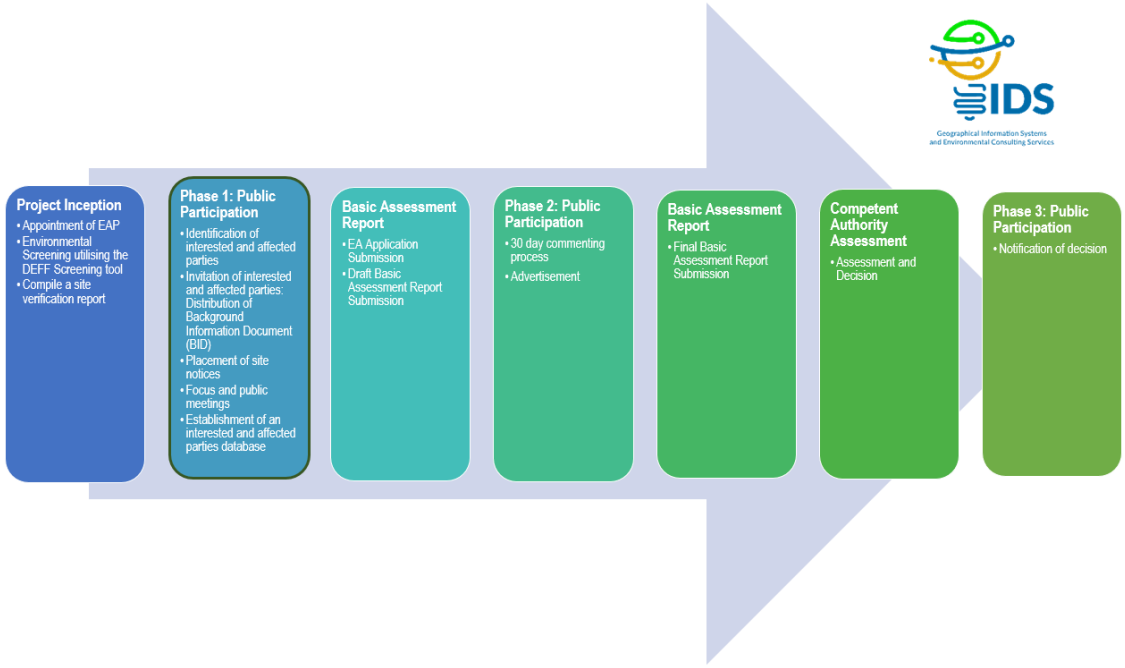
1 INTRODUCTION

Information Decision Systems has been appointed by the National Department of Forestry, Fisheries and the Environment (DFFE), runs the Special Needs and Skills Development Programme which is aimed at providing Environmental Services, pro-bono, to small-scale businesses. The programme offers the undertaking of a Basic Assessment for projects that require this assistance in applying for Environmental Authorisation.

Leratong Victim Empowerment Co-operative Ltd, a beneficiary of the Special Needs Programme requires Environmental Authiorisation for the proposed development of the uMzimkhulu Factory within the Nomdaphu rural area, within the UMzimkhulu Local Municipality. The UMzimkhulu Local Municipality is an administrative area in the Harry Gwala District of KwaZulu-Natal Province

The proposed development triggers listed activities in terms of the Environmental Impact Assessment (EIA) Regulations, Government Regulations (GNR) 324 and 327 of April 2017 promulgated under the National Environmental Management Act (NEMA) (Act no 107 of 1998). In terms of these Regulations, a Basic Assessment (BA) should be undertaken for the proposed project. The EAP will be managing the BA process on behalf of the project applicant.

2 METHODOLOGY: BASIC ASSESSMENT PROCESS



This section of the report describes the approach undertaken for the Basic Assessment process inclusive of the competent authority process that has been undertaken as well the details of the applicant and the independent Environmental Assessment Practitioner.

2.1 Pre-application phase

A virtual pre-application meeting has been conducted with the KZN Department of Economic Development, Tourism and Environmental Affairs on the 7th May 2021. The minutes of the pre-application meeting have been attached as **Appendix E**. The following comments were made by the competent authority and have since been addressed on this Basic Assessment Report;

- The Background Information Document must include operative activities especially regarding air emissions.
- Specifications for each structure in terms of dimensions must be provided on the Basic Assessment Report.
- In addition to the specialist studies that have been conducted, the following specialist studies must be conducted;

- ✓ Socio-economic impact assessments;
- ✓ Terrestrial Biodiversity assessment; and
- ✓ Geotechnical assessments

- The stakeholders suggested by Ms. Ntoyonke Dlamini must also be included on this application. In addition, the Environmental Health Department within Harry Gwala District Municipality must be consulted regarding the health and safety specifications for a metal factory and if an Air Emission Licence will be required for the proposed development.
- In addition, the Department of Transport, Department of Health, Amafa, Department of Agriculture, KZN Ezemvelo and DWS.

2.2 Application for Environmental Authorisation

The Environmental Authorisation Application has been lodged simultaneously with the Draft Basic Assessment report to the KZN Department of Economic Development, Tourism and Environmental Affairs.

2.3 Basic Assessment Study

A Basic Assessment (BA) is the level of environmental assessment applicable to activities listed in Listing Notices 1 and 3 of the Environmental Impact Assessment (EIA) Regulations 2014 as amended in April 2017. A BA is applied to activities that are considered less likely to have significant environmental impacts and, therefore, unlikely to require a detailed Environmental Impact Assessment (EIA).

The BA aims to achieve the following:

- Determine the policy and legislative context within which the proposed activity is undertaken and how the activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed project;
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Undertake an impact and risk assessment process inclusive of reasonably foreseeable cumulative impacts (where applicable). The focus being; determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the project and the risk of impact of the proposed activity 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 avoided, managed or mitigated.

This draft Basic Assessment Report (DBAR) has been compiled in accordance with the stipulated requirements in GNR 326, Appendix 1 of the EIA Regulations, 2014 (as amended in 2017), which outlines the legislative BA process and requirements for assessment of outcomes, impacts and residual risks of the proposed development. The DBAR further incorporates the findings and recommendations of the specialist studies conducted for the project.

An Environmental Management Programme (EMPr) has been compiled according to Appendix 4 of GNR 326 of the EIA Regulations, 2014 (as amended in 2017) for the construction and rehabilitation phases of the project and attached as **Appendix G**. The EMPr provides the actions for the management of identified environmental impacts emanating from the project and a detailed outline of the implementation programme to minimise and/ or eliminate any anticipated negative environmental impacts and to enhance positive impacts. The EMPr provides strategies to be used to address the roles and responsibilities of environmental management personnel on site, and a framework for environmental compliance and monitoring.

2.4 Specialist Assessments undertaken

To ensure a comprehensive meticulousness scientific approach to the BA study, IDS has appointed a number of specialist studies in order to comprehensively identify both potentially positive and negative environmental impacts (social and biophysical), associated with the proposed project, and where possible to provide mitigation measures to reduce the potentially negative impacts and enhance the positive impacts (**Table 1**). The specialist studies are attached as **Appendix G**.

Table 1: Specialist assessments conducted is support of the Basic Assessment process for the proposed development

Specialist Assessment	Organisation	Date	Appendix on the BA Report
Agroecosystems and Agricultural Compliance	Keith Synaman & Associates	September 2020	Appendix F1
Ecological and Wetland Assessment	SDP Ecological and Environmental Services	October 2020	Appendix F2
Terrestrial Biodiversity Impact Assessment	Information Decision Systems (Pty) Ltd	June 2021	Appendix F4
Phase 1 Cultural Heritage Impact Assessment	Active Heritage cc	December 2020	Appendix F5
Baseline Socio-economic Impact Assessment	Information Decision Systems (Pty) Ltd	June 2021	Appendix F6

2.5 Details of the Applicant

Leratong Victim Empowerment Co-operative Ltd is the project applicant for the proposed development and the details are provided in **Table 2** below;

Table 2: Project applicant details

Company Name	Leratong Victim Empowerment Co-operative Ltd
Contact Person	Bonginkosi Leonard Ndabani
Contact Details	065 612 0503/ 084 765 8698
Email	leonard777@icloud.com

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2.6 Details of the Environmental Assessment Practitioner

Information Decision Systems (Pty) Ltd is the appointed independent Environmental Assessment Practitioner (EAP) for the proposed development as per **Table 3** below. The CV of the EAP has been attached as **Appendix I.**

Table 3: EAP details

Company Name	Information Decision Systems (Pty) Ltd
Contact Person	Ms Terisa Balmith
Email	terisa@ids-cc.co.za
Tel	087 353 2576/ 071 452 8255
Fax	086 685 7767

IDS

3 PROJECT DESCRIPTION

3.1 Locality

UMzimkhulu Factory is located in within the Nomdaphu rural area under the administration of the Sondzaba Tribal Authority. Umzikhulu is approximately 22km North East from the site. The geographic coordinates of the study area have been described in Table 4 below.

Table 4: Geographical coordinates of study area

Site name	Latitude (S)	Longitude (E)
UMzimkhulu Factory	30°27'37.04"S	29°52'7.80"E

Figure 1: Site Locality

3.2 Cadastral Description

UMzimkhulu Factory is located within Bult Fontein 18269 Portion 0 and Zamenkomst 18261 Portion 0 under the ownership of the Sondzaba tribal authority. The applicant has been issued with a permit to occupy and utilise land by the tribal authority.

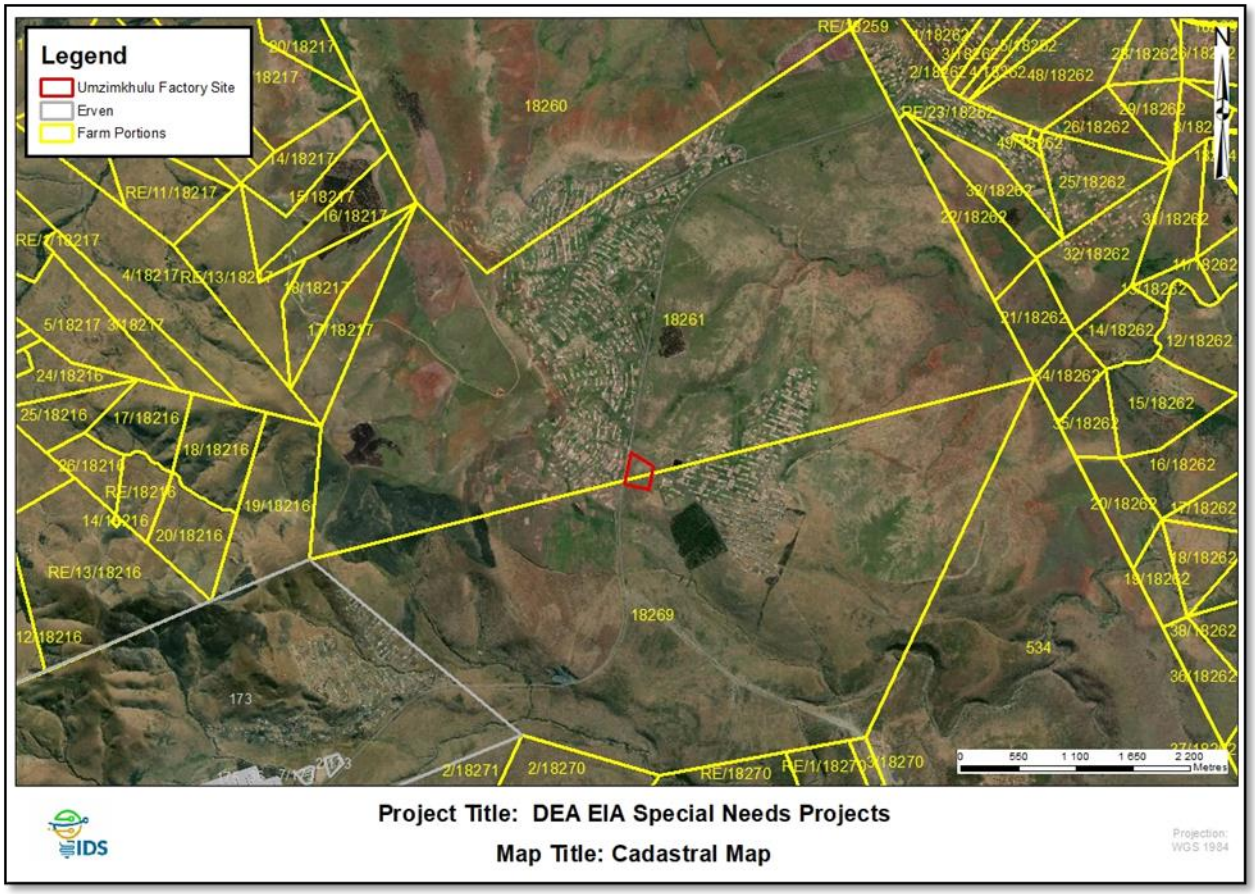

Figure 2 : Cadastral map of the study area

3.3 Scope of Works

The Leratong Victim Empowerment Co-operative Ltd proposes to establish a 51 019 m^2 metal works factory in the uMzimkhulu Factory.

In 2017 the applicant identified a need, in the metal industry for roof sheet that needs to be satisfied. That need was to manufacture roof sheet and sell directly to hardware shops, at a factory price. The products will be Corrugated iron sizes 0,25mm, 0,27mm, 0,3mm and 0,4mm (Figure 3). IBR 0,3mm and 0,4mm. At present, within a radius of 200km, there are no manufacturers of this product. That was the best option for the co-operative to grow and be independent of government.

Figure 3 An example of the metal sheet works industrial development

In addition, the factory will comprise of the following structures form part of the scope of works

- Paved access road;
- Fencing;
- Garden area;
- Visitors parking;
- Staff parking;
- Stand by truck parking;
- Stormwater management;
- Two factory buildings.

It is important to note that the factory will not be producing the metal material however, the material will be brought into the factory in sheets and further processing is done i.e. designing to the required standards. This is to ensure that no toxic emissions are released into the atmosphere due to the metal production activities.

3.4 Physical size of activity

The total footprint of the site is approximately 6ha and has been broken down into the following dimensions as per **Table 5** below. The site layout plan has been attached as **Appendix B**.

Table 5: Facilities dimensions

Activity	Perimeter	Additional information
Boundary Walls	51 019 m^2	▪ Concrete Blocks and Concrete
Factory A	1891 m^2	
Factory B	1075 m^2	
Office Block	215.011 m^2	
Guard House	27.040 m^2	
Waste House	84.690 m^2	▪ Recycled material will be the responsibility of LVEC ▪ Proposed to store recycled oil (250L per Month) ▪ Proposed to store recycled Paper (50Kg per Month) ▪ Normal Dumping Material (Municipality Dump Site)
A Metal waste concrete area	2 700 m^2	▪ Offcuts from production will be stored on site. ▪ All materials will be recycled for reuse on site, where possible. ▪ Capacity of facility – 50 Tons
Elevated Tank stand with 4 x 10 000L Jojo Tank	6.1m high elevated stand, excluding tanks Jojo Tank: 4x 10 000L	▪ Steel Material ▪ 40L Capacity Stand
A Septic Tank	420 m^2	▪ 960 Cubic Meters (Capacity) ▪ Concrete material only
Storm water lines	Length:1750m Diameter: 400mm Trench widths: 700mm	▪ Constructed with concrete pipe
Sewer Reticulation	Length: 1500m Trench width: 500mm Diameter: 200mm	▪ PVC Pipe Material
Water Reticulation	Length: 3000m Trench width: 500mm Diameter: 110mm	▪ PVC/HDPE Material
Paved Yard and walkways	45200 Square meters	▪ Constructed with Concrete brick pavers
Total	**6ha**	

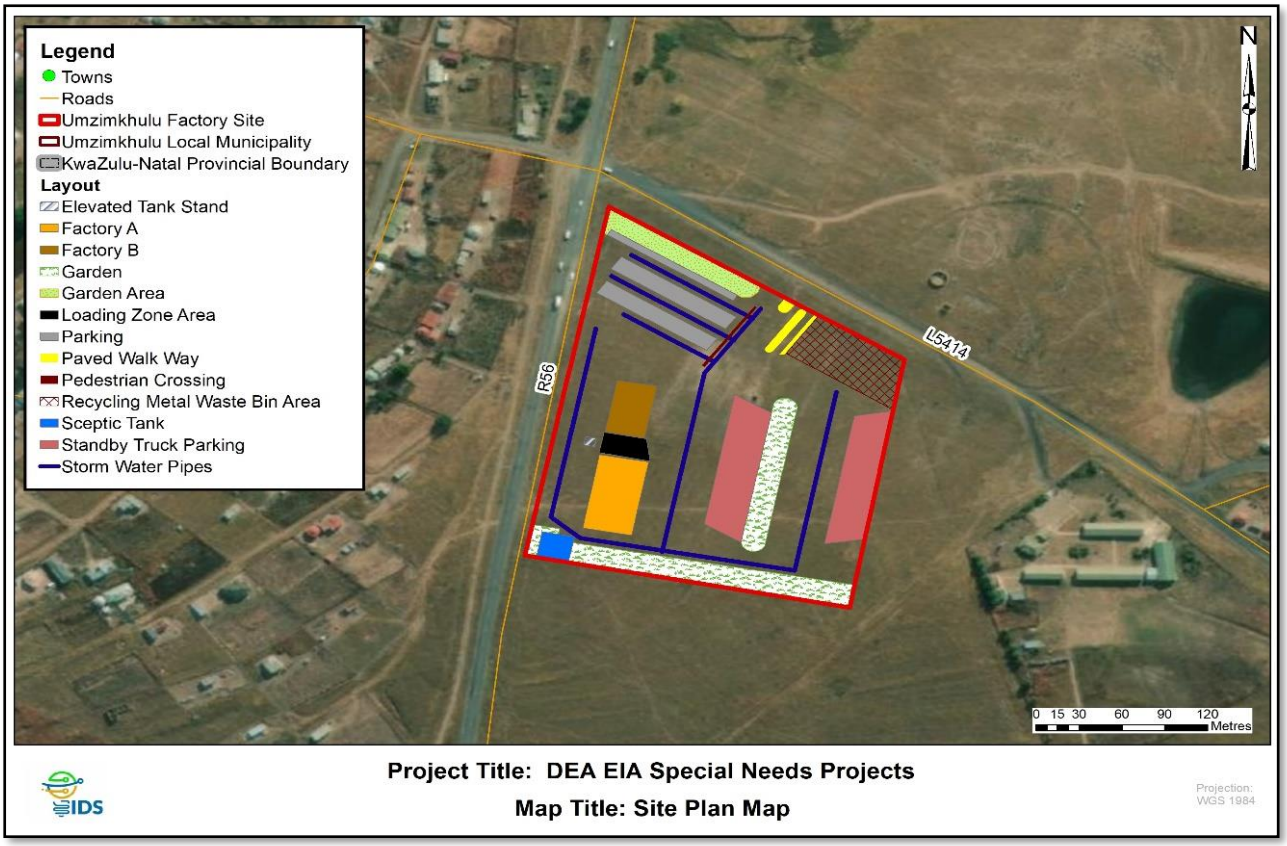

Figure 4: Proposed Site Plan Map

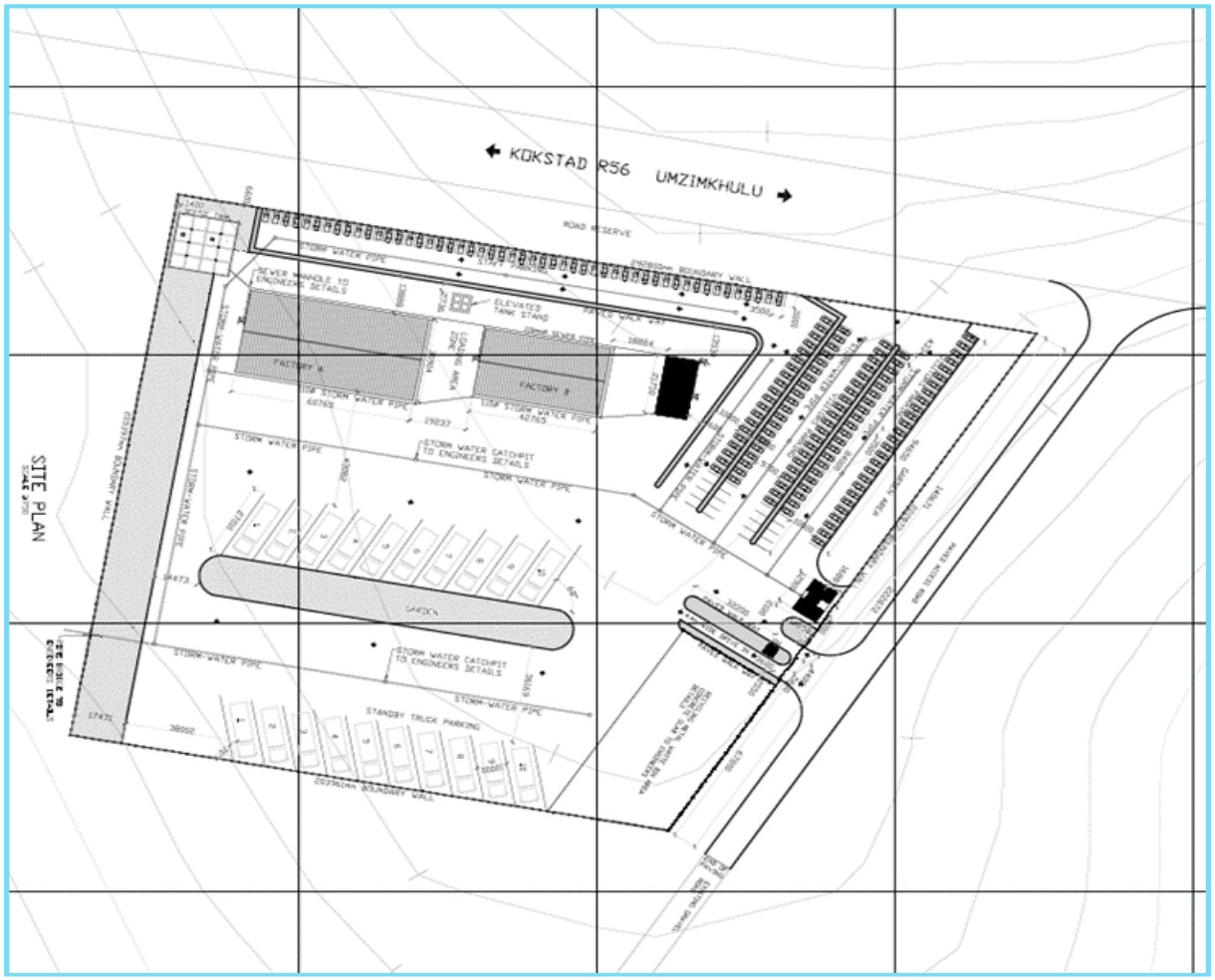

Figure 5: Proposed site layout plan

3.5 Site Access

No roads need to be created for accessing the site.

The site can be easily accessed using existing roads as per the directions below;

Head south on R65, turn left after 1.1km. Continue straight until you turn right onto N2 at the cross section. Turn left onto Hawkins St after 1.9km on a T-section.

3.6 Needs and desirability

The needs and desirability discussed below is as per Notice 891 of 2014, Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations 2010.

3.6.1 Securing Ecological Sustainable Development and use of natural Resources

How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?

Ecosystem Threat Status

According to the National Environmental Management: Biodiversity Act, the entire extent of the project area is within a vulnerable ecosystem, which is an ecosystem which has a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems.

Critical Biodiversity Areas

According to the DEA Screening Tool, more than half of the study area is located within an Ecological Support Area (ESA) resulting in a very high sensitivity towards terrestrial biodiversity.

Environmental Management Framework

According to the Harry Gwala District Municipality Environmental Management Framework dated November 2018, the proposed metal factory has been accommodated within the nodal development whereby the sphere of influence for these primary nodes range from 10-15 km. These nodes serve the sub-regional economy of the district and are currently in need of a detailed master-planning for infrastructural and services requirements for expansion. Services that are expected in these centres include agri industrial development, large scale tourism projects, housing development, shopping centres, wide range of retail services, police services, primary, secondary and tertiary high level of education centres, hospitals, clinics, government departments, satellite offices (especially for land affairs, social welfare).

These areas have potential for significant economic development, growth and expansion. Their sphere of influence ranges from 10-15km.

Harry Gwala DGDP

Based on the understanding gained from the status quo as well as the synthesis and analysis of issues, the following vision statement was crafted as part of the Harry Gwala DGDP:

"By 2030, Growth and Development in the Harry Gwala District Municipality will have significantly improved the quality of life in the area."

This will occur through increased participation in the economy, whilst protecting the natural environmental assets.

The proposed development aims to provide job opportunities during the construction and operational phase whilst conserving the environment.

Environmental Management Priorities

Surface Water: the study area is located in close proximity to watercourse i.e. wetlands, drainage lines and rivers. According to the EMF, wetland areas, streams and rivers must be protected, rehabilitated and managed to maintain ecological functioning. Adopt 30 metres buffer area from boundary of regulated area, for strict regulation of development. Development to be located outside of the 1:100 year flood line and not to interfere with storm water drainage. No urban, mining or agricultural development within regulated area of the watercourse (i.e. 1:100 year floodline or delineated riparian / wetland habitat, whichever is greatest). Critical wetlands need to be delineated according to DWS guidelines.

Agriculture: the study area is located within high potential agricultural land. The EMF states that high potential agricultural land set aside for agricultural purposes.

Socio-economic environment: the proposed development aims to improve the socio-economic status of the area through job creation and local business development. The EMF states that poverty alleviation and job creation must be motivated, growing the economy and promotion of labour intensive projects.

Integrated Development Plan

According to the UMzimkhulu Local Municipality Integrated Development Plan (2021), the municipality is committing to local economic development through the continuation of support to SMME's and small holder producers. The applicant is recognised as a small holder producer of the sheet metal. Therefore the proposed development is in line with the IDP.

How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?

Based on the terrestrial assessment seven (7) species of conservation concern were noted Desktop Analysis studies, and 5 for field results for the vegetation assessment. The plant species *Senna didymobotrya* was identified, during the filed survey within the project site, and is category 1b listed invasive species. The spreading or allowing the spread of any specimen of a listed invasive species is prohibited, according to National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) Alien and Invasive Species Lists, 2016. The proposed project area shows signs of disturbance and transformation, from the presence previously cultivated land covering the project site, and bare land patches, and walking paths within the project site area. The majority land cover type within the project site is disturbed grassland, which is close to its natural state, with minimal impacts.

All impacts are noted to have a high, medium-high, medium or medium-low significance before mitigation measure can be implemented. These significance ratings are due to the removal of vegetation from the development footprint size, causing soil erosion, habitat loss, faunal and floral disturbance, and the infestation of alien invasive species. The generation of waste caused by the type of activity (Industrial), causes a higher significance rating, leading to bad odours in and around the study area and the potential risk of respiratory health conditions development to the surrounding community. All impacts are however noted to have a low or very low significance rating if all mitigation measures are strictly adhered to.

Therefore based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment.

How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?

Based on the terrestrial assessment seven (7) species of conservation concern were noted Desktop Analysis studies, and 5 for field results for the vegetation assessment. The plant species Senna didymobotrya was identified, during the filed survey within the project site, and is category 1b listed invasive species. The spreading or allowing the spread of any specimen of a listed invasive species is prohibited, according to National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) Alien and Invasive Species Lists, 2016. The proposed project area shows signs of disturbance and transformation, from the presence previously cultivated land covering the project site, and bare land patches, and walking paths within the project site area. The majority land cover type within the project site is disturbed grassland, which is close to its natural state, with minimal impacts.

All impacts are noted to have a high, medium-high, medium or medium-low significance before mitigation measure can be implemented. These significance ratings are due to the removal of vegetation from the development footprint size, causing soil erosion, habitat loss, faunal and floral disturbance, and the infestation of alien invasive species. The generation of waste caused by the type of activity (Industrial), causes a higher significance rating, leading to bad odours in and around the study area and the potential risk of respiratory health conditions development to the surrounding community. All impacts are however noted to have a low or very low significance rating if all mitigation measures are strictly adhered to.

Therefore based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment.

What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?

Construction Phase

No waste streams are anticipated to be produced from construction activities proposed on site other than domestic and construction waste which will be disposed of to a registered landfill. Consequently, volumes can only be determined at a later stage (development stage of the project).

Operational Phase

Due to the expected activities to be undertaken, domestic waste and material waste is anticipated to be produced during the operational activities of the project. The municipality has been provisioned to provide capacity towards waste management.

How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?

According to the Phase 1: HIA the proposed Roof Sheeting Factory is situated on the east bank of the R 56 approximately 28 km to the south of the UMzimkhulu CBD. The footprint covers an area of approximately 580m x 440m. It is covered by disturbed grasslands and it is also evident that the area has been cultivated previously. There is no evidence for any heritage site, feature, or artefact associated with the actual footprint. The main anthropogenic footprint is a footpath. There are no visible graves. A rural cemetery occurs approximately 300m to the north of the proposed development. However, these graves are not threatened by the proposed development and there is no need for mitigation. It is also important to note that the footprint does not form part of any known cultural landscape.

How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?

The proposed development will not directly impact on any non-renewable natural resources.

How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?

The proposed development will not impact on any renewable natural resources.

How will the ecological impacts resulting from this development impact on people's environmental right in terms following;

Construction and Operational Phase

The following impacts have been identified based on the scope of work to be carried out in comparison to the receiving environment:

- Removal of existing vegetation community for infrastructure development;
- Disturbance and mortality of faunal species due to habitat loss;
- Potential infestation of alien and invasive plant species;
- Reduction in air quality due to the generation of dust caused by construction activities; and
- Sedimentation and erosion due to the clearance of vegetation.

Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g., on livelihoods, loss of heritage site, opportunity costs, etc.)?

The development site is zoned agriculture however it is not being utilised for this purpose. It is currently vacant land and as such is making little direct contribution to livelihoods at present. It is not anticipated that the proposed development will impact adversely on the environment, and the Benefits that will accrue to the local community as a result of the project are summarised in Section 8 of the BAR.

Employment opportunities will be created for the construction and operational phases of the activity. The factory will further enhance the local economy as the roof sheets will be able to service a wide geographical area which is currently not available within 200m of the project area.

Labourers will be sourced from UMzimkhulu area.

Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?

It is clear from the ground truthing conducting by the terrestrial specialist that the project area has land patches which were previously cultivated land, and have undergone habitat degradation, where the vegetation growth is clearly differentiated from the surrounding grassland. The land patches now appear to be bare land, with little to no vegetation cover. The project site is also situated on previously cultivated land, which has recovered and appears to be Grassland cover presently. There is also a walking path which has formed, because of human trek paths.

Considering the findings of the respective studies, no fatal flaws were identified for the proposed project. Should the avoidance and mitigation measures prescribed be implemented, the significance of the considered impacts for all aspects is expected to be low. It is thus the opinion of the specialists that the project can proceed, but only if the recommended mitigation measures and recommendations are implemented.

Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?

No site or design alternatives were noted for this development, the site layout plan was designed in consultation with the independent relevant specialists with the aim of reducing the development footprint.

Based on inputs from the engineering team, a preferred layout option has been prepared for the site to totally exclude any water resources in the vicinity of the project area.

Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?

Job creation and economic development are essential for the survival of local municipality specifically UMzimkhulu Local Municipality. Therefore, based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. The proposed development will therefore feed into these two essential areas of survival during the construction and operation phases of development. Results from growing local economies and access to job opportunities also mean the socio-economic status of the locals within the municipality will be improved.

3.6.2 Promoting justifiable economic and social development

What is the socio-economic context of the area, based on, amongst other considerations, the following considerations: (1) The IDP; (2) Spatial priorities and desired spatial patterns; (3) Spatial characteristics; and (4) Municipal Economic Development Strategy?

Environmental Management Framework

According to the Harry Gwala District Municipality Environmental Management Framework dated November 2018, the proposed metal factory has been accommodated within the nodal development whereby the sphere of influence for these primary nodes range from 10-15 km. These nodes serve the sub-regional economy of the district and are currently in need of a detailed master-planning for infrastructural and services requirements for expansion. Services that are expected in these centres include agri industrial development, large scale tourism projects, housing development, shopping centres, wide range of retail services, police services, primary, secondary and tertiary high level of education centres, hospitals, clinics, government departments, satellite offices (especially for land affairs, social

welfare). These areas have potential for significant economic development, growth and expansion. Their sphere of influence ranges from 10-15km.

Harry Gwala DGDP

Based on the understanding gained from the status quo as well as the synthesis and analysis of issues, the following vision statement was crafted as part of the Harry Gwala DGDP:

"By 2030, Growth and Development in the Harry Gwala District Municipality will have significantly improved the quality of life in the area."

This will occur through increased participation in the economy, whilst protecting the natural environmental assets.

The proposed development aims to provide job opportunities during the construction and operational phase whilst conserving the environment.

Environmental Management Priorities

Surface Water: the study area is located in close proximity to watercourse i.e. wetlands, drainage lines and rivers. According to the EMF, wetland areas, streams and rivers must be protected, rehabilitated and managed to maintain ecological functioning. Adopt 30 metres buffer area from boundary of regulated area, for strict regulation of development. Development to be located outside of the 1:100 year flood line and not to interfere with storm water drainage. No urban, mining or agricultural development within regulated area of the watercourse (i.e. 1:100 year floodline or delineated riparian / wetland habitat, whichever is greatest). Critical wetlands need to be delineated according to DWS guidelines.

Agriculture: the study area is located within high potential agricultural land. The EMF states that high potential agricultural land set aside for agricultural purposes.

Socio-economic environment: the proposed development aims to improve the socio-economic status of the area through job creation and local business development. The EMF states that poverty alleviation and job creation must be motivated, growing the economy and promotion of labour intensive projects.

Integrated Development Plan

According to the UMzimkhulu Local Municipality Integrated Development Plan (2021), the municipality is committing to local economic development through the continuation of support to SMME's and small holder producers. The applicant is recognised as a small holder producer of the sheet metal. Therefore the proposed development is in line with the IDP.

Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?

The socio-economic contribution of the development include:

- Impact on economic income;
- Provision of employment opportunities;

Potential negative socio-economic impacts identified include:

- Influx of people (e.g., Job seekers);
- Increase in local crime levels (particularly during construction phase)
- And an increase in traffic during both the construction and operational phases.

How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?

Job creation and economic development are essential for the survival of local municipality specifically UMzimkhulu Local Municipality. Therefore, based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. The proposed development will therefore feed into these two essential areas of survival during the construction and operation phases of development. Results from growing local economies and access to job opportunities also mean the socio-economic status of the locals within the municipality will be improved.

Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?

Job creation and economic development are essential for the survival of local municipality specifically UMzimkhulu Local Municipality. Therefore, based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. The proposed development will therefore feed into these two essential areas of survival during the construction and operation phases of development. Results from growing local economies and access to job opportunities also mean the socio-economic status of the locals within the municipality will be improved.

In terms of location, describe how the placement of the proposed development will result in the creation of residential and employment opportunities in close proximity to or integrated with each other, reduce the need for transport of people and goods, and result in access to public transport or enable non-motorised and pedestrian transport?

The proposed project is located in Nomdaphu within the UMzimkhulu Local Municipality. A residential area is located within the site. This residential area has been noted as a direct beneficiary of the project in terms of socio-economic benefits. It is anticipated that the residents of this area will not require public transport to get into the proposed industrial area.

How were a risk-averse and cautious approach applied in terms of socio-economic impacts in terms of limits of current knowledge, level of risk associated with the limits of current knowledge and how and to what extent was a risk-averse and cautious approach applied to the development?

A SWOT analysis was conducted for the proposed development with the aim of identifying risks associated with the development.
In addition, the precautionary approach was applied during the consideration of environmental potential impacts. Gaps in knowledge, limitations and assumptions are discussed in Section 8.5 of the BAR. Refer to the Specialist Studies included in **Appendix F** for the respective gaps in knowledge and assumptions and limitations for each study.

How will the socio-economic impacts resulting from this development impact on people's environmental right in terms of Negative and Positive impacts?

Job creation and economic development are essential for the survival of local municipality specifically UMzimkhulu Local Municipality. Therefore, based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. The proposed development will therefore feed into these two essential areas of survival during the construction and operation phases of development. Results from growing local economies and access to job opportunities also mean the socio-economic status of the locals within the municipality will be improved.

It is for this reason that no negative impacts are anticipated as far as people's environmental rights are concerned. Negative impacts indicated on the Basic Assessment report have been address with mitigation measures with the aim of ensuring that people's environmental rights are not violated in any manner.

Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts?

Based on the terrestrial assessment seven (7) species of conservation concern were noted Desktop Analysis studies, and 5 for field results for the vegetation assessment. The plant species *Senna didymobotrya* was identified, during the filed survey within the project site, and is category 1b listed invasive species. The spreading or allowing the spread of any specimen of a listed invasive species is prohibited, according to National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) Alien and Invasive Species Lists, 2016. The proposed project area shows signs of disturbance and transformation, from the presence previously cultivated land covering the project site, and bare land patches, and walking paths within the project site area. The majority land cover type within the project site is disturbed grassland, which is close to its natural state, with minimal impacts.

All impacts are noted to have a high, medium-high, medium or medium-low significance before mitigation measure can be implemented. These significance ratings are due to the removal of vegetation from the development footprint size, causing soil erosion, habitat loss, faunal and floral disturbance, and the infestation of alien invasive species. The generation of waste caused by the type of activity (Industrial), causes a higher significance rating, leading to bad odours in and around the study area and the potential risk of respiratory health conditions development to the surrounding community. All impacts are however noted to have a low or very low significance rating if all mitigation measures are strictly adhered to.

Therefore based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. Employment opportunities will be created for the construction and operational phases of the activity.

The factory will further enhance the local economy as the roof sheets will be able to service a wide geographical area which is currently not available within 200m of the project area.

What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?

As indicated above, the development proposal has considered the carrying capacity of the site from a visual and heritage perspective. Please refer to **Appendix F** of the BAR.

What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?

It is not anticipated that adverse environmental impacts will be distributed in such a manner as to unfairly discriminate against any person. The local community will benefit from the project. Employment opportunities will be created for the construction and operational phases of the activity. The factory will further enhance the local economy as the roof sheets will be able to service a wide geographical area which is currently not available within 200m of the project area.

The PPP was all an all inclusive process and there were no factors that would have led to the exclusion of vulnerable and disadvantaged persons.

What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?

It is not anticipated that the proposed development will impact adversely on the environment, and there are benefits that will accrue to the local community. Employment opportunities will be created for the construction and operational phases of the activity. The factory will further enhance the local economy as the roof sheets will be able to service a wide geographical area which is currently not available within 200m of the project area.

What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?

Job creation and economic development are essential for the survival of local municipality specifically UMzimkhulu Local Municipality. Therefore, based on the above, the development is noted to improve local economy and job creating without adverse impacts on the environment. The proposed development will therefore feed into these two essential areas of survival during the construction and operation phases of development. Results from growing local economies and access to job opportunities also mean the socio-economic status of the locals within the municipality will be improved.

It is for this reason that no negative impacts are anticipated as far as people's environmental rights are concerned. Negative impacts indicated on the Basic Assessment report have been address with mitigation measures with the aim of ensuring that people's environmental rights are not violated in any manner

An EMPr has been drafted for the construction and operational phase of the development, to ensure environmental safety during construction, as well as safety of staff on site. Refer to **Appendix G**.

The applicant is also to ensure, inter alia, that the working conditions throughout the project life cycle on site adhere to the minimum requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).

What measures were taken to ensure the participation of all interested and affected parties, ensure participation by vulnerable and disadvantaged persons, promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means?

The public participation process is outlined in Section 7 and **Appendix E** of this report and includes the process followed to ensure as many I&APs are reached and provided with an opportunity to comment.

All comments received have been considered and responded to in a Comments and Response Table attached in **Appendix E6**.

What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?

The EMPr makes provision for "Tool Box Talks", which should be held with all workers on site. The dangers associated with the job as well as their right to refuse work that is harmful to human health or the environment should be communicated to workers at this time. The applicant is also to ensure, inter alia, that the working conditions on site adhere to the minimum requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).

Describe how the development will impact on job creation in terms of, amongst other aspects including the number of temporary versus permanent jobs that will be created?

New skilled employment opportunities created in the construction phase of the project	44
New skilled employment opportunities created in the operational phase of the project	15
New un-skilled employment opportunities created in the construction phase of the project	223
New un-skilled employment opportunities created in the operational phase of the project	10
Expected value of the employment opportunities during the operational and construction phase?	R12 024 951.00
The total of employment?	292

What measures were taken to ensure that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment?

(1) Section 2 of the BAR summarises the legal and policy context applicable to the proposed development.

(2) A list of organs of state that have been notified and provided with an opportunity to comment on the BAR. IDS is not aware of any current conflicts of interest between organs of state that are required to be resolved.

What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?

The specialist studies were commissioned to inform the environmental sensitivities present on site. Factors such as the agricultural potential, vegetation condition and absence of surface water resources were used to inform the preferred site layout, and realistic mitigation measures are proposed to reduce or enhance impacts.

As such the "measures" that will be taken include the consideration of various specialist inputs to ensure that the best practicable environmental option (BPEO) is assessed and submitted to the EDTEA for approval.

Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?

It is the opinion of the EAP that the recommended mitigation and monitoring measures put forward by specialist practitioners are realistic given the nature and scale of the proposed development.

What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?

Section 28 of NEMA (Duty of Care) holds every person who causes, has caused, or may cause significant pollution and degradation of the environment accountable. As such, the mechanisms provided for in the NEMA could be used by any person or the responsible authority (ies) to hold those responsible for pollution and degradation of the environment accountable.

The necessary rehabilitation measures are incorporated into the EMPr, which will require that the applicant be responsible for the costs of remedying environmental degradation (e.g., erosion of topsoil or pollution of groundwater) that may occur during the construction phase

Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?

Section 28 of NEMA (Duty of Care) holds every person who causes, has caused, or may cause significant pollution and degradation of the environment accountable. As such, the mechanisms provided for in the NEMA could be used by any person or the responsible authority (ies) to hold those responsible for pollution and degradation of the environment accountable.

The necessary rehabilitation measures are incorporated into the EMPr, which will require that the applicant be responsible for the costs of remedying environmental degradation (e.g. erosion of topsoil or pollution of groundwater) that may occur during the construction phase.

Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?

Influx of job seekers

With any development there is the possibility of an influx of people into the area. With this project, one may see an increase in job-seekers especially around labour-sending areas such as Kroonstad. However, the significant of this would be low, as employment opportunities will need to be advertised through the LMs and appropriate Human Resources (HR) policies will need to be followed. Employment should be prioritised for the local, youthful population. Labour accommodation will also not be provided, which means that people should be less inclined to move to the area in search of jobs.

The potential concerns with an influx of job-seekers would related competition over job opportunities in the area, as work is already very limited. More importantly, it is important to note that an influx of job-seekers (such as contractors) are often associated with an increase in risky sexual behaviours or even sex work. This could cause a spike in sexually transmitted diseases, such as HIV/Aids.

Specialist workers attracted to the area during the construction phase might encourage practices such as prostitution, which are often fuelled by promiscuous sexual relationships, usually driven by financial incentives.

Conflicts can be stirred as a result of many other factors. Some of these include conflict (but are not limited to):

- An increase in economic disparities between those with jobs and those without;
- Changes in values and changes in 'way of life' of those with jobs;
- Changes in power relations between employed youth and elders;
- Perceived unfair recruitment strategies; and/or
- Perceived preferential procurement strategies.

It should be noted that, as with most social impacts, in-migration may also have a positive impact in terms of providing locals with small business opportunities due to an increased demand for local produce and other goods, as well as opportunities for cultural exchange.

It is the specialist' opinion that it is highly unlikely for these concerns to be realised, however, as the project will not provide labour accommodation and as labour will be sourced through the LMs in the PACs.

Unrestricted Access of Construction Vehicles/Workers onto Farm Land and Adjacent/Surrounding Areas

The SIA noted that there are several privately-owned farms adjacent to the N1. Although these farms should not be affected by the upgrade of the road, one has to understand that the continuous influx of workers along the road on a daily basis and unrestricted vehicular access do render farmers more vulnerable from a health and safety perspective. Many farm-owners were concerned that this could facilitate unrestricted vehicular access onto their farms, possibly even intruders, without farmers knowing or providing permission. If not managed and controlled, this could potentially worsen this impact.

In is anticipated that this impact would have the highest significance during the construction period, as construction vehicles and contractors would have access to particular sections of the road on a continuous basis. This impact would become less significant during the operational phase of the project, as the road would have been completed and hence fewer inspection vehicles, crews and contractors would be required.

Potential Increase in Crime

This impact is a potential increase in crime is highly likely the result of unrestricted vehicle and/or worker access on properties.

Due to the rural nature of the site, police surveillance is also challenging. A possible increase in crime levels not only puts property owners in a vulnerable position, but also their farm workers and children who walk in the area or to the nearest bus stops.

Fire

As the area is dominated with grassland, and as many of the crops planted on the farms along the road to be upgraded are highly flammable, fire hazard is an obvious impact during the construction phase. With crops fields, livestock and farmer/worker housing surrounding the N1 to be upgraded, such a fire could have a very significant impact on terms of health and safety considerations, but also economic losses.

Employing Local Labour

Although little information is currently available on the number of jobs to be created, it is anticipated that most of these jobs would be available during the construction period. Fewer workers would be needed during route operational phase maintenance work; workers who might also be more highly skilled professionals.

The importance of employing local residents cannot be overstated. Not only does employment afford an income to households that are highly deprived thereof, additional benefits to may include:

- Reducing crime rates;
- Reducing alcohol and drug-abuse rates; and
- Reducing intra-household violence.

Skills Training and Further Training Opportunities

There is a strong possibility that the local residents might not have the skills required to perform the work needed. It is therefore advised that the proponent initiates programmes aimed at ensuring that a number of local residents are provided with appropriate education and skills training to allow them to perform the work needed, or through a community trust mechanism, is afforded the opportunities and access to further education.

Sufficient skills and further training opportunities should be created for several reasons. Training local youth members in becoming familiar with the work required would allow the residents to apply for similar positions elsewhere too. Another reason is that more local skilled residents could be absorbed, reducing the need for expats from other provinces.

Contributing to Local and Regional Businesses

SANRAL is encouraged to invest in the labour-sending communities (PACs) and especially to stimulate the development of SMMEs. Many local industries could benefit from this upgrade, especially during the construction phase. Prior to and during construction, local construction-related suppliers could be amongst those who will enjoy benefits, whilst local retailers could stand to benefit the most. Benefits during construction are likely to be more localised. For example, there might be more buying power from local people in the area as result of the proposed activity.

3.7 Socio-economic value

Anticipated CAPEX value of the project on completion	R 10 411 200.00
What is the expected annual turnover to be generated by or as a result of the project?	R71 282 350.00 (1st Year)
New skilled employment opportunities created in the construction phase of the project	44
New skilled employment opportunities created in the operational phase of the project	15
New un-skilled employment opportunities created in the construction phase of the project	223
New un-skilled employment opportunities created in the operational phase of the project	10
What is the expected value of the employment opportunities during the operational and construction phase?	R12 024 951.00
The total of employment?	292

4 DESIGN AND SITE ALTERNATIVES

In terms of the EIA Regulations 2014 (as amended in 2017) feasible alternatives are required to be considered as part of the environmental investigations. In addition, the obligation that alternatives are investigated is also a requirement of Section 24(4) of the NEMA (Act No. 107 of 1998) (as amended).

As such, an alternative is defined as different means of meeting the general purpose and requirements of the activity which may include alternatives to:

- the property on which or location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity;
- the operational aspects of the activity; and
- the option of not implementing the activity.

4.1 Site Alternatives

No site alternatives have been considered for the proposed development as this is the only available land parcel that the Applicant has an agreement with the Land Owner. This site has been deemed feasible due to the size of the activity and the required footprint to develop on.

4.2 Activity Alternatives

There are currently no roof sheet manufacturers in UMzimkhulu. Consumers need to travel for more than 200km to purchase products of this nature. The activity therefore required no investigation into any alternatives as the Applicant has identified a need for the activity/product and has determined that it would be the best option for the co-operative to grow and be independent of government.

4.3 Design and Layout alternatives

Two development footprints have been proposed. These are illustrated in Figure 6. The larger of the two is the original alternative and the smaller is the revised and preferred alternative. **Figure 6** indicates Google Earth image of the affected area. The original alternative is indicated by the red polygon, while the revised and preferred alternative for the warehouse footprint is shown in yellow.

Figure 6: Layout Alternatives

4.4 Technology alternatives

There is no available municipal sewage infrastructure within reasonable distance of the property. Two alternatives were considered in terms of the management of sewerage created by the development. The following reasons render the septic tank the best and preferred alternative.

Table 6: Assessment of septic tanks

SEPTIC TANKS			
Positives	**Negatives**	**Risk**	**Mitigation**
• No burden on municipal services • Sustainable in the long term provided soil conditions are suitable • Economic burden carried by the developer • Retention of phosphates in the soil • Absorption of nitrates through vegetation • Low-cost implication for the developer and the municipality • • Economical for small to large developments	• Disturbance to a larger area of ground • Increased Ecoli and pathogens in the soil • Perched water tables may cause surface water seepage • Increased heavy metals in the soil • Leaching of phosphates and nitrates into ground water	• Pollution leaching onto the soil surface • Pollution leaching into • water courses • Pollution leaching into • ground water • Health and ecological • implications	• Consideration of the depth of the groundwater table • Sensible placement away from water resources • Only employ on large enough sites

Table 7: Assessment of conservancy tanks

CONSERVANCY TANKS			
Positives	**Negatives**	**Risk**	**Mitigation**
• **No on-site contamination** • **Economic burden carried by the developer**	• Disturbance to a • larger area of ground • Burden on municipal services; need municipal agreement • Potential for smells as a result of minor leakages • Management inputs • High-cost implication for the developer and the municipality during operation	• Tank spillage, resulting in contamination • Traffic accidents and spillage • Health and ecological implications • Eutrophication	• Monitoring of tanks, transport vehicles and handling • Sensible placement away from water resources

4.4.1 Other technology considerations

Technology alternatives such as solar panels and geysers, LED lighting, etc. will be considered by the Applicant prior to construction, but will be cost-dependant. Energy efficiency and water saving techniques will be encouraged in the design.

Soft engineering practices will be encouraged where feasible to limit hard paved surfaces and promote use of the natural landscape in storm water drainage design.

4.5 No-go alternative

The No-go Alternative is to not to develop the site. Should the No-go Alternative be implemented, the area will remain undeveloped and unutilised, No local employment opportunities during the construction and operational phases of the development will be created and no additional income to the local economy will be generated in the short or long term. the status quo will remain the same.

As per **Section 3.6** of this Report, the proposed development is anticipated to generate the following positive outcomes:

Total investment in the local economy is as follows:

- New skilled employment opportunities created in the construction phase of the project 44
- New skilled employment opportunities created in the operational phase of the project 15
- New un-skilled employment opportunities created in the construction phase of the project 223
- New un-skilled employment opportunities created in the operational phase of the project 10
- Expected value of the employment opportunities during the operational and construction phase? R12 024 951.00
- The total of employment? 292
- Should the No-go Alternative be implemented, the abovementioned benefits will not be reached and will not contribute to the local economy and employment opportunities will not be generated.

5 ENVIRONMENTAL LEGISLATION, POLICIES & GUIDELINES

In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant environmental legislation that need to be considered during this study.

This section outlines the legislation that is applicable to the proposed project and has been considered in the preparation of this report.

5.1 Environmental Impact Assessment Regulations

The purpose of these EIA Regulations 2014 as amended in 2017 is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of and decision, on applications for environmental authorisations for the commencement of activities subjected to environmental impact assessment in order to avoid or mitigate detrimental impacts on the environment and to optimise positive environmental impacts.

Three (3) Listing Notices are identified within the EIA Regulations 2014 as amended in 2017 i.e. R327, R325 and R324.

The table below **(Table 8)** aims to provide the listed activities applicable to the proposed development. All activities listed under R327 and R324 must be investigated and communicated as per procedure prescribed in regulations 19 and 20 of the EIA Regulations 2014 as amended in 2017.

Table 8: Table of applicable listed activities as per EIA Regulations 2014 as amended

Relevant Government Notice	Activity No (s) (relevant notice): e.g., Listing notices 1, 2 or 3	Description of listed activity as per the wording in the listing notice	Applicability
R327	**Listing Notice 1: Activity 12**	[The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —	The proposed development is located approximately 21m's north of a minor drainage line.
R327	**Listing Notice 1: Activity 27**	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for: (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed development will be undertaken on 6ha of indigenous vegetation.

Relevant Government Notice	Activity No (s) (relevant notice): e.g., Listing notices 1, 2 or 3	Description of listed activity as per the wording in the listing notice	Applicability
R327	**Listing Notice 1: Activity 28**	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	The site is currently zoned as Agricultural I. An application for rezoning of the site to an Industrial Zone will be undertaken.
Listing Notice 3			
R324	Activity 12 (h)(vi)	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed development will entail the removal of more than 300 square meters of indigenous vegetation.
R324	**Listing Notice 3: Activity 14 (xii) (ff)**	[The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — in KwaZulu-Natal (vii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority	According to the Harry Gwala district municipality EMF, the site is located within agricultural land that is deemed sensitive.

5.2 Other applicable environmental legislation

Table 9: Applicable environmental legislation for the proposed development

Legislation, policy and guideline	Year	Applicability to the proposed development
National Environmental Management Act, 1998 (Act No.107 of 1998 as amended).	1998	The National Environmental Management Act (Act No. 107 of 1998) aims at providing for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.
National Water Act, 1998 (Act No. 36 of 1998) as amended	1998	The National Water Act (Act No. 36 of 1998) (NWA, 1998) was drafted in order to ensure the protection and sustainable use of water resources (including wetlands) in South Africa. According to Section 21 of the NWA, the proposed development triggers Section 21 (a), (b), (c) and (i).
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	1999	The National Heritage Resources Act 25 of 1999 intends to introduce an integrated and interactive system for the management of the national heritage resources; to promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations; to lay down general principles for governing heritage resources management throughout the Republic; to introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa; to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level; to set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance; to control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries; to enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; to provide for the protection and management of conservation-worthy places and areas by local authorities; and to provide for matters connected therewith. According to Section 38 of the National Heritage Resources Act (Act No. 25 of 1999), at the earliest stages of any development project, the agency must be informed. In response, the agency must determine whether or not heritage resources are likely to be impacted by the proposed development.
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)	2004	The National Environmental Management: Biodiversity Act (Act 10 of 2004) provides for the listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction by preserving sites of exceptionally high conservation value. Listed ecosystems were defined at the local rather than a regional scale and were delineated based on one of the following: The South African Vegetation Map, priority areas identified in provincial conservation plans, national forest types recognised by the Department of

Legislation, policy and guideline	Year	Applicability to the proposed development
		Water Affairs and Forestry (DWAF), as well as highly irreplaceable forests patches or forest clusters systematically identified by DWAF.
National Environmental Management Waste Act, 2009 (Act No. 59 of 2008)	2008	The National Environmental Management: Waste Act (Act 59 of 2008) (as amended) details the protection of the surrounding environment through efficient waste management by the appointed Contractor. No waste listed activities will be triggered for the proposed expansions, however during the construction and operation of the proposed expansion of the broiler facility the basis of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) hierarch focusing on waste reduction and reuse will be implemented.
National Development Plan: A Vision for 2030	2030	The South African Government through the Presidency has published a National Development Plan. The Plan Aims to eliminate poverty and reduce inequality by 2030. The Plan has the target of developing people's capabilities to be to improve their lives through education and skills development, health care, better access to public transport, jobs, social protection, rising income, housing and basic services, and safety. It proposes the following strategies to address the above goals: 1. Creating jobs and improving livelihoods; 2. Expanding infrastructure; 3. Transition to a low-carbon economy; 4. Transforming urban and rural spaces; 5. Improving education and training; 6. Providing quality health care; 7. Fighting corruption and enhancing accountability; 8. Transforming society and uniting the nation.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	2004	Section 32 - Control of dust. Section 34 - Control of noise. Section 35 - Control of offensive odours
Occupational Health and Safety Act (Act No. 85 of 1993)	1993	Section 8 - General duties of employers to their employees. Section 9 - General duties of employers and self-employed persons to persons other than their employees
Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series, Guideline 3: General Guide to the EIA Regulations	2006	This guideline was taken cognisance of in assessing the environmental impacts envisaged from the proposed development of the UMzimkhulu Factory.
DEA Integrated Environmental Management Guideline Series, Guideline 4: Public Participation in support of the EIA Regulations.	2017	This guideline was taken cognisance of during the Stakeholder Engagement process conducted for the proposed development of the UMzimkhulu Factory.

Legislation, policy and guideline	Year	Applicability to the proposed development
DEA Integrated Environmental Management Guideline Series, Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations.	2006	This guideline was taken cognisance of in determining the alternatives for the proposed development of the UMzimkhulu Factory.
DEA Integrated Environmental Management Guideline Series, Guideline 5: Companion to the EIA Regulations	2010	This guideline was taken cognisance of in assessing the environmental impacts envisaged from the proposed development of the UMzimkhulu Factory.
UMzimkhulu Local Municipality Integrated Development Plan (2017-2022)	2017	The UMzimkhulu Local Municipality IDP has an objective to create more employment, decent work and sustainable livelihoods for the population residing within the jurisdiction of the municipality.
Harry Gwala Municipality Integrated Development Plan (2021-2022)		The IDP highlights the need to continue to develop SMMEs to play a meaning full role in tourism, agriculture, industrial and manufacturing by identifying potential markets wherein they can show case, promote and sell their products. This principle of the IDP encourages the proposed project as it will not only create employment within the District but it will also enhance the local economy.

5.3 Environmental Management Principles

It is extremely important for effective environmental management that the Applicant be aware of the general principles upon which sound environmental management is based and that these principles are considered in all aspects of the prospecting operation. NEMA has established a general framework for environmental law, in part by prescribing national environmental management principles that must be applied when making decisions that may have a significant impact on the environment. These principles are briefly summarised in the sections that follow.

5.3.1 Holistic principle

The Holistic principle, as defined by NEMA (Section 2(4)(b) requires that environmental management must be integrated, acknowledging that all elements of the environment are linked and inter-related and it must take into account the effect of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option (defined below). Holistic evaluation does not mean that a project must be looked at as a whole. It rather means that it must be accepted that there is a whole into which a project introduced. If the indications are that the project could have major adverse effects, the project must be reconsidered and where appropriate re-planned or relocated to avoid an adverse impact or to ensure a beneficial impact.

5.3.2 Best practicable environmental option

When it is necessary to undertake any action with environmental impacts, the different options that could be considered for the purpose must be identified and defined. The Best Practicable Environmental Option (BPEO) is defined in NEMA as “the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.” Other guidelines typically used for environmental management in terms of other legislation include: BPM which is the Best Practicable Means and BAT which is the Best Available Technology.

5.3.3 Preventative principles

The preventative principle is fundamental to sustainable development and requires that the disturbance to ecosystems and the pollution, degradation of the environment and negative impacts on the environment be avoided, or, where they cannot be altogether avoided, are minimised and remedied.

5.3.4 The precautionary principles

The precautionary principle requires that where there is uncertainty, based on available information, that an impact will be harmful to the environment, it is assumed, as a matter of precaution, that said the impact will be harmful to the environment until such time that it can be proven otherwise. The precautionary principle requires that decisions by the private sector, governments, institutions and individuals need to allow for and recognise conditions of uncertainty, particularly with respect to the possible environmental consequences of those decisions. In South Africa, the DWA (then DWAF, now DWS) adopted a BPEO guideline in 1991 for water quality management and in 1994 in the Minimum Requirements document for waste management.

In terms of DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, the precautionary principle is defined as, “Where a risk is unknown; the assumption of the worst case situation and the making of provision for such a situation.” Here the precautionary principle assumes that a waste or an identified contaminant of a waste is “both highly hazardous and toxic until proven otherwise.”

In the context of the EIA process in South Africa, the precautionary principle also translates to a requirement to provide sound, scientifically based, information that is sufficient to provide the decision making authority with reasonable grounds to understand the potential impacts on the environment, the extent thereof and how impacts could be mitigated. If such information is not adequate for this purpose, the relevant authority cannot be satisfied as is required and then the authority should require that further information be collected and provided.

5.3.5 Duty of care and cradle to grave principle

In terms of the NEMA Section 28, “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.”

By way of example, the principle of “duty of care” in terms of waste management emphasises the responsibility to make sure that waste is correctly stored and correctly transported, as it passes through the chain of custody to final point of disposal. This means that waste must always be stored safely and securely. The company removing and disposing of waste also holds the responsibility to hold the relevant licenses, and that waste is transported alongside the necessary paperwork. “Cradle to Grave” refers to the responsibility a company takes for the entire life cycle of a product, service or program, from design to disposal or termination. In terms of the DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, “any person who generates, transports, treats or disposes of waste must ensure that there is no unauthorised transfer or escape of waste from his control. Such a person must retain documentation describing both the waste and any related transactions. In this way, he retains responsibility for the waste generated or handled.” This places responsibility for a waste on the Generator, by the "Cradle to Grave" principle, according to which a "manifest" accompany each load of Hazardous Waste until it is responsibly and legally disposed of. This manifest is transferred from one transporter to the next along with the load, should more than one transporter be involved. Once the waste is properly disposed of at a suitable, permitted facility, a copy of the manifest must be returned to the point of origin.” Duty of Care offers one strategy to implement sustainable development.

5.3.6 Polluter pays principle

The "polluter pays principle" holds that the person or organisation causing pollution is liable for any costs involved in cleaning it up or rehabilitating its effects. It is noted that the polluter will not always necessarily be the generator, as it is possible for responsibility for the safe handling, treatment or disposal of waste to pass from one competent contracting party to another. The polluter may therefore not be the generator, but could be a disposal site operator or a transporter. Through the 'duty of care' principle, however, the generator will always be one of the parties held accountable for the pollution caused by the waste. Accordingly, the generator must be able to prove that the transferral of management of the waste was a responsible action. The polluter pays principle acceding to NEMA dictates that “the cost of remedying pollution, environmental degradation and consequent adverse effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.”

5.3.7 Sustainable Development

The principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (Act No. 108 of 1996) and given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations. Therefore, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- The disturbance of landscapes and sites that constitute the nation’s cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- Waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;

5.3.8 Climate Change Consideration

The proposed project will take into account energy efficient technologies and consider international best practice in terms of the construction methodologies and management of finite resources. Since climate change concerns include unpredictability and severity in weather patterns, the provision of basic human needs, such as fresh water supply, is considered critical.

6 BASELINE DESCRIPTION

6.1 Geology

The study area is located within the Pietermarizburg Formation as per **Figure 7** below. The Lower Permian Pietermaritzburg Formation is a mudrock-dominated, upward-coarsening stratigraphic unit in the lower Ecca Group (Karoo Supergroup) in the northeastern part of the main Karoo Basin of South Africa. The formation extends over most of the KwaZulu-Natal Province, and due to its lithology and the local climate, it is usually poorly exposed; hence the description is mainly based on borehole records. The Pietermaritzburg Formation only preserves scattered, fragmentary plant fossil and invertebrate trace fossils, which are diagnostic of marine conditions.

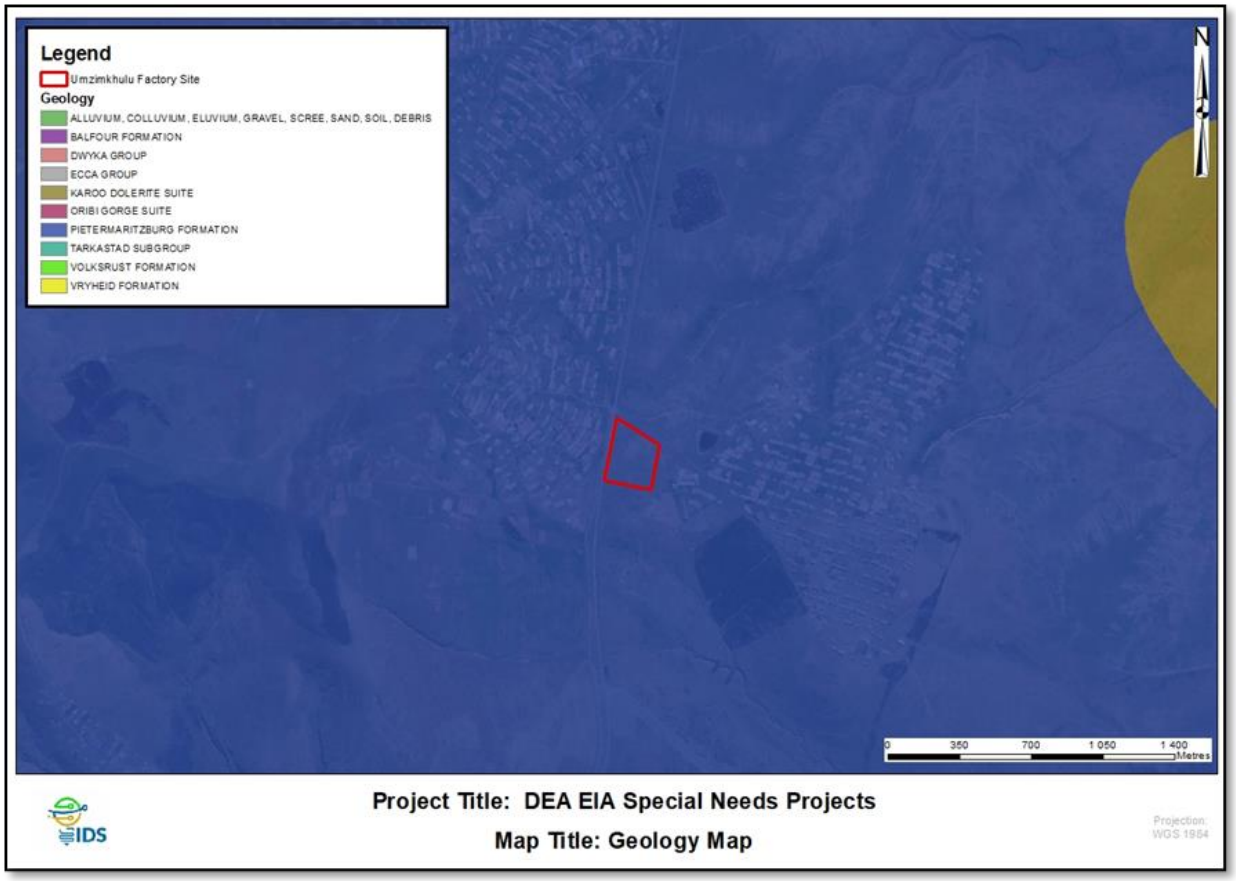

Figure 7: Geological Map of the study area

6.2 Topography

Based on **Figure 8** below the elevation profile of the study area is relatively flat at an average of 801m above sea level.

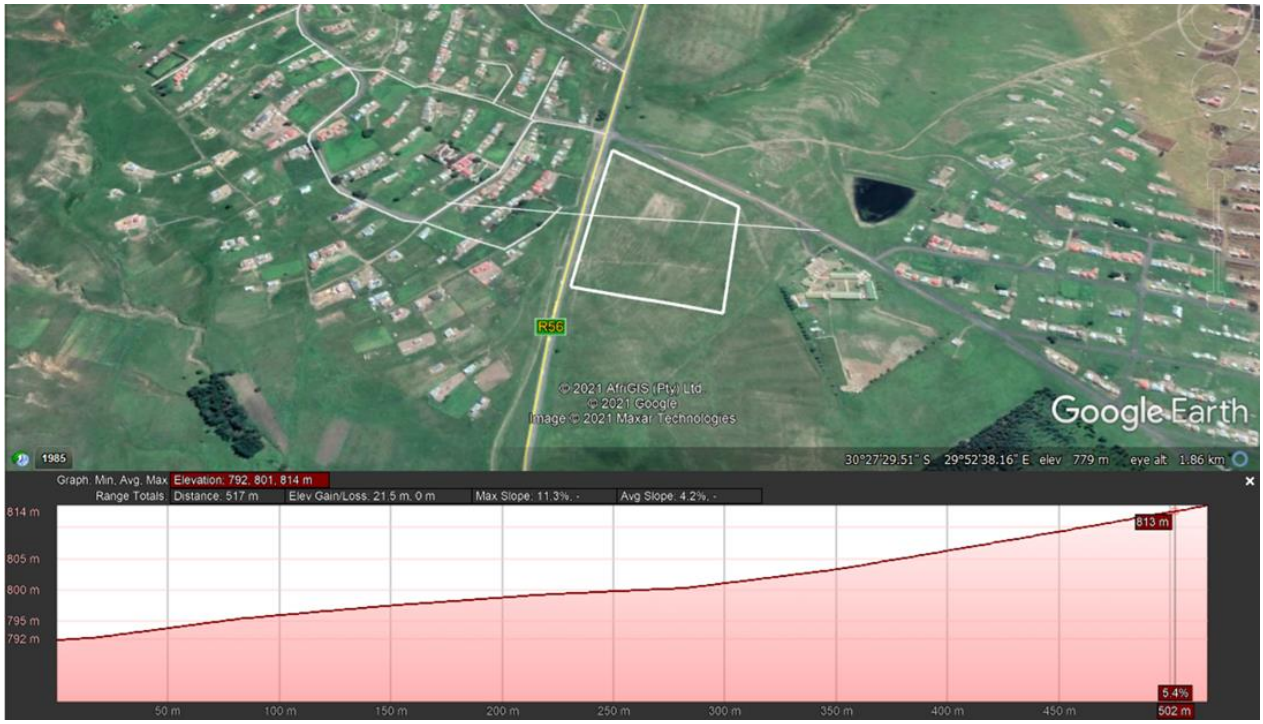

Figure 8: Elevation profile of the Study Area

6.3 Climate

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for UMzimkhulu. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

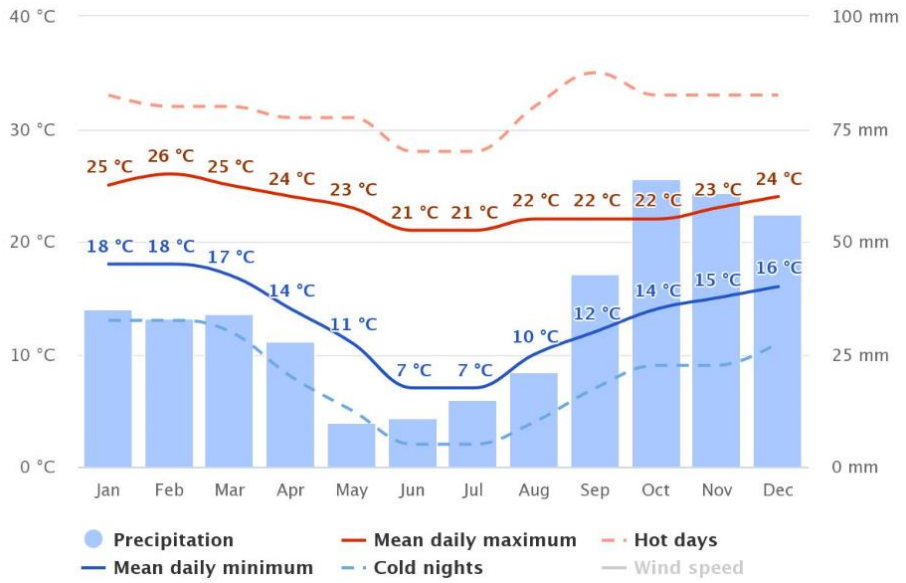

Table 10: Climate of the study area

6.4 Soil

The study area is located within Albic Endopetric plinthosols which are characterised by undifferentiated poorly drained soils with red, yellow and / or greyish soils with low to medium base status.

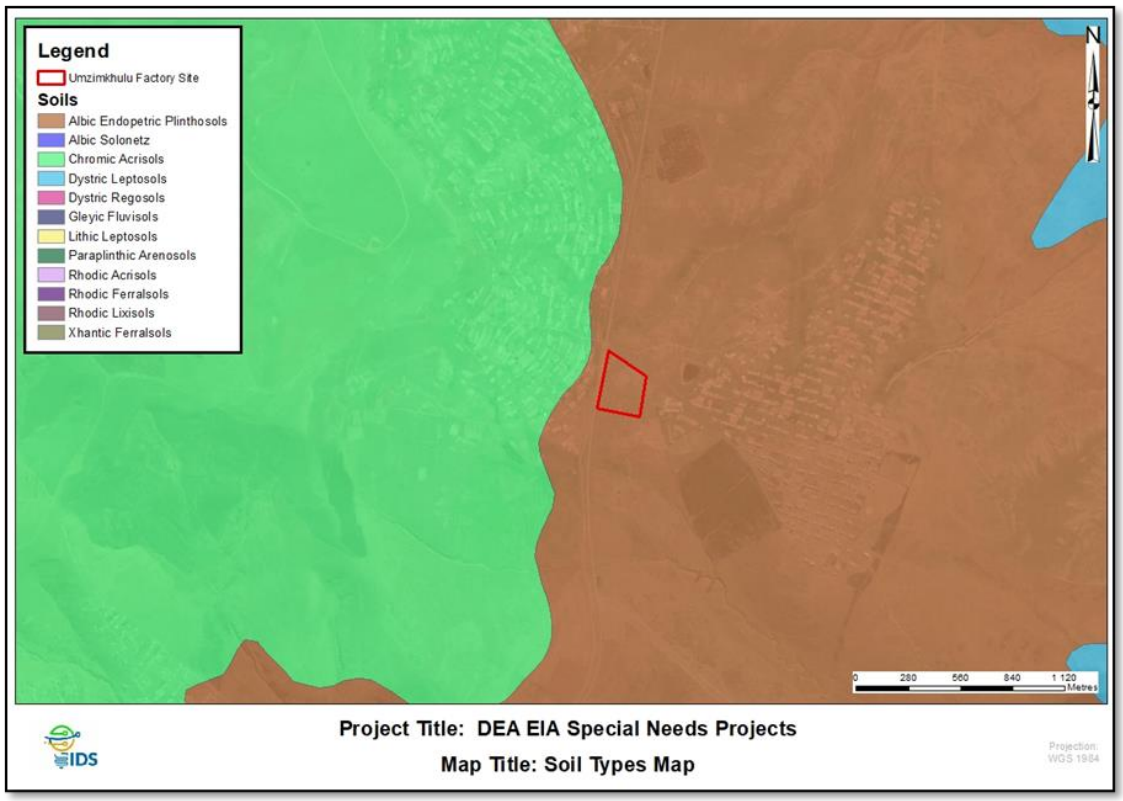

Figure 9: Soil type map

6.5 Agricultural Potential

This section of the report has been compiled utilising the Agroecosystems and Agricultural Compliance Report by Keith Synaman & Associates attached as **Appendix F1**.

The agricultural land potential was determined according to the method of Smith (2006) which is endorsed by the KwaZulu-Natal Department of Agriculture and Rural Affairs. The classification has been conducted for each SMU, with the agricultural land potential outcome shown in **Figure 10** and **Table 11**.

The agricultural land potential ranking is at an eight-class scale and is as follows:

- *Class L1 – very high agricultural land potential*
- *Class L2 – high agricultural land potential*
- *Class L3 – good agricultural land potential*
- *Class L4 – moderate agricultural land potential*

arable

- *Class L5 – restricted agricultural land potential*
- *Class L6 – very restricted agricultural land potential*
- *Class L7 – low agricultural land potential*
- *Class L8 – very low agricultural land potential*

non-arable

Criteria used to determine agricultural land potential per SMU are slope class, topsoil texture, effective root depth, soil permeability, wetness hazard, rockiness, soil crusting, rainfall, evaporation, temperature, wind and hail.

Table 11: Agricultural land potential per SMU

SMU	Extent	Agricultural Land Capability According to Screening Tool	On-Site Assessment of Agricultural Land Potential	Arable
A	13.6 ha 94%	high and medium	L6 (very restricted)	No
B	0.9 ha 6%	Hhgh and medium	L5 (resricted)	No

Contrary to the reporting by the Agricultural Screening Tool (2019) where the study area is reported to have "high and medium agricultural land capability", the on-site agroecosystems assessment (the essence of this report) found that the agricultural land potential is L6 and L5 being "very restricted and restricted" and non-arable. The on-site findings indicate severe limitations to agricultural land use due to continual shallow soil effective rooting depth and associated low water storage capacity. Rainfed crop performance will be severely curtailed under such soil conditions. Also, the poor veld carrying capacity of the occurring graminoids endorses curtailed agricultural potential. The spatial agricultural land potential derived from the on-site agroecosystems assessment is shown in **Figure 10**.

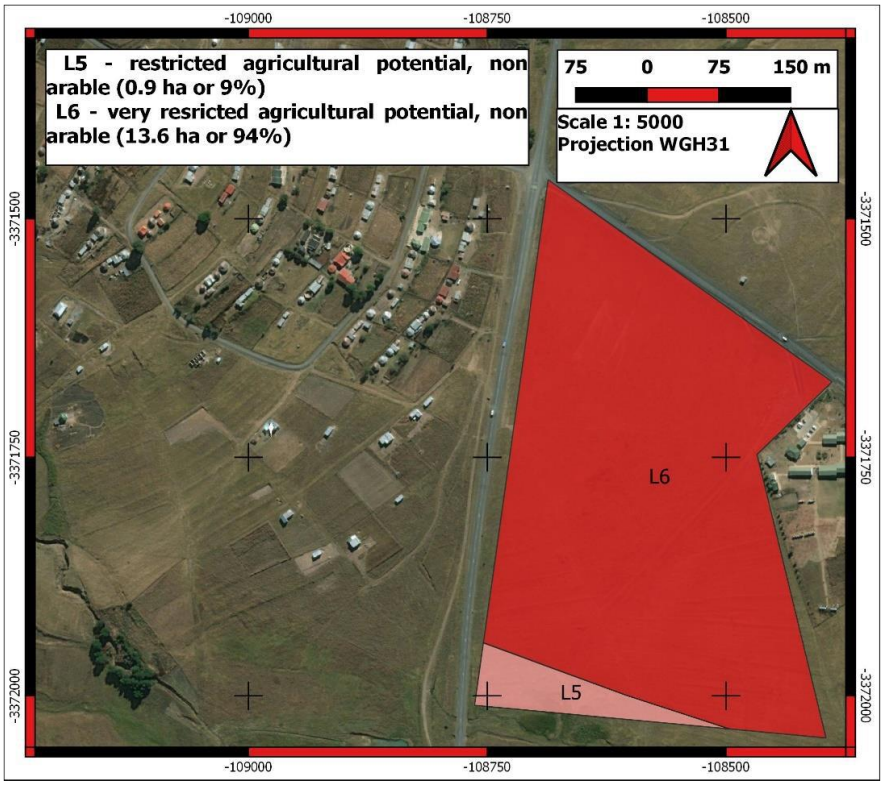

Figure 10: Agricultural land potential

6.6 Hydrology

This section of the report has been compiled utilising the Wetland Ecological Report by SDP Ecological and Environmental Services attached as **Appendix F2**.

6.6.1 Quaternary Catchment Analysis

The Mzimkhulu River rises in the Ukhahlamba Drakensberg Park (Garden Castle Forest) in the upper part of Quaternary Catchment T51A whereas the river then enters a deep gorge, where it is joined by the Bisi River below Umzimkhulu town within the T52H catchment quaternary – as shown by **Figure 11** below. Umgeni Water (2020) makes comment with regards to the scattered subsistence rural communities drawing water from run-of-river schemes. In the middle reaches, there are a number of rural water supply schemes, drawing water mostly from local streams, but also from boreholes and springs. It is also evident that the upper extent of the catchment has been affected through the establishment of dams as well as afforestation.

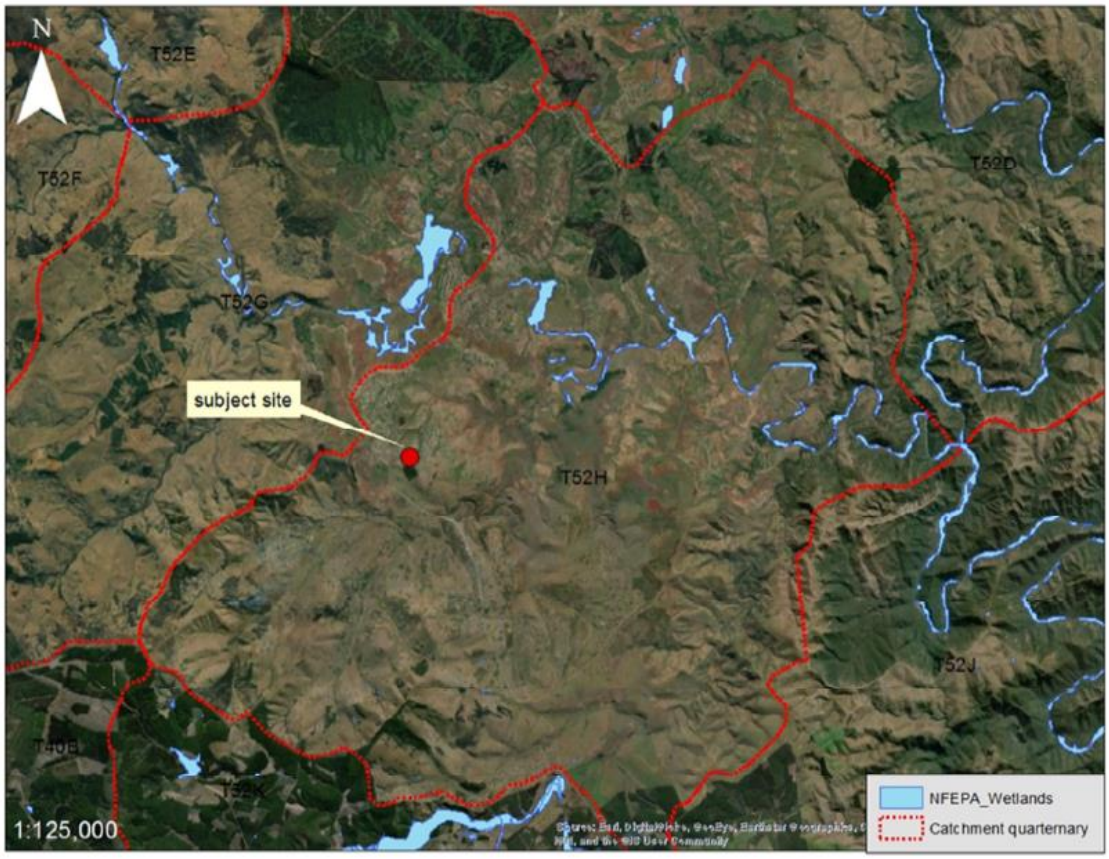

Figure 11: The location of the subject site within Quaternary Catchment T52H

6.6.2 General hydrological description

The 20 Ha subject area (property) lies between the Nomdaphu and Ntlobeni settlements, east of the R56 roadway. Access is gained to the site from the northern extent of the site via an existing, unnamed gravel road way. The proposed development site (footprint – 6.3 Ha) lies on the southern edge of a water shed divide (**Figure 12**) and is characterised by a southern facing aspect that dominated by graminoid vegetation with weakly defined, stepped surface terracing – a likely consequence of past farming practices as shown by **Figure 13** below. The topography of the site directs surface water runoff in a southerly direction into a low-lying wetland that ultimately drains into the Mahobe River system some 2 km south of the site. Any surface water flow north of the gravel access road is too directed into the Mahobe River from a northernly direction, via an ephemeral drainage channel – as illustrated by **Figure 15**.

Figure 12: Map image illustrating the nearby watershed boundary

Consistent with the Dry Coast Hinterland Grassland vegetation type, the property is dominated by graminoid vegetation, primarily Aristida junciformis. The site offers low floral biodiversity. Other plant species identified included the following:

- Acacia karoo (single specimen identified)
- Eucalptus grandis (plantation)
- Hyparrhenia hirta
- Hypoxis argentea
- Sporobolus pyramidalis

The burned and heavily grazed nature of the site made identification of graminoids and herbs/forbs challenging (**Figure 13**). Greater ecological disturbance of this area has stemmed through:

1. The establishment of road infrastructure.
2. Increasing peri-urban residential sprawl.
3. The establishment of a plantation at the south eastern extent of the site.
4. Unmanaged/informal grazing.
5. Historical agricultural practices resulting in the terracing of the land

As a result of the above-mentioned disturbance activities, no CBA nor similar conservation status has been attributed to the subject site as shown by **Figure 14**.

Figure 13: The general nature of the property. Top left: View of the property looking north from the southern boundary. Top right: View of the property looking south east towards the plantation. Bottom: View of the property looking south towards the adjacent wetland system

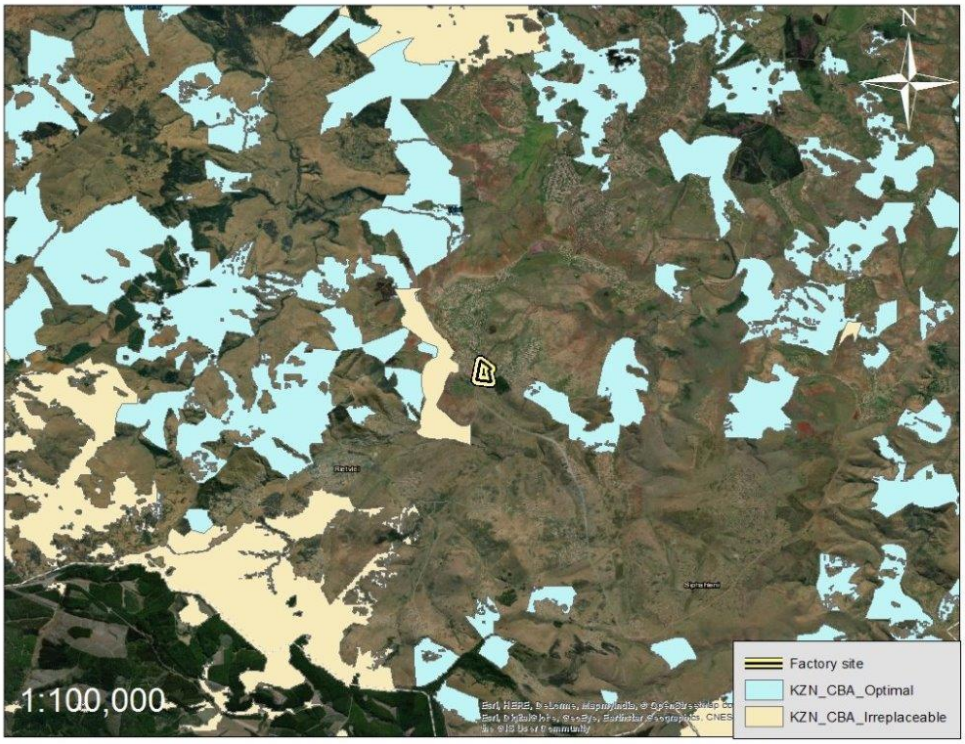

Figure 14: Map image detailing the subject area relative to the KZN CBA "irreplaceable" and "optimal" zones

6.6.3 Wetland delineation

Two wetland systems were identified and delineated within 500 meters of the proposed warehouse site, with each positioned on opposite sides of the watershed – as shown by **Figure 13** below. The topography of the site suggests that the wetland system located to the south of the site is likely to be affected, most probably indirectly. The wetland system positioned to the north of the ware house facility is unlikely to be affected by the construction or operation of the ware house facility as this wetland system is located on the opposite side of the watershed. The wetland systems drain into the Mahobe River system, a tributary of the Ibisi River (uMzimkhulu River system).

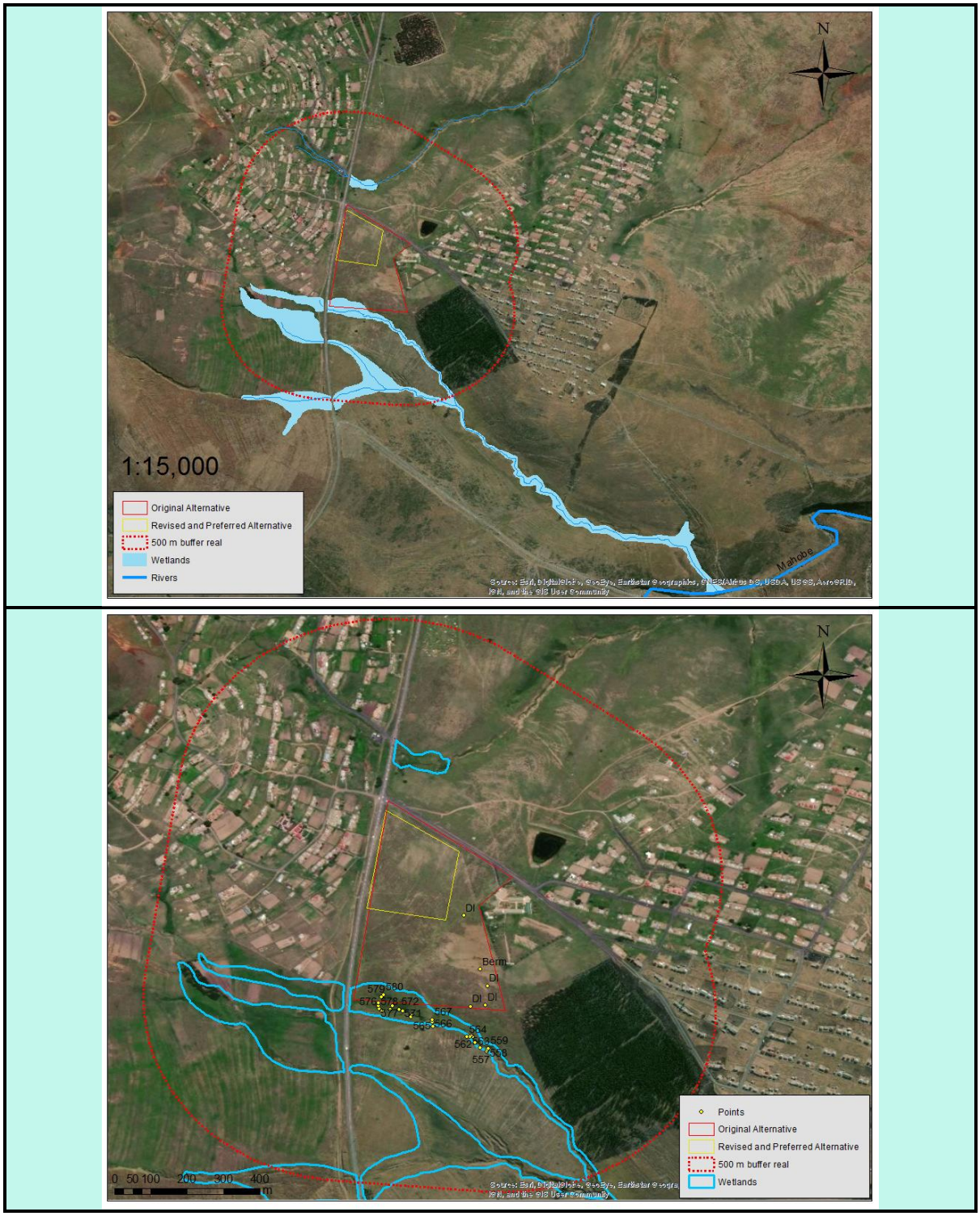

Figure 15: Top: The extent of watercourses and wetland identified within 500 m and the surrounding area. Bottom: The location of the Inspection points

The two wetland systems consist of 4 hydrogeomorphic units in total (HGM units, **Figure 16**). These have been classified as follows based on Ollis et. al. (2013) (**Table 12**):

Table 12: Classification of the 10 HGM units identified within the study area

HGM unit	Level 3	Level 4a	Area (m^2)	Wetland system
N1	Valley floor	Valley head seep*	8862	Northern
S1	Valley floor	Channelled valley bottom	63 832	Southern
S2	Valley floor	Channelled valley bottom	101 244	Southern
S3	Valley floor	Channelled valley bottom	81994	Southern

*Although classified as a valley head seep wetland, this is a "best fit" classification as the wetland unit is induced by the establishment of a small dam wall and input form a car wash.

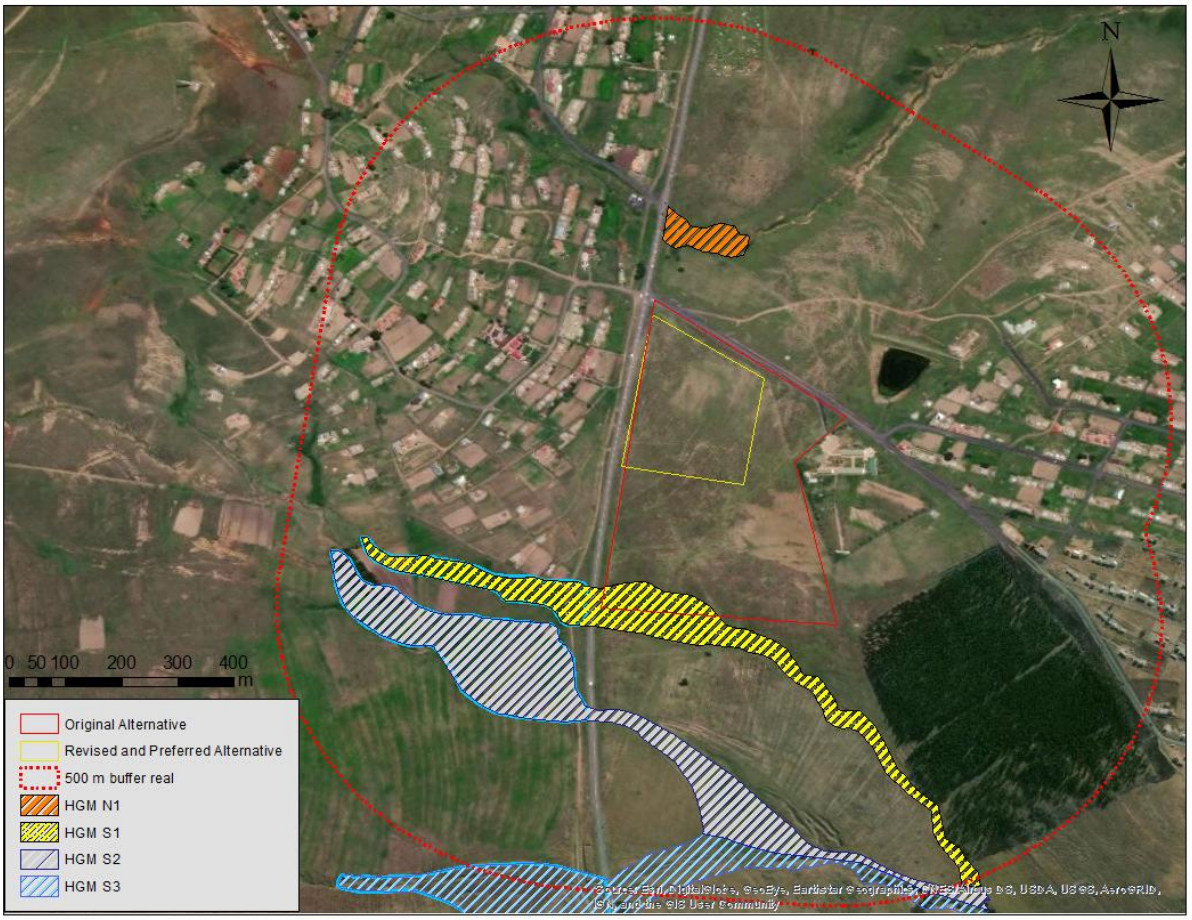

Figure 16: Map image detailing the separate HGM units

The nature of the HGM units is discussed in more detail below.

6.6.3.1 HGM unit S1

The hillslope wetland originates to the west of the R56 and flows in an easterly direction beneath the road and adjacent to the development property (**Figure 17**). The unit is a narrow, channeled valley bottom wetland. The channel is incised within the lower reaches. The vegetation consists of graminoids. Grasses such as Aristida junciformis are dominant within the outer temporary wetland zone, while Cyperus latifolius is present within the channel (seasonal wetland). Figure 14 shows the nature of the hydromorphic soils present within the channel. Orange soil mottling is evident within a grey matrix, typical of a seasonal wetland. **Figure 17** illustrates the nature of the wetland. Poor catchment management/development as well as overgrazing are prominent disturbances. These disturbances have resulted in channel scour and bank destabilization due to trampling. Despite these disturbances, this HGM unit serves as an important functional feature that facilitates drainage within this localized catchment, attenuating and directing flow from the elevated, surrounding areas in an easterly direction towards the Mahobe River system.

Figure 17: Wetland environment (HGM S1). Note the narrow and relatively incised channel

Figure 18: The nature of HGM unit S1. Top: hydromorphic soils typical of a seasonal wetland. Note the presence of orange/brown mottles in a grey matrix. Middle: Isolated surface water within HGM unit S1. Bottom: The narrow channel and HGM unit is set within a broad valley bottom, draining in a south-easterly direction

6.6.3.2 HGM unit S2 & HGM unit S3

These two HGM units are similar in nature to that of HGM S1. Like HGM unit S1, they have their source west of the R56 road way and flow in an easterly direction. HGM unit S2 is a broad channelled valley bottom wetland that consists of mostly temporary wetland. HGM unit S3 is a channelled valley bottom wetland that consists of seasonal channel and outer temporary zone, similar in nature to HGM unit S1. The disturbances mentioned above for HGM unit S1 have modified these two HGM units in a similar manner, notably the incising of the central channel and scour/erosion.

6.6.3.3 HGM unit N1

This HGM unit displays typical wetland characteristics, however this wetland is considered to be artificial in nature, augmented by surface water run-off from the nearby car wash – see Figure 19 that is attenuated by a small dam wall. This has resulted in permanently wet conditions within the "impoundment" where obligate hydrophytes such as *Cyperus latifolius*, have established. The evolution of this impoundment is illustrated in **Figure 20**. Additional anthropogenic modifications of the immediate area has occurred, particularly the establishment of the R56 road way and a bulk water supply line and associated chamber. This HGM unit, although unnatural acts as a water resource and grazing ground for the local livestock of the surrounding community.

HGM unit N1 lies within 500 meters of the proposed development, however this HGM unit will be unaffected by the proposed warehouse. The reasons for this are 1) this HGM unit lies on the opposite side of the watershed (different local catchment), thus run off from the warehouse development will not be a factor. And 2) Distance – the warehouse is to be constructed (>) 150 meters south of this HGM unit.

Figure 19: The nature of HGM unit N1. Top: A structure associated with a bulk water pipeline is present in the upper reaches of the unit, near the R56. Middle: The broad, lower portion of the unit that is attenuated by an earth mound. Bottom: The car wash and surrounding settlement from where flow was observed – west of the R56.

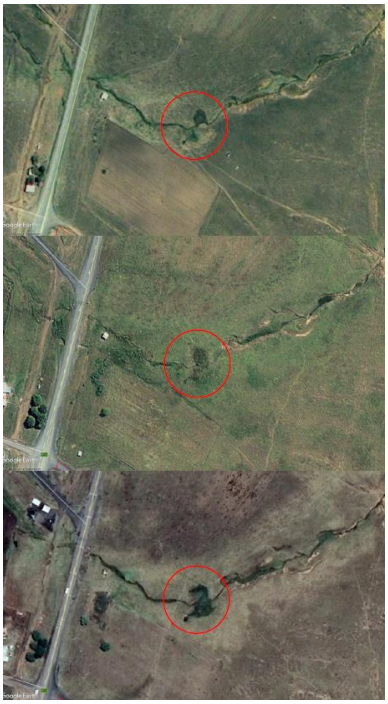

Figure 20: Top: A 2003 Google Earth image illustrating the presence of a clearly defined watercourse channel. Middle: A 2009 Google Earth image illustrating a change to the channel. Bottom: A 2018 Google Earth image illustrating a clearly defined impoundment

6.6.4 Wetland functionality and health

From a review of the location of the proposed warehouse, it is clear that only HGM S1 will be affected through the construction and operation of said facility. As a result, a wetland functionality and health assessment was carried out on HGM unit S1 only.

This wetland system has been significantly impacted through anthropogenic activities – directly through the establishment of wetland crossings as well as indirectly though catchment transformation, namely subsistence farming practices and infrastructure establishment.

Inadequate storm water controls have further aided the transformation of the wetland system. Scour cause by surface water flow as a result of the turbulence caused by the R56 crossing as well as significant erosion stemming from the unattenuated surface flow emanating from the nearby homesteads to the west of the site (see Figure 17) have modified the geomorphology of the system.

The present state of the wetland is provided in **Table 13** below, indicating an aggregated PES (Present Ecological Status) score of 'C' or "moderately modified". This score insinuates that the wetland system in question can be described as 'having a change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable'. Whilst the PES of this wetland environment has been significantly compromised, it is evident that this wetland still provides a number of eco-system benefits to the surrounding area, as detailed by Figure 17, in particular "Flood Control" and "Toxicant Removal".

Table 13: Results of the Wet-Health assessment for HGM unit S1.

HGM unit	ha	HGM unit extent	Hydrology		Geomorphology		Vegetation	
			Impact score	Change score	Impact score	Change score	Impact score	Change score
S1	6.3	100	3.8	-1	4.2	-1	2.2	-1
Area weighted score			3.8	-1	4.2	-1	2.2	-1
PES Category			C	↓	D	↓	C	↓
Aggregated PES		3.5	C					

Based on the ecoservices scores provided in **Table 14**, the overall functionality of the wetland unit can be described as "intermediate", with the range of ecoservices scores stretching from "low" to "moderately high". The majority of ecoservices

scores were however in the “intermediate’ category. Although degraded, there is opportunity for ecoservices provision. This is illustrated by the moderately high “Flood Attenuation” and “Toxicant Removal” scores. The opportunity scores for both based on the importance of downstream aquatic systems (high) and the presence of disturbances in the catchment were high, resulting in the overall rating of “moderately high”. “Carbon Storage” and “Maintenance of Biodiversity” scored the lowest of all the biophysical ecoservices. This is attributed to the presence of erosion, trampling/grazing by cattle, surrounding disturbances and the dominance of seasonal and temporary wetland.

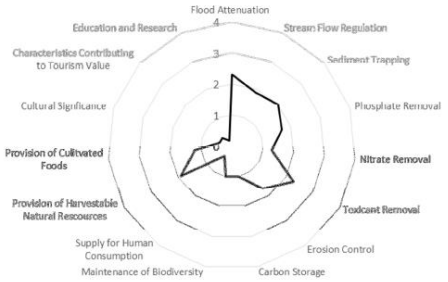

Figure 21: Results of the Wet-Ecoservices assessment for the affected wetland system

Table 14: Ecoservices scores for HGM unit S1

HGM unit	*S1*
HGM unit type	*CVB*
Size (m^2)	*63832*
Ecoservice	**Score**
Flood Attenuation	2.3
Stream Flow Regulation	1.9
Sediment Trapping	2
Phosphate Removal	1.7
Nitrate Removal	1.3
Toxicant Removal	2.3
Erosion Control	1.7
Carbon Storage	1
Maintenance of Biodiversity	1
Supply for Human Consumption	0.4
Provision of Harvestable Natural Resources	1.9
Provision of Cultivated Foods	1.2
Cultural Significance	0.4
Characteristics Contributing to Tourism Value	0.4
Education and Research	0.2

6.6.5 EIS

Based on the criteria provided by Duthie (1999), the EIS rating for HGM unit S1 is “Moderate”. Based on observations, the unit is expected to support neither rare and endangered species, nor unique species. Species richness based on the floral diversity of the unit is low and limited to graminoids. Cyperus latifolius and Aristida junciformis are common. The species diversity may be under represented, due to the heavily grazed nature of the unit and surrounding grasslands. When more open water is available (e.g during summer), amphibians may use the unit for breeding. No tadpoles or adults were observed during the site inspection. No fish are expected to utilise the channel area due to the intermittent flow. Birds such as herons and egrets may forage within the unit periodically. Changes to the natural hydrological regimen have resulted in erosion and channel scour. The unit is thus considered sensitive to such changes. Water quality is expected to be variable due to the presence of cattle and the seasonal nature of the system. An established aquatic community is lacking and therefore the impacts of water quality changes are likely to be low to moderate. From an ecoservices provision perspective, the unit provides most biophysical eco0services at an intermediate to moderately high level. The unit is not protected and is moderately modified in nature.

Table 15: Criteria scores and overall EIS rating for HGM unit S1

	HGM unit 1S	
Determinant	**Score**	**Confidence**
PRIMARY DETERMINANTS		
Rare & Endangered Species	0	3
Populations of Unique Species	0	3
Species/taxon Richness	1	3
Diversity of Habitat Types or Features	2	4
Migration route/breeding and feeding site for wetland species	1	3
Sensitivity to Changes in the Natural Hydrological Regime	3	3
Sensitivity to Water Quality Changes	2	3
Flood Storage, Energy Dissipation & Particulate/Element Removal	2	3
MODIFYING DETERMINANTS		
Protected Status	0	4
Ecological Integrity	2	3
TOTAL	13	32
MEDIAN	1.3	3.2
OVERALL ECOLOGICAL SENSITIVITY AND IMPORTANCE	**MODERATE**	

6.7 Vegetation

This section of the report has been compiled utilising the Terrestrial Biodiversity Assessment by Information Decision Systems (Pty) Ltd attached as **Appendix F4**.

6.7.1 Desktop Vegetation Assessment

The project site is situated on one biome, which is Grassland Biome. South Africa's Grassland Biome is mapped according to the vegetation structure, as well as the environmental conditions, specifically rainfall patterns, summer rainfall, and the minimum temperatures in the winter season. The biome occurs various portions of the country, such as the high central plateau, named the Highveld, the inland regions on the eastern seaboard, in the Province of KwaZulu-Natal on the mountainous areas and the central regions of the Eastern Cape Province. The topography of the biome varies, from being primarily flat to rolling, also including the mountainous regions and the Escarpment. The elevation also varies widely from 300 m to 3 485 m.

The structure of the vegetation is simple and is dominated by the POACEAE family. The vegetation biomass is primarily influenced by rainfall amount, intensity and type of grazing pressure, and fire events.

The vegetation unit found within the project site was the Gs 19 – Dry Coast Hinterland Grassland on the 2018 National Vegetation Map.

6.7.1.1 Vegetation Units

The project site falls within the vegetation unit: Gs 19 Dry Coast Hinterland Grassland (Geocortex Viewer for HTML5, 2018).

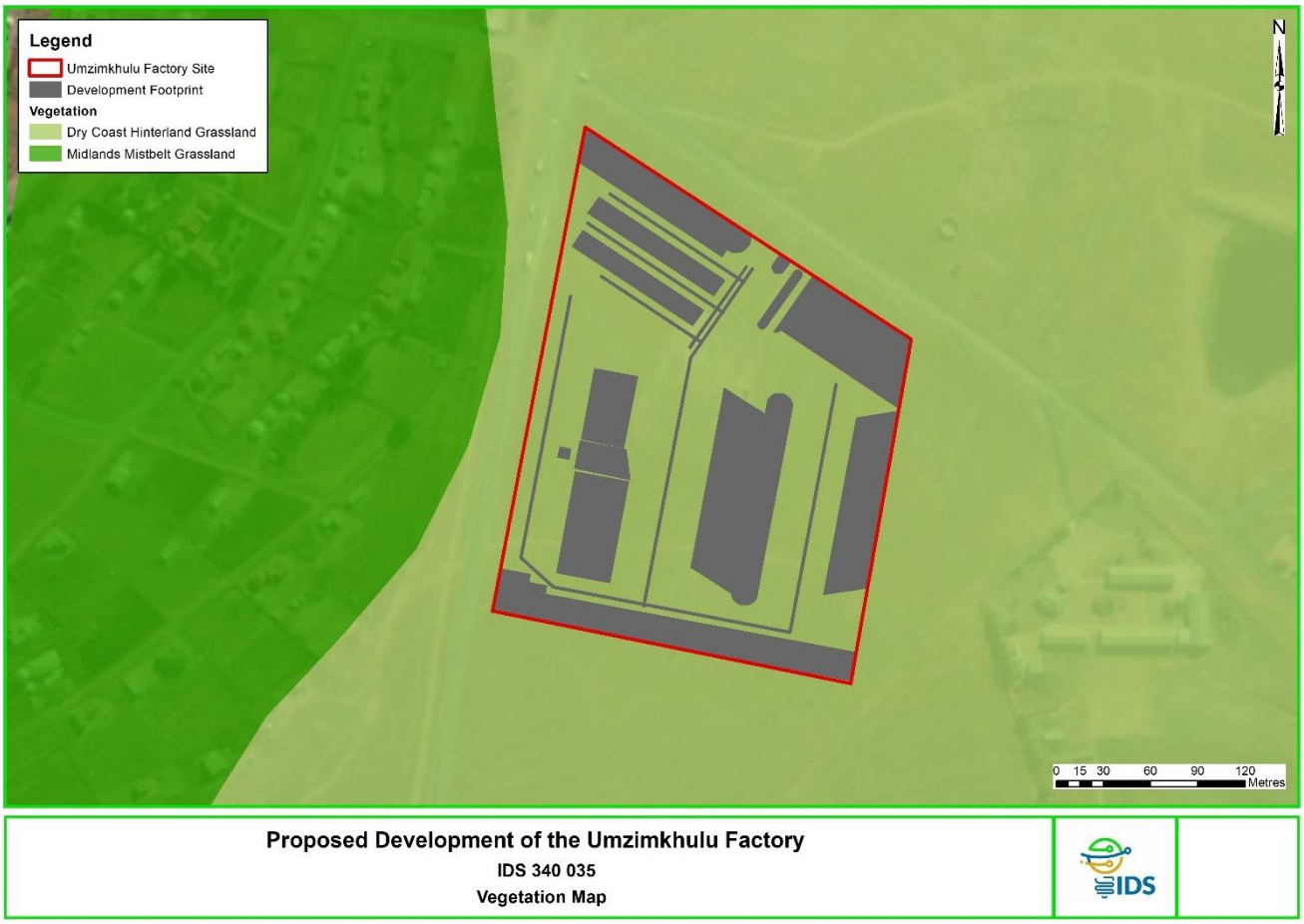

Figure 22: Vegetation Map (2018)

6.7.1.2 Gs 19 Dry Coast Hinterland Grassland

The grassland vegetation units regional distribution ranges from Melmoth in the north to near Libode in the former Transkei (including Camperdown, Umlaas Road, Eston, Bisi, iZingolweni, Ngqeleni near Mthatha). It occurs within an altitude range of 450 m–900 m. The vegetation unit was previously mapped as SVs4 Ngongoni Veld (86 %), and marginal portions of SVs6 Eastern Valley Bushveld, CB3 KwaZulu-Natal Coastal Belt, SVs3 KwaZulu-Natal Hinterland Thornveld, Gs9 Midlands Mistbelt Grassland, SVl22 Northern Zululand Sourveld, CB4 Pondoland-Ugu Sandstone Coastal Sourveld, FOz5 Scarp Forest, Gs11 Southern KwaZulu-Natal Moist Grassland, FOz3 Southern Mistbelt Forest, SVs1 Thukela Valley Bushveld and SVl23 Zululand Lowveld. Herbaceous species richness is much less in Dry Coast Hinterland Grassland compared with the adjoining vegetation units KwaZulu-Natal Sandstone Sourveld; Moist Coast Hinterland Grassland; Midlands Mistbelt Grassland and relatively few of its common species are shared with these. A Bioresource classification for the region refined vegetation into different types based on climate, and the presence and abundance of dominant plant species.

6.7.1.3 Important Plant Taxa

The important taxa consist of vegetation species which are found to dominate a vegetation unit, frequently occurring or being prominent in the landscape (Mucina and Rutherford, 2011). For the Gs 19 Dry Coast Hinterland Grassland vegetation unit, the following species (**Table 16**) are considered important plant taxa:

Table 16: Species composition of the Gs 19 Dry Coast Hinterland Grassland vegetation unit

Dominant taxa	*Themeda triandra, Tristachya leucothrix, Aristida junciformis, Digitaria eriantha, Vachellia karroo, Lantana camara, Rauvolfia caffra., Syzygium cordatum, Solanum mauritianum, Aristida congesta., Bothriochloa insculpta, Eragrostis superba, Sporobolus pyramidalis, Vachelia nilotica., Vachelia sieberiana, Ziziphus mucronata., Diospyros lycioides, Alloteropsis semialata., Andropogon eucomus, Digitaria tricholaenoides, Eragrostis gummiflua, Monocymbium ceresiiforme, Pogonarthria squarrosa, Hyparrhenia hirta, Sporobolus pyramidalis, Vachelia tortilis, Dichrostachys cinerea.*

6.7.1.4 *Floral Species of Conservation Concern Assessment*

The expected flora of conservation concern is listed according to the National Red List categories, included in Error! Reference s ource not found. are the threatened species category: **Critically Rare**, **Rare**, **Declining**, **Data Deficient** – **Insufficient Information** (**DDD**), **Near Threatened** (**NT**), **Vulnerable** (**VU**), **Endangered** (**EN**), **Critically Endangered** (**CR**), **Critically Endangered**, **Possibly Extinct** (**CR PE**), **Regionally Extinct** (**RE**), **Extinct in the Wild** (**EW**). The categories of IUCN status and description of the floral species data was collected from the National Red List (Threatened Species Programme | SANBI Red List of South African Plants, 2021).A total of 7 species were noted as SCC.

6.7.2 Field Vegetation Assessment

The vegetation assessment identified plant species which are listed below from the field survey conducted on the 2nd of June 2021.

The grassland was determined to be a short grassland dominated by *Themeda triandra* and *Digitaria eriantha* (**Table 17**). The vegetation had become monospecific with reduced biodiversity because of the previous land uses within the site. Patches of soil were evident in parts of the grassland and evidence of burning was observed. Species of *Helichrysum, Seriphium plomusum* and *Gazania* were identified in pockets throughout the project site. Several areas were identified to have been transformed and replaced with forestry (as pictured in) etc.

Table 17: Identified floral species within the project site

Family	Common Name	Species Name	Ecology	IUCN	CATEGORY / AREA: Invasive Species Class (2016)	CATEGORY/ AREA: Threatened, Protected, or Endangered Species Class (2015)
FABACEAE	African Wild Cassia	*Senna didymobotrya*	-	NE	a. 1b in Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga and Western Cape. b. Not listed elsewhere.	-
POACEAE	Curly leaf (broad) grass	*Eragrostis rigidior*	Not endemic to South Africa	LC	-	-
ASTERACEAE	-	*Nidorella agria*	Not endemic to South Africa	LC	-	-
ASTERACEAE	-	*Berkheya sp.*	-	-	-	-
POACEAE	-	*Themeda triandra*	Not endemic to South Africa	LC	-	-
POACEAE	Bloukruisgras, Common Finger Grass, Finger Grass, Gewone Vingergras, Hoenderspoor, Hoenderspoorgras, Hoenderspoort, Hoenderspoortgras, Isikonko, Kleinvingergras, Kortbeen Hoenderspoort, Kortbeen Hoenderspoortgras, Kortbeenhoenderspoor, Kortbeenhoenderspoorgras, Kruisgras, Mangole Maseka, Mmoyane, Moeane, Pongola Finger Grass, Smuts Finger Grass, Smuts Vingergras, Vingergras, Wolvingergras, Woolly Finger Grass	*Digitaria eriantha*	Not endemic to South Africa	LC	-	-

Table 18: Floral species identified within the project site area; Senna didymobotrya (A), Eragrostis rigidior (B), Nidorella agria (C), and Themeda triandra (D)

A 	B 
C 	D 

6.8 Faunal Assessment

6.8.1 Avifauna

Based on the expected species list with Desktop Results, 83 bird species were noted. However, there were no avifaunal species recorded during the field survey from a visual sighting of the animal. The lack of Avifaunal sightings may be due to the winter season, where majority of the bird species may be on migration, as well the degraded habitat condition, with anthropogenic pressure from urbanization impact, reducing habitat availability within the project site and the surrounding region.

6.8.2 Mammals

The mammal species recorded during the field survey were identified through track impressions on the soil, fecal samples found within the project area, and a visual sighting of the animal (Mountain Reedbuck). A field guide book was used to identify the faecal samples and the animal track images, which were captured during the field survey (Stuart and Stuart, 2013). The identified mammal species within the project site can be found in Table 20.

6.8.3 Herpetofauna

Based on the expected species list with Desktop Results, 22 reptile species and 9 amphibian species were noted. However, there were no herpetofauna species recorded during the field survey, either through track impressions on the soil, faecal samples or a visual sighting of the animal.

6.9 Heritage

This section of the report has been compiled utilising the Phase 1 Cultural Heritage Impact Assessment by Active Heritage cc attached as **Appendix F5**.

6.9.1 Background to Archaeological History of Area

The greater UMzimkhulu area has never been intensively surveyed for heritage sites. However, some sites have been recorded by cultural resource consultants who have worked in the area during the last two decades whilst archaeologists from the KwaZulu-Natal Museum have made sporadic visits to the area. The area was surveyed in 2008 by Anderson (2008) and a few year later by Beater & Prins (2014) and the nearby Ibisi Water Reticulation Project in 2019 (Prins 2019) but no archaeological sites were recorded. The available evidence, as captured in the KwaZulu-Natal Museum heritage site inventories, indicates that the greater UMzimkhulu area contains a wide spectrum of archaeological sites covering different time-periods and cultural traditions. These include five Early Stone Age sites, two Middle Stone Age sites, four Later Stone Age sites, two rock painting sites, four Early Iron Age sites, three Later Iron Age sites, and one historical site. Various buildings and farmsteads belonging to the Victorian and Edwardian periods occur in the area. These would also be protected by heritage legislation (Derwent 2006).

Stone Age sites of all the main periods and cultural traditions occur within the greater study area. Most of these occur in open air contexts as exposed by donga and sheet erosion. The occurrence of Early Stone Age tools in the near vicinity of permanent water resources is typical of this tradition. These tools were most probably made by early hominins such as Homo erectus or Homo ergaster. Based on typological criteria they most probably date back to between 300 000 and 1.7 million years ago. The presence of the first anatomically modern people (i.e. Homo sapiens sapiens) in the area is indicated by the presence of a few Middle Stone Age blades and flakes. These most probably dates back to between 40 000 and 200 000 years ago. The later Stone Age flakes and one rock painting site identified in the area are associated with the San (Bushmen) and their direct ancestors. These most probably dates back to between 200 and 20 000 years ago.

The San were the owners of the land for almost 30 000 years but the local demography started to change soon after 2000 years ago when the first Bantu-speaking farmers crossed the Limpopo River and arrived in South Africa (Mitchell 2002). By 1500 years ago these early Bantu-speaking farmers also arrived in the greater UMzimkhulu area. Due to the fact that these first farmers introduced metal technology to southern Africa they are designated as the Early Iron Age in archaeological literature. Their distinct ceramic pottery is classified to styles known as “Msuluzi” (AD 500-700), Ndondondwane (AD 700-800) and Ntshekane (AD 800-900). Most of the Early Iron Age sites in the greater Ixopo area belong to these traditions (Maggs 1989:31; Huffman 2007:325-462). These sites characteristically occur on alluvial or colluvial soil adjacent to large rivers, such as the Mzimkhulu River, below the 1000m contour. The Early Iron Age farmers originally came from western Africa and brought with them an elaborate initiation complex and a value system centred on the central significance of cattle.

Later Iron Age sites also occur in this area. These were Bantu-speaking agropastoralists who arrived in southern Africa after 1000 year ago via East Africa. Later Iron Age communities in KwaZulu-Natal and adjacent parts of the Eastern Cape Province were the direct ancestors of the Zulu and Xhosa-speaking people (Huffman 2007). Many African groups moved through the study area due to the period of tribal turmoil as caused by the expansionistic policies of King Shaka Zulu in the 1820’s. During the colonial era (1840s onwards) many African groups were settled in this area by the native administrator of the Colony of Natal, Lord Shepstone. It is known from oral history that the Umzimkhulu area was occupied by the Nhlangwini, amaWushe, amaHlubi, amaBhaca, amaZizi, amaNqolo, amaCunu and various other Zulu-speaking and Xhosa-speaking refugees in the 19th century (Bryant 1965; Jackson 1975). There are also some Mpondo and Sotho groupings in the area. Interestingly, descendants of the San still live in the area and have adopted the Zulu clan name of Ndobe. The descendants of all these ethnic groupings still live in the area. Interestingly, after the Anglo-Zulu war of 1879 and the Bambatha Rebellion of 1911 some of the African people in the study area adopted a Zulu ethnic identity.

The town of UMzimkhulu owes its origins to the Strachan Family who set up a trading store on the banks of the UMzimkhulu River, near the original ferry crossing in the 1880s. This store (and specifically the trading company) formed an integral part of the regional economy. Strachan & Co. even had its own coins minted that were accepted by the banks in Kokstad. Anderson

(2008) recorded some historical buildings in the actual town of UMzimkhulu. However, none of these occur closer than 1km to the actual footprint.

6.9.2 Description of the general area surveyed

The proposed Roof Sheeting Factory is situated on the east bank of the R 56 approximately 28 km to the south of the UMzimkhulu CBD. The footprint covers an area of approximately 580m x 440m. It is covered by disturbed grasslands and it is also evident that the area has been cultivated previously. There is no evidence for any heritage site, feature, or artefact associated with the actual footprint (Fig 8). The main anthropogenic footprint is a footpath. There are no visible graves. A rural cemetery occurs approximately 300m to the north of the proposed development (Figs 5 & 9). However, these graves are not threatened by the proposed development and there is no need for mitigation. It is also important to note that the footprint does not form part of any known cultural landscape.

6.10 Land use and land cover

The current General Land Cover of the project site was assessed using Arch GIS. The imagery revealed the following land cover types: cultivated land, wetland, a built-up area, forested land, and grassland.

The majority of the area within the project site is dominated by cultivated land cover, as can be seen from **Figure 23** below.

Figure 23: Land use cover

6.10 Socio-economic

6.10.1 Demographic Data

According to (StatSA, 2016) the population of UMzimkhulu is about 197 286 people. UMzimkhulu is the most populated of the Harry Gwala municipalities, accounting for 39% of the district's population.

According to Census Data (2011), there are approximately 9143 people living in Ward 13, with 55% of the population being female and 45% males. 100% of the population is Black African with no other race groups living in Ward 13. The breakdown

of population according to the age groups is illustrated in Figure 15. isiZulu is the predominant language with Xhosa being spoken by 49% of the population in Ward 13.

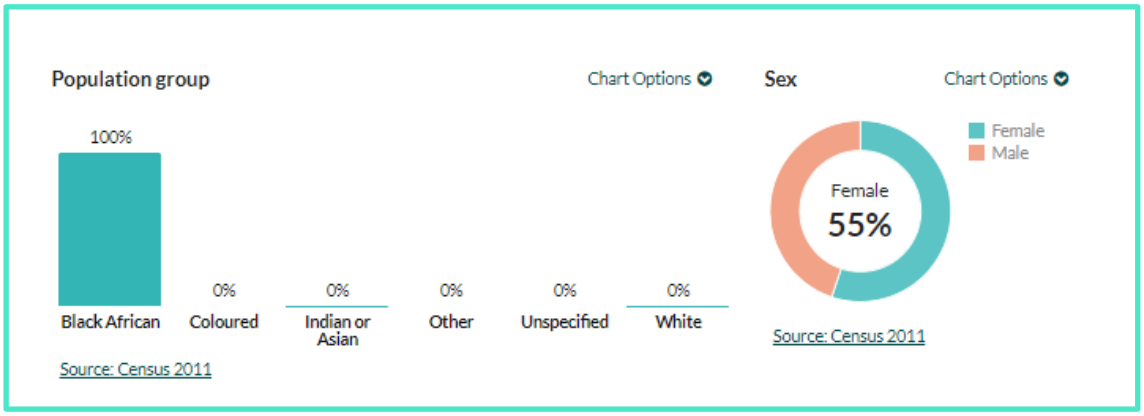

Figure 24: Population Group

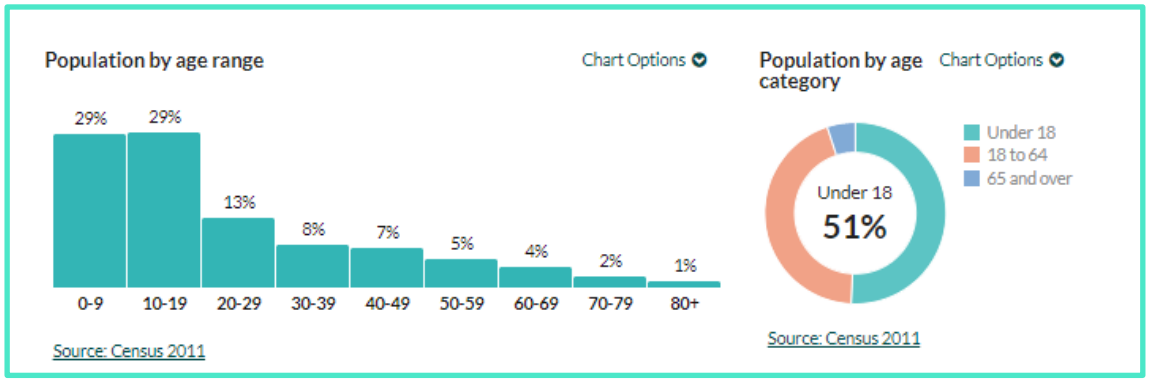

Figure 25: Age Group Breakdown

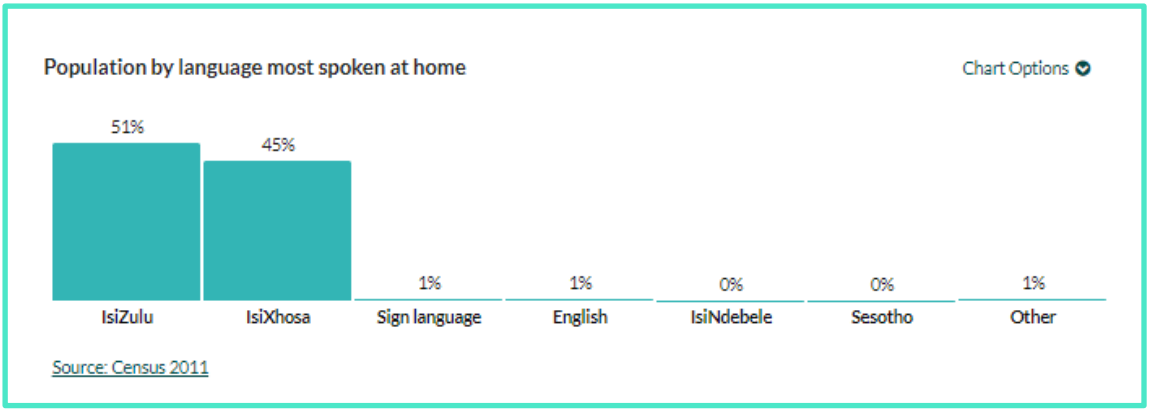

Figure 26: Languages

6.10.2 Education Levels

In 2011, 6.4% of the population in UMzimkhulu did not go to school. Approximately 2.1% had higher education and 15.2% had matric. However, primary education enrolment for the 6-13 years was standing at an impressive 93.9%. This is encouraging and the municipality together with other government tiers should strategize to ensure that these pupils go beyond the secondary levels.

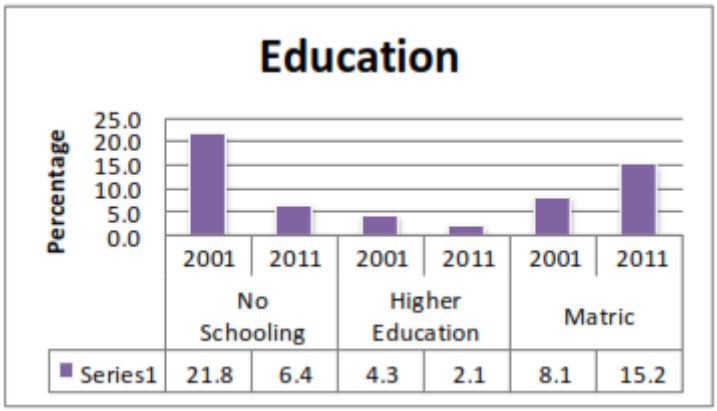

Figure 27 Education Levels

Generally, majority of the population in the municipal area have no high education level. This is a major challenge, which is likely to lead to low households' income levels that further limit the ability of families to invest into the education of youthful members. Such low figures also limit the ability of absorbing new skills and effectively compete for higher paying jobs.

Education levels have a major bearing on the quality of life. The inability of an individual to perform certain basic functions due to illiteracy is also part of elements that define human poverty. Low educational levels are likely to push individuals to unemployment and to low paying jobs. Low educational levels also limit the ability of an individual to learn new skills and be trained.

6.10.3 Economics

The following is a summary of the economic profile of the municipality as extracted from the IDP:

- Unemployment reduced from 68% in 2001 to 47% in 2011;
- Unemployment amongst the youth declined from 78.8% to 56.8% between 2007 and 2011;
- Government is the main source of employment as it employs approximately 21% of the municipal's population;
- Approximately 75,589 (i.e., 42%) of the population has no source of income and about 56,944 (i.e., 32%) earn less than R400 per month which translate to almost 76% of the population leave below the poverty line;
- Gross Value of the municipality steadily improved from 2007 to 2011;
- Agriculture sector experienced a decline in the municipality as people employed by this sector reduced from 14% in 2001 to 6% in 2011

6.10.4 Service Delivery

6.10.4.1 Water

Water in UMzimkhulu mainly drawn from natural sources like streams, rivers and fountains. Water in many areas is not purified and this makes these areas exposed or prone to cholera and other waterborne diseases. The quality of water is generally poor. Water from the main pipeline supplies and from the boreholes is not always in working order. Of the funding that has been received by the municipality, part of it is for the planned water projects that were previously halted due to lack of funding. There are projects that have been identified to cater for the provision of water and sanitation to the community.

The table below reflect the households with access to water in Umzimkhulu Local Municipality as tabled from the Harry Gwala 2018/2019 Draft IDP. The table indicates that Umzimkhulu has 48 641 households of which 32 473 have access to water and have a backlog of 16 168. That mean 33.24% of Umzimkhulu household don't get access to clean water. This indicates that the Harry Gwala DM has a long way to go to achieving full access to piped water.

MUNICIPALITY	NO. OF HOUSEHOLDS	WATER SERVED HOUSEHOLDS	WATER BACKLOGS HOUSEHOLDS	PERCENTAGE OF WATER BACKLOGS
Umzimkhulu Local Municipality	48 641	32 473	16 168	33.24%

Figure 28: Water services

6.10.4.2 Sanitation

Rural areas under the jurisdiction of UMzimkhulu use pit latrines with very few areas that use septic tanks. A main sewer line has been installed within the UMzimkhulu CBD and surroundings. Therefore, most CBD residents are using water borne sanitation systems. This depicted by the census 2011 which shows that only 6.4% of the households have flush toilets that are connected to the sewerage.

6.10.4.3 Electricity

UMzimkhulu Municipality is not the electricity / energy provider. However, it plays a facilitation role to ensure that Eskom smoothly provides the services to the communities. The municipality has considerably reduced electricity backlog in its area of jurisdiction. The households in uMzimkhulu have experienced a significant improvement in the use of electricity as the number of households having access to electricity increased from 31% in 2001 to 64.5% in 2011.

The Umzimkhulu backlog in relation to electricity has been 35.5% in 2011 and further reduced to 20.02% in 2016 as per the community survey of 2016. This is as a result of the support of the Department of Energy and ESKOM in making sure that there is access to electricity in Umzimkhulu Local Municipality.

Electricity Backlog	Census 2011	Community survey 2016
Umzimkhulu Local Municipality Electricity Backlog	35.5%	20.02%

Figure 29: Electricity backlog

7 RESOURCE USE AND PROCESS DETAILS

This section provides resource details during construction and operation phase of the development. This includes services i.e. electricity, water, sewer and waste.

7.1 Waste, effluent, and emission management

7.1.1 Solid waste management

No waste streams are anticipated to be produced from construction activities proposed on site other than domestic and construction waste which will be disposed of to a registered landfill. Consequently, volumes can only be determined at a later stage (development stage of the project).

7.1.2 Liquid effluent (other than domestic sewage)

No liquid effluent is anticipated for the proposed development.

7.1.3 Liquid effluent (domestic sewage)

The site is located in a rural undeveloped area and as result does not have any sewer lines connecting the local houses, neither is there a connection to the waste water treatment works. The system for the proposed site will be serviced by Leratong Victim Empowerment Co-Operative in collaboration with Harry Gwala District Municipality (HGDM).

The site will be serviced either by a septic tank as indicated in Section 4.4 above. However, the selection of the preferred option in terms of sewerage will depend on the HGDM preference and also the costing of the proposed method of disposal.

The size of the tank is equal to the six-day per capital sewage flow.

Volume of Septic Tank = 960.4 KL (960.4 m3)

The required surface area will be determined once the percolation test results have been obtained from the Geotechnical Engineer.

7.1.4 Emissions into the atmosphere

No significant emissions are anticipated to be released to the atmosphere other than dust during the construction and operational phase of the development.

7.2 Water Use

There are several water reservoirs located on the West side of the site which are believed to be operated by Harry Gwala District Municipality. The water pump station and the borehole of the Zamenkomst area is located on the south of the proposed site and is about 50m away from the site boundaries. It has been confirmed by Harry Gwala District Municipality, that the proposed development will require the establishment of a separate borehole for water.

The water demand for the proposed were estimated at:

- AADD for the site is considered 0.0160 Mℓ/day and the instantaneous peak flow = 0.0415 Mℓ/day = 0.480 ℓ/sec as shown on the table below and an additional 100l/s for firefighting.

It has been established that a borehole will need to be established to service the proposed development.

7.3 Power Supply

The electricity supply is to be provided by Eskom, there is currently existing electricity connections present on site and the supply is deemed stable, but outages are experienced as is a norm with the country. Application for electricity connection is required.

7.4 Energy Efficiency

A generator has been provisioned as an alternative source of energy.

8 PUBLIC PARTICIPATION PROCESS

Public participation is a process that is designed to enable all interested and affected parties (I&APs) to voice their opinion and/or concerns which enables the practitioner to evaluate all aspects of the proposed development, with the objective of improving the project by maximising its benefits while minimising its adverse effects.

I&APs include all interested stakeholders, technical specialists, and the various relevant organs of state who work together to produce better decisions.

The primary aims of the public participation process are:

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

The requirements in Regulation 41 (2) of Chapter 6 of the 2014 EIA Regulations (as amended in 2017), which outlines the methods required for PPP, together with the COVID Regulations (Government Notice 650 of Government Gazette No. 43412), was used to compile the Public Participation Plan (PP Plan, Appendix E) for the development.

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

- The identification of stakeholders is a key deliverable at the outset, and it is noted that there are different categories of stakeholders that must be engaged, from the different levels and categories of government, to relevant structures in the non-governmental organisation (NGO) sector, to the communities of wards of residential dwellings which surround the works;
- The development of a living and dynamic database that captures details of stakeholders from all sectors;
- The fielding of queries from I&APs and others, and providing appropriate information;
- The convening of specific stakeholder groupings/forums as the need arises;
- The preparation of reports based on information gathered throughout the BA via the PPP and feeding that into the relevant decision-makers;
- The PPP includes distribution of pamphlets or Background Information Documents (BIDs) and other information packs; and
- Where appropriate site visits may be organised, as well as targeted coverage by the media.

The PPP has entailed the following activities.

8.1 Authority Consultation

The competent authority, the KZN EDTEA, is required to provide an EA (whether positive or negative) for the project. The EDTEA was consulted from the outset of this study, and has been engaged throughout the project process. Authority consultation included the following activities:

- A pre-application meeting was held with the EDTEA on the 7th May 2021. Minutes of the meeting is included as **Appendix E** of this BAR.

8.2 Site Notification

The EIA Regulations 2014 (as amended in 2017) require that a site notice be fixed at a place visible to the public at the boundary or on the fence of the site where the activity to which the application relates and at points of access or high through traffic. The purpose of this is to ensure that the I&APs were identified primarily from responses received from the notices erected and notify the public of the project as well as to invite the public to register as stakeholders and inform them of the PP Process.

Four (4) A3 site notices were placed in pre-selected locations in discussion with the applicant. The location of the site notices is indicated by Figure x below. Proof of the site notices has been attached as **Appendix E1**.

Table 19: Description of site notices

Site Notice Number	Geographic coordinates	
1	30°27'30.12"S	29°52'6.05"E
2	30°27'41.90"S	29°52'24.46"E
3	30°27'26.99"S	29°51'55.27"E
4	30°26'55.90"S	29°52'8.06"E

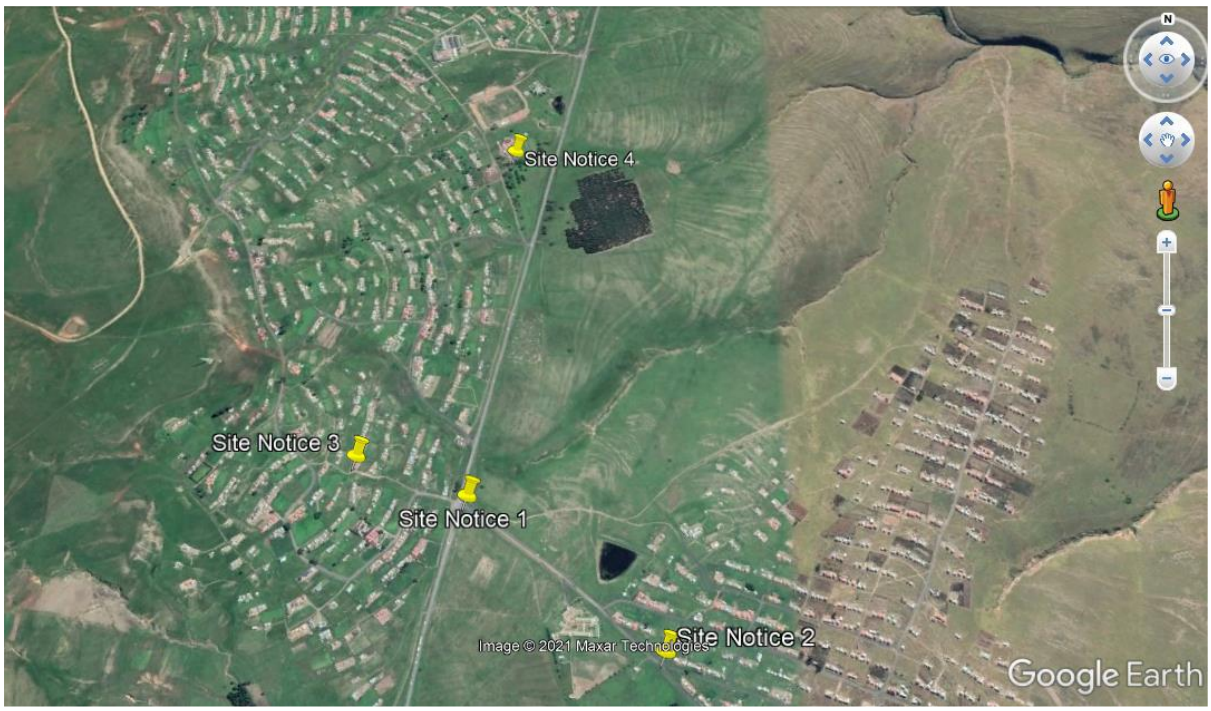

Figure 30: Proof of site notices

8.3 Background Information Document

A Background Information Document was distributed on site and electronically to the public and stakeholders dated April 2021. The purpose of the BID is to provide members of the public with information about the proposed project. This information allowed readers to:

- Determine whether they are an Interested and Affected Party (I&AP).
- Understand the project in order to provide informed comments.
- Understand the applicable environmental authorisation process in order to participate meaningfully.

A registration form was attached to the BID for commenting purposes.

8.4 Advertising

In compliance with the EIA Regulations 2014 (as amended in 2017), a notification of the commencement of the BA process for the project will be advertised in a local newspaper. I&APs were requested to register their interest in the project and become involved in the BA process. The primary aim of these advertisements was to ensure that the widest group of I&Aps possible was informed and invited to provide input and questions and comments on the project.

See attached **Appendix E3.**

Ongasekhoyo u-Owen Hlazo

IBhodi elawula utywala ikwamkele ukubuyiselwa kotywala

Unikwe ikhefu elikhethekileyo usodolophu

USixolile Mehlomakhulu

Ubuyele enkomeni uSomlomo

ISAZISO MAYELANA NOKUFAKWA KWESICELO SESEMVELO JULY 2021

NOTICE TO CREDITORS IN DECEASED ESTATES

Usomlomo wase-Alfred Nzo uSmthembile Kulu

POND NEWS 039 727 1995 pondonews@gmail.com advertising.pondonews@gmail.com P. O. Box 1275 KOKSTAD. 4700

Figure 31: Proof of newspaper advert

8.5 Consultation with Other Relevant Stakeholders

Consultation with other relevant key stakeholders were, and will continue, to be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the BA process.

Relevant key stakeholders were consulted and sent pamphlets or BIDs and other information packs (where requested). All relevant stakeholders will be allowed an opportunity to comment on the draft Consultation Basic Assessment Report (BAR).

An interested and affected parties database has been compiled (**Appendix E9**) and the following stakeholders have been invited;

- KZN Department of Economic Development, Tourism and Environmental Affairs
- KZN Department of Economic Development, Tourism and Environmental Affairs
- KZN Department of Agriculture & Rural Development
- KZN Department of Cooperative Governance and Traditional Affairs
- KZN Department of Transport
- KZN Department of Human Settlements, Water & Sanitation
- KZN (Pollution and Waste Management)
- KZN Province (Office of the Premier)
- KZN Province (Economic development and tourism)
- KZN Province (Economic development and tourism
- KZN Province (Economic development and tourism)
- KZN Province (Community safety, Security and Liaison)
- KZN Province (co-operative goverance and traditional affairs)
- AMAFA (Heritage Resource Authority)
- AMAFA (Heritage Resource Authority)
- AMAFA (Heritage Resource Authority) Archaeology sites Impact Assessments Archaeology Permits
- KZN Province (Water Use Licencing Officer)
- KZN Province (Scientific Manager: Water Quality Management)
- Harry Gwala Districts (Head of Communications)
- Umzimkhulu Municipality (Information officer)
- Harry Gwala Districts (Head of Communications)
- Ward concillor 13 (Umzimkhulu Municipality)
- Chief Mjoli
- Eskom
- Ezemvelo KZN Wildlife
- Ezemvelo KZN Wildlife
- SANParks
- Birdlife South Africa
- WESSA
- Ntlabeni Junior Secondary School (Principal)

8.6 Issues Trail

Issues and concerns raised in the public participation process during the BA process have been and will continue to be compiled into an Issues Trail together with the responses thereof.

Table 20: Summary of the comments and responses

Organisation	Name and contact details	Date	Comment	EAP response (if applicable)
Ezemvelo KZN Wildlife	Gugu Zulu / Nerissa Pillay Email: Gugu.Zulu@kznwildlife.com **Tel:** 033 845 1346	**10th June 2021**	Thank you for forwarding the Draft Basic Assessment Report dated April 2021, for the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment. Ezemvelo will not be providing comment on this application, but trust that all significant biodiversity related concerns have been clearly identified and made known in this assessment together with appropriate measures (viz. avoid, mitigate and thereafter ameliorate) to safeguard the ecological integrity of the developable area. Please be advised that the potential impacts upon biodiversity will be evaluated by the Competent Authority who may, upon identification of a potential biodiversity concern, refer the biodiversity concern to this organisation for evaluation and advice regarding the specific concern, prior to making a decision. In such case, the environmental principles prescribed in the National Environmental Management Act 107 of 1998, the objectives of the National Environmental Management Biodiversity Act 10 of 2004 and best practice will be applied.	No comment required from the EAP.

8.7 Public Review of the Draft BAR

The draft BAR was made available for public review from the **30th July 2021 to the 29th August 2021**. The report will be made available on social media platforms and sent via emails to all registered I&APs in compliance with the COVID-19 regulations.

8.8 Final Consultation BAR

The final stage in the BA process entails the capturing of responses and comments from I&APs on the BAR in order to refine the BAR, and ensure that all issues of significance are addressed. The final BAR (i.e., fBAR) will be the product of all comments and studies, before being submitted to EDTEA for review and decision-making.

Section	Description
Identifying Stakeholders	Stakeholders were identified and a database of all I&APs were compiled.
Publishing Newspaper Adverts	In compliance with the EIA Regulations 2014 (as amended in 2017), a notification of the commencement of the BA process for the project will be advertised in a local newspaper.
Distribution of a BID	BIDs were distributed electronically and by hand to I&APs.
Erection of Site Notices	A number of A2 site notices were erected on the perimeter of the site.
Preparation of an on-going Issues Trail	Comments, issues of concern and suggestions received from stakeholders thus far have been captured in an Issues Trail.
Release of Draft Report	The draft BAR has been advertised and made available for a period of 30 days for public review and comment. This draft BAR was available for review for a 30-day commenting period.
Release of Amended Draft Report	The amended BAR will be available for a period of 30 days for public review and comment.
Release of final Report	The final BAR (i.e., fBAR) will be the product of all comments and studies, before being submitted to EDTEA for review and decision-making.

9 IMPACT ASSESSMENT

The assessment of impacts below has adhered to the minimum requirements in the EIA Regulations, 2014, and considered applicable official guidelines into account. The issues raised by interested and affected parties are also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

9.1 Methodology

The method used to determine the significance of impacts associated with the development was motivated by the Department of Environmental Affairs Series 5 of Impact Significance. This method is known as the systematic method which follows the criteria that includes;

- extent or spatial scale of the impact;
- intensity or severity of the impact;
- duration of the impact;
- mitigatory potential;
- acceptability;

in description, the criteria is defined:

- **Nature**: A brief written statement of the environmental aspect being impacted upon by a particular action or activity;
- **Extent**: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration**: Indicates what the lifetime of the impact will be;
- **Intensity**: Describes whether an impact is destructive or benign;
- **Probability**: Describes the likelihood of an impact actually occurring; and
- **Cumulative**: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

The criteria to be used for the rating of impacts are provided in **Table 21**.

Table 21: Criteria to be used for the rating of impacts

Score	Rating	Description
Consequence Descriptors		
Severity or Intensity – defines the magnitude of the impact		
5	High	Natural, cultural and social functions and processes are altered to extent that they permanently cease
4	Moderately High	Natural, cultural and social functions and processes are altered to extent that they are severely impaired and may temporarily cease
3	Moderate	Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way
2	Moderately Low	Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a slightly modified way
1	Low	Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
Extent – relates to the extent of the impact		
5	Entire system	Entire habitat unit / Entire system/ > 2000ha impacted / Linear developments affected >3000m
4	Regional	Regional within 5 km of the site boundary / < 2000ha impacted / Linear developments affected < 3000m
3	Local	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear developments affected < 1000m

Score	Rating	Description
2	Larger site boundary	Development specific/ within the site boundary / < 100ha impacted / Linear developments affected < 100m
1	Immediate site	Activity specific/ < 5 ha impacted / Linear developments affected < 100m
Duration – relates to the duration of the impact		
5	Permanent	The impact will continue indefinitely and is irreversible
4	Long term	Life of operation
3	Medium term	One year to five years
2	Medium short	One month to one year
1	Short term	One day to one month
Likelihood Descriptors		
Probability – relates to the likelihood of the impact occurring		
5	Definite	More than 75% chance of occurrence. The impact is known to occur regularly under similar conditions and settings
4	Highly likely	The impact has a 41 - 75% chance of occurring and thus is likely to occur. The impact is known to occur sporadically in similar conditions and settings
3	Likely	The impact has a 10 - 40% chance of occurring. This impact may / could occur and is known to occur in low frequencies under the similar conditions and settings
2	Possible	The possibility of the impact occurring is low with less than 10% chance of occurring. The impact has not been known to occur under similar conditions and settings
1	Highly unlikely	The possibility of the impact occurring is negligible and only under exceptional circumstances
Severity of Impact		
5	Natural, cultural, social aspect very highly sensitive/important	
4	Natural, cultural, social aspect highly sensitive/important	
3	Natural, cultural, social aspect moderately sensitive/important	
2	Natural, cultural, social aspect limited sensitivity/importance	
1	Natural, cultural, social aspect not sensitive/important	

Significance is determined through a synthesis of impact characteristics (**Table 22**). Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact. Impact significance is expressed as:

Significance = Likelihood (Frequency of the activity + Frequency of impact) x Consequence

(Severity + Extent + Duration)

Table 22: Significance rating matrix

	CONSEQUENCE (Severity + Spatial Scope + Duration)														
LIKELIHOOD (Frequency of activity + Frequency of impact)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Table 23: Impact significance categories

Significance Rating	Value	Impact Management Recommendation	Positive Impact Management Recommendation
Very High	126-150	Critically consider the viability of proposed projects. Improve current management of existing projects significantly and immediately	Maintain current management
High	101-125	Comprehensively consider the viability of proposed projects. Improve current management of existing projects significantly	Maintain current management
Medium-high	76-100	Consider the viability of proposed projects. Improve current management of existing projects.	Maintain current management
Medium-low	51-75	Actively seek mechanisms to minimise impacts in line with the mitigation hierarchy.	Maintain current management and/or proposed project criteria and strive for continuous improvement
Low	25-50	Where deemed necessary seek mechanisms to minimise impacts in line with the mitigation hierarchy	Maintain current management and/or proposed project criteria and strive for continuous improvement
Very Low	1-25	Maintain current management and/or proposed project criteria and strive for continuous improvement.	Maintain current management and/or proposed project criteria and strive for continuous improvement
Neutral	/	Impact is neither positive or negative	

9.2 Mitigation Measures

The mitigation actions provided below are important to consider with other specialist assessment. These mitigation measures should be implemented in the Environmental Management Programme (EMPr) should the project go-ahead. The mitigation hierarchy proposed by Macfarlane *et al*., (2016) was considered for this study.

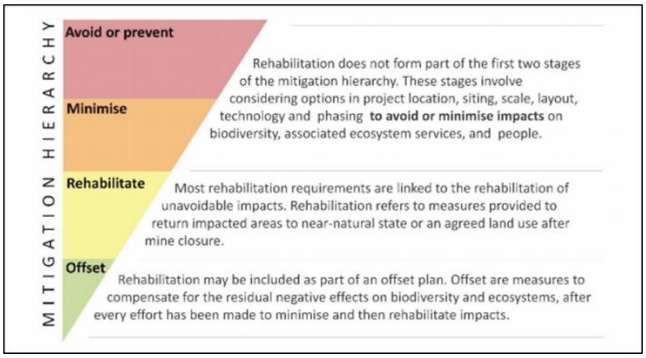

Figure 32: The Mitigation Hierarchy (Macfarlane et al., 2016)

9.3 Impacts and Significance

The section below describes the significance and impacts of the proposed development during the construction, operational and decommissioning phase. In addition, provision has been made for the no-go alternative and the cumulative impacts.

9.3.1 Construction Phase

Table 24: Impacts associated with the proposed development during the construction phase

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Activity: Site preparation prior to construction **Impact**: ▪ Exposure of soils, leading to increased runoff, erosion and stream incision, and thus increased sedimentation of the watercourse; ▪ Increased sedimentation of freshwater habitat, leading to smothering of flora and benthic biota and potentially further altering surface water quality; and ▪ Decreased ecoservices provision; and ▪ Proliferation of alien vegetation as a result of disturbances.	Significance: 54 / Rating: Medium Low / Negative	▪ Existing dirt road should be used to gain access to the site. ▪ Crossing delineated wetlands must be minimized. ▪ Removal of vegetation must be minimized, and indigenous vegetation must be kept as much as possible. ▪ It is preferable that construction takes place during the dry season (as much as possible) to reduce the erosion potential of the exposed surfaces;	**Low**
Activity: ▪ Clearing of vegetation to facilitate the development infrastructure. **Impact** ▪ Removal of existing vegetation community which includes the loss of an Ecological Support	Significance: 54 / Rating: Medium Low / Negative	▪ The footprint area associated with the infrastructure construction must be minimised, avoiding sensitive habitat where possible. Areas earmarked for the infrastructure must be marked to ensure a controlled disturbance footprint area. ▪ The removal of vegetation must be limited to the perimeter of the development footprint of the project area; ▪ Demarcating all footprint areas during construction activities; and ▪ All areas outside of the project area are to be considered as a No-Go area, to limit the development footprint	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Area (ESA) and a vulnerable ecosystem during construction.		▪ Erosion prevention and sediment control measures are imperative and need to be implemented throughout the entire project footprint area of the proposed pipeline, access roads and temporary laydown / storage sites. Temporary erosion control methods may include silt fences, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching. These control measures are only applicable for the section of the wetland and ▪ Contamination of the river system with unset cement or cement powder should be negated as it is detrimental to aquatic biota. It is preferable that on-site mixing is avoided and that only prefabricated materials are used.	
Activity: Stripping and stockpiling topsoil **Impact:** ▪ altering hydromorphic soils	**Significance** 96 / **Rating** Medium High / Negative	▪ The first 300 mm of soil must be stockpiled separate from the soil excavated deeper than 300 mm	**Low**
Disturbance and mortality of faunal species due to habitat loss	**Significance** 54 / **Rating** Medium low / Negative	▪ Construction and Operational Phase activities must be limited to the development footprint area within the project area. The areas where vegetation and habitat remain undisturbed, should be avoided for faunal and floral habitat to be maintained in their present state.	**Low**
Further infestation of alien and invasive plant species	**Significance** 70 / **Rating** Medium High / Negative	▪ Carefully regulate / limit access by vehicles and materials to the construction site. Demarcate or fence in the construction area. ▪ Prohibit the introduction of domestic animals such as dogs and cats. ▪ Remove any woody alien species that germinate. ▪ Plant only locally indigenous flora if landscaping needs to be done ▪ Keep construction activities neat and tidy. When complete, remove all sand piles and landscape all uneven ground while re-establishing a good topsoil layer. ▪ Remove Category species using mechanical methods, and minimize soil disturbance as far as possible.	**Low**
Displacement of flora and faunal community due to habitat loss, direct mortalities and disturbance	**Significance** 50 / **Rating** Medium Low / Negative	▪ Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species; ▪ If any faunal SSC are recorded during construction, activities should temporarily cease, and time permitted for the species to move away. In the event the species do not move away (voluntarily), the species must be removed safely from the area and relocated to a suitable area that will not be directly disturbed by the project; ▪ Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals;	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		▪ All termite mounds within the project area should be protected, as these provide habitat for potentially occurring reptile SCC (namely the Striped Harlequin Snake); and ▪ The intentional killing of any animals including snakes, insects, lizards, birds or other animals should be strictly prohibited. ▪ General waste must be collected into suitable water, wind and animal proof waste containers so that it can be removed to a disposal site on a regular basis; ▪ Filter waste must be composted and not disposed of via postproduction water resources; ▪ A suitable bulk service provider must be contracted to remove processing waste; and ▪ Waste must be removed to a recognized disposal site equipped to deal with the waste type of animal waste	
Soil erosion	Significance: 60 / Rating: Medium High / Negative	▪ Soil erosion preventative structures should be built around erosive activities, such as the avoidance of water runoff, and the construction of a drainage system; and ▪ Where vegetation has been cleared, a rough ground cover structure must be created, to avoid runoff but still permitting infiltration, such as 'Rock Ground Cover Landscaping Rocks' or similar structures built.	**Low**
A risk of respiratory health condition due to construction activities	Significance: 60 / Rating: Medium low / Negative	▪ The speed of construction vehicles must be kept under 20km/hour; ▪ Any exposed soil must be watered for the duration of construction, by the use of water trucks and watering sprays, to introduce moisture to the soil; ▪ The distance between the exposed soil and stockpiles must be kept at a minimum, to reduce traveling time, and dust traveling by wind; ▪ The surface of the stockpile must be kept moist, to reduce dust generation; ▪ The surface of the exposed soil must be kept moist, to reduce dust generation; and ▪ Ensure that the cleared land areas during the construction phase are vegetated once their need is fulfilled, to avoid dust generation from the project site during the operation phase.	**Low**
Increase in air emissions	Significance: 60 / Rating: Medium low / Negative	▪ Exhaust emissions from construction vehicles must be minimised by ensuring that all vehicles are properly equipped and serviced. ▪ Vegetation clearance must be limited to approved and demarcated infrastructure development footprints. ▪ If fine building materials, such as sand, are to be transported on the back of trucks, they must be adequately covered. ▪ Excavations and other clearing activities must only be done during the agreed-upon working hours and days ▪ All exposed surfaces must be re-vegetated and/or stabilized as soon as is practically possible. ▪ No burning of waste, such as plastic bags, cement bags and litter, must be permitted at the contractor or restoration sites ▪ A complaints register is provided on the EMPr to report any excessive dust incidents	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		▪ The Contractor must make alternative arrangements (other than fires) for cooking and / or heating requirements. LPG gas cookers may be used provided that all safety regulations are followed.	
Waste generation	**Significance** 80 / **Rating** Medium High / **Negative**	Storage areas for material and equipment shall be situated in a position as agreed in consultation with the ECO. These areas shall be secured to prevent unintended damage or pollution to the environment. All hazardous substances shall be stored within a secured storage area, with impervious lining and bunding. Drip trays must be used where appropriate. **General Waste** ▪ Solid waste generated must be disposed of at the registered landfill site. Bins and / or skips shall be provided at convenient intervals for disposal of waste along the work areas and in the construction camp. ▪ Recyclable waste shall be separated, reused and recycled at approved facilities. Proof shall be available. ▪ Different waste bins, for different waste streams, shall be provided to ensure correct waste separation. **Sewage/ waste water and infrastructure** ▪ Discharge of waste from temporary chemical toilets into the environment must be strictly prohibited. ▪ Ensure that adequate containment structures are provided for the storage of construction materials on site. ▪ Ensure the adequate removal and disposal of construction waste and material **Hazardous waste** ▪ Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site. The contractor must provide proof of disposal ▪ Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container shall be covered with a lid).	**Low**
Increase in run off due to the removal of vegetation and paving	**Significance** 60 / **Rating** Medium Low / **Negative**	▪ The storm water management plan must be incorporated into the site plan of the proposed development site to prevent erosion and the associated sedimentation located in the riparian and instreams areas since this area contains the aquatic macroinvertebrate species that rely on this aquatic ecosystem. ▪ The runoff from the paved surface, access roads, and cleared areas need to be curtailed. ▪ The runoff from the paved surface should be slow down by using the strategic plan of placement of beams.	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		▪ The erosion beam should be installed to prevent siltation of the riparian resources and gully formation. The following points should be used as the guide when placing the erosion berms: ❖ When the track slope is less than 2%, beams should be installed every 50m. ❖ When the track slope is between 2% and 10%, beams should be installed every 25m. ❖ When the track slope is between 10% and 15%, beams should be installed every 20m. ❖ When the track slope is more than 15%, beams should be installed every 10m.	
Impact on potential land for cropping	Significance: 56 / Rating: Medium Low / Negative	▪ Loss of 13.6 ha of potential cropping land that is non-arable is negligible ▪ Vegetation clearance must be limited to the demarcated development footprints.	**Low**
Impact of loss of grazing veld and grazing potential	Significance: 56 / Rating: Medium Low / Negative	▪ Loss of 14.4 ha of veld with a carrying capacity of 2 animal units is negligible ▪ Vegetation clearance must be limited to the demarcated development footprints.	**Low**
Social Impacts (Residents)	Significance: 150 / Rating: Very High / Positive	▪ Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area during construction. ▪ Local communities or local community organizations shall be given preference in supplying services and labor to the construction activities. A roster of "temporary labor" must be kept indicating "origin" of employee. ▪ Temporary structures on site must be located such that they have as little visual impact on local residents as possible. Lighting on site is to be set out to provide maximum security and to enable easier policing of the site, without creating a visual nuisance to local residents or businesses. ▪ Lighting on the construction site must be pointed downwards and away from oncoming traffic and nearby houses.	**Very Low**
Site Contamination Due To The Storage And Handling Of Hazardous Substances	Significance: 80 / Rating: Medium High / Negative	▪ The storage of fuels and hazardous materials must be located away from all identified sensitive water resources. ▪ All hazardous substances, including fuel, oil, and cement, must be stored in a bunded area. ▪ The recommendations of the Stormwater Management Plan must be implemented throughout the construction phase. ▪ Spill kits must be readily available on site throughout the construction phase. ▪ Drip trays must be placed under all stationary plant. ▪ If a spill occurs on a permeable surface (e.g. soil), a spill kit must be used to reduce the potential spread of the spill immediately. ▪ If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. ▪ Contaminated remediation materials must be carefully removed from the area of the spill, to prevent the further release of hazardous chemicals to the environment and ▪ stored in adequate containers until appropriate disposal at a suitably licenced landfill site	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Noise Pollution	<table><tr><td>Significance</td><td>Rating</td><td rowspan="2">Negative</td></tr><tr><td>70</td><td>Medium Low</td></tr></table>	▪ Construction activities must be undertaken according to working hours stipulated by the Applicant i.e. during daylight hours only. ▪ Construction vehicles and equipment generating excessive noise must be fitted with appropriate noise abatement measures ▪ Construction workers must be provided with the appropriate PPE i.e. ear plugs. ▪ A complaints register shall be provided to record any complaints regarding excessive noise. All complaints received must be investigated and a response given to the complainant within 14 days. ▪ All construction vehicles must be in sound working order and meet the necessary noise level requirements. ▪ All relevant municipal by-laws, with regards to noise control, must apply. ▪ Construction workers must not make use of portable radios, vehicle radios, whistles, and other items which generate excessive noise, while they are on the construction site.	**Low**
Water Pollution	<table><tr><td>Significance</td><td>Rating</td><td rowspan="2">Negative</td></tr><tr><td>80</td><td>Medium High</td></tr></table>	**Storm water** ▪ To prevent storm water damage, the increase in storm water run-off resulting from construction activities must be estimated and if necessary, the drainage system must be assessed accordingly. A drainage plan must then be submitted by the Applicant for approval by the ECO. ▪ Temporary cut off drains and berms may be required to capture storm water and promote infiltration. ▪ Storm water must be disposed of without causing soil saturation, erosion, sloughing and without affecting the integrity of the stream. ▪ The storm water leaving the site premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapor or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises. **Water Quality** ▪ Storage areas that contain hazardous substances must be bunded with an approved impermeable liner ▪ Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity ▪ Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. Waste from these should then be disposed of to a suitable waste site. ▪ Every effort should be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site ▪ Site staff shall not be permitted to use the stream for the purposes of bathing, washing of clothing or for any construction or related activities. Municipal water (or another source approved by the	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		Applicant) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting etc. ▪ Deterioration of water quality needs to be avoided and the current PES must be maintained or improved upon ▪ Ensure that adequate containment structures are provided for the storage of construction materials on site. ▪ Ensure the adequate removal and disposal of construction waste and material	
Disturbance and loss of heritage resource	**Significance** 60 / **Rating** Medium low / **Negative**	▪ A Chance finds procedure (CFP) should also be implemented in the event that stone tools are identified underground ▪ Should skeletal or archaeological remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted. ▪ Section 36 (6) of the National Heritage and Resources Act, 25 of 1999 also states that should culturally significant material be discovered during the course of the said development, all activities must be suspended pending further investigation by a qualified archaeologist ▪ A desktop paleontological study by an accredited palaeontologist will be required before any development may proceed	**Low**
Visual Impacts	**Significance** 56 / **Rating** Medium low / **Negative**	▪ No specific mitigation measures are required other than standard construction site housekeeping and dust suppression. **These are included below:** ▪ The contractor(s) should maintain good housekeeping on site to avoid litter and minimise waste. ▪ Litter and rubble should be timeously removed from the construction site and disposed at a licenced waste disposal facility. ▪ The project developer should demarcate construction boundaries and minimise areas of surface disturbance. ▪ Appropriate plans should be in place to minimise fire hazards and dust generation. ▪ Night lighting of the construction site should be minimised within requirements of safety and efficiency.	**Low**
Health and safety	**Significance** 56 / **Rating** Medium low / **Negative**	▪ Ensure that a skilled and competent Contractor is appointed during the construction phase. The Contractor must be evaluated during the tender/appointment process in terms of safety standards. ▪ The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate. ▪ The Contractor must undertake a Construction Phase Risk Assessment. ▪ A Construction Site Manager or Safety Supervisor should be appointed, in conjunction with the project manager, to monitor all safety aspects during the construction phase. This could be the same person that is assigned to co-ordinate the construction traffic.	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Traffic, congestion and potential for collisions	Significance: 56 / Rating: Medium low / Negative	▪ Ensure that roads are not closed during construction, which may restrict access for emergency services. ▪ The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate.	**Low**
Fire Risk	Significance: 80 / Rating: Medium High / Negative	▪ Open fires must not be permitted within the proposed site during the construction phase. ▪ Smoking must be restricted to designated smoking areas which have easy access to fire-fighting equipment. ▪ The Contractor, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires. ▪ The Contractor and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on-site during the construction phase. ▪ The Contractor and/or the appointed fire marshal must ensure that all site personnel are aware of the risk of fires, the procedure to be followed in the event of a fire and that all site personnel have access to the relevant contact details of the nearest Fire and Emergency Services	**Low**

9.3.2 Operational Phase

Table 25: Impacts associated with the proposed development during the operational phase

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Stormwater Management and Soil Erosion	Significance: 60 / Rating: Medium low / Negative	▪ The Stormwater Management Plan, compiled and implemented during the construction phase, must include operational phase management measures for implementation throughout the operational phase. ▪ The site must be monitored regularly for signs of erosion by the ECO. Remedial action must be taken at the first signs of erosion. ▪ Stormwater management measures must be evaluated frequently to ensure proper functioning of stormwater structures. ▪ An operational phase Stormwater Management Plan must be designed and implemented, with a view to prevent the passage of concentrated flows from hardened surfaces and onto natural areas.	**Low**
Dewatering the borehole	Significance: 56 / Rating: Medium Low / Negative	▪ Groundwater depletion may take place at the abstraction borehole if not managed correctly as such the borehole should be managed constantly ▪ Groundwater levels should be monitored regularly	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		▪ Discharge water from the processing operations should be disposed of in a safe manner, should the water become contaminated over time it should either be stored in dedicated PCD's for reuse at the processing plant or treated prior to discharging into the environment.	
Hydrocarbon spills	Significance: 80 / Rating: Medium High / Negative	▪ Farm employees and supervisors at workshops, yellow metal laydown areas and fuel storage areas should be trained in hydrocarbon spill response and each of these areas should be equipped with the appropriate spill response kits ▪ Contaminated soil must be disposed of correctly at a suitable location. Should these management measures be put in place the impact on the receiving environment would be reduced to a low impact.	**Low**
Fire Risk	Significance: 80 / Rating: Medium High / Negative	▪ The maintenance personnel, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires. ▪ The maintenance personnel and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on site during the operational phase. ▪ The maintenance personnel must be aware of the risk of fires, the procedure to be followed in the event of a fire and they must have access to the relevant contact details of the nearest Fire and Emergency Services	**Low**
Sewerage waste management	Significance: 80 / Rating: Medium High / Negative	▪ All wastewater application on land must be in accordance with the DWS's guidelines in terms of wastewater use. ▪ Ensure adherence to wetland buffer zones and soil quality monitoring requirements as stipulated in these guidelines. ▪ The depth to aquifer must be more than 5m for dewatered sludge application and must be more than 10m for liquid sludge application. The distance from surface water or borehole must be more than 400m. ▪ The conservancy tank must be serviced regularly to prevent overflow from the tank. Regular inspections must be undertaken. The size of the conservancy tank must be sufficient to store flow for a 1 month period. Fortnightly service intervals are recommended to ensure that the tank always has sufficient capacity. These time frames can be adjusted based on actual usage figures and observations.	**Low**
Soil and water pollution due to poor waste management	Significance: 56 / Rating: Medium low / Negative	▪ Waste containers must be available on site at all times. ▪ A waste management plan must be adopted and implemented. This plan should consider the type of waste, storage, disposal method and facility as well as methods to reduce waste on site. ▪ Ensure compliance with waste management legislation. ▪ Maintenance staff must be informed that littering is prohibited within the construction site and surrounding areas	
Visual and Aesthetic Impact	Significance / Rating / Negative	▪ All general waste, including litter, must be stored in windproof/sealable containers before being disposed of at a registered landfill site.	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
	50 | Medium Low |	▪ The rehabilitation of disturbed areas must be monitored to ensure successful rehabilitation and the resultant decrease in the visual impact. ▪ The factory Infrastructure must be maintained frequently to reduce the risk of degradation of the infrastructure	
Establishment of Alien Plant Species	Significance: 60 | Rating: Medium High | Negative	▪ The Alien Vegetation Management Plan must be compiled and implemented to prevent the establishment and the spread of undesirable alien plant species during the Operational Phase. ▪ Monitoring of the establishment of alien seedlings should continue throughout the Operational Phase. Any alien seedlings should be removed and disposed of at a registered landfill. ▪ A Rehabilitation Management Plan must be compiled and implemented during the Operational Phase. ▪ limit access by vehicles and materials to the site ▪ Prohibit the introduction of domestic animals such as dogs and cats. ▪ Plant only locally indigenous flora if landscaping needs to be done. ▪ Employ best practices regarding tilling of soil and weed management ▪ Minimize the accumulation or dispersal of excess fodder on site. ▪ Remove Category species using mechanical methods, and minimize soil disturbance as far as possible. Alien debris could be donated to a local community	**Low**
Impacts Of Noise and lighting on Faunal Population	Significance: 60 | Rating: Medium High | Negative	▪ Regular maintenance and checks of the infrastructure must be undertaken to ensure that infrastructure is within regulated/standard noise limits. ▪ Where possible, external lighting should be avoided, and site access should be minimised	**Low**
Local economy enhancement	Significance: 78 | Rating: Medium High | Positive	▪ Ensure that the proposed infrastructure is maintained appropriately to ensure that all facilities and infrastructure operate within its design capacity to deliver as the market requires. ▪ Enhance the use of local labour and local skills as far as reasonably possible. ▪ Where the required skills cannot be acquired locally, and where appropriate and applicable, ensure that relevant local individuals are trained. ▪ Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small to-medium enterprises and training specifications in the Contractors contract. ▪ Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible	**Low**
Reduction in air quality due to the operational activities	Significance: 56 | Rating: Medium Low | Negative	▪ Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) must be provided at the terminal as required. Mobile fire-fighting equipment should be provided at the berths as a safety precaution during the vessel offloading process. It should be noted that the products planned to be stored at the terminal have high flash points and low volatility. As a result,	**Very Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		fires are unlikely, unsustainable, and can be extinguished with basic fire water and portable fire extinguishers. ▪ Efficient movement of traffic through the entrance and exit in order to reduce congestion and vehicle emissions. ▪ Ensure that the facility is operated in such a manner whereby potential odours are minimised	
Health and Safety	Significance: 60 / Rating: Medium Low / Negative	▪ An Emergency Plan must be drafted and approved in order to deal with potential spillages and fires. Records of practices should be kept on site. ▪ Frequent inspections must be implemented by operating personnel in order to assure and verify the integrity of hoses, piping and other structures. ▪ Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) should be provided at the facility as required.	**Low**

9.3.3 Cumulative Impacts

The cumulative impacts associated with the project will include the loss of vegetation communities at a regional scale which will be exacerbated, the spread of invasive alien plant species which could be exacerbated, and habitat fragmentation and disruption of ecosystem function and process could be exacerbated. The cumulative impact associated with the construction and operation of the proposed UMzimkhulu Metal sheet factory Development, is likely to be of low significance due to the relatively small development footprint. However, to limit the impact, it is important that the Alien Invasive Management Plan is implemented, and that vegetation clearance is strictly limited to the development footprint of the UMzimkhulu Metal sheet factory. Rehabilitation, to restore ecological function, is also important in mitigating cumulative impacts, and it is therefore critical to implement and monitor rehabilitation.

9.3.4 Closure and rehabilitation

Table 26: Impacts associated with the proposed development during the closure phase

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Introduction and proliferation of alien species	Significance: 60 / Rating: Medium low / Negative	▪ Remove Category species using mechanical methods, and minimize soil disturbance as far as possible	**Low**
Soil erosion	Significance: 56 / Rating: Medium Low / Negative	▪ Limit vehicles to the construction site ▪ Closure activities must commence in winter where soil erosion is limited ▪ Revegetate exposed areas with locally indigenous flora immediately ▪ Implement erosion protection measures on site to reduce erosion and sedimentation of the local drainage system. ▪ Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road	**Low**

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
		▪ Discharge water from the processing operations should be disposed of in a safe manner, should the water become contaminated over time it should either be stored in dedicated PCD's for reuse at the processing plant or treated prior to discharging into the environment.	
Disturbance of fauna due to noise	Significance: 80 / Rating: Medium High / Negative	▪ Commence (and preferably complete) demolition / rehabilitation during winter, when the risk of disturbing active (including breeding and migratory) animals, should be least. ▪ Minimize noise to limit its impact on sensitive fauna. ▪ Limit demolition activities to day time hours ▪ Minimize or eliminate security and other lighting, to reduce the disturbance of nocturnal fauna	Low
Stormwater management	Significance: 80 / Rating: Medium High / Negative	▪ The appointed Contractor should compile a Method Statement for Stormwater Management during the closure phase. ▪ Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff.	Low
Dust emissions	Significance: 70 / Rating: Medium High / Negative	▪ Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. ▪ Approved soil erosion mitigation measures may be utilised to limit dust generation. ▪ Ensure that closure vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour.	Low
Noise generation	Significance: 70 / Rating: Medium High / Negative	▪ A method statement, including detailed procedures, must be drawn up prior to any closure of existing tanks. ▪ Decommissioning personnel must wear proper hearing protection, which should be specified as part of the Decommissioning Phase Risk Assessment carried out by the Contractor. ▪ The Contractor must ensure that all decommissioning personnel are provided with adequate PPE, where appropriate	Low
Socio-Economic Benefits	Significance: 70 / Rating: Medium High / Positive	▪ Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.	Low (+)
Waste Management	Significance: 80 / Rating: Medium High / Negative	▪ All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site. ▪ Waste must not be burned on site. ▪ Workers must be informed that littering is prohibited within the site and surrounding areas. ▪ The Waste Management Plan should be should include relevant decommissioning waste management measures and it should be implemented for the duration of the decommissioning phase	Low
Visual And Aesthetic Impacts	Significance: 80 / Rating: Medium High / Negative	▪ All general waste, which is temporarily stored, on site must be done so in windproof/sealable containers before being disposed of at a registered landfill site. ▪ Rehabilitation of the decommissioned footprints must take place as soon as practically possible	Low

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:
Insufficient rehabilitation	**Significance** 80 / **Rating** Medium High / **Negative**	▪ A portion of the operational phase earnings should be set aside for costs associated with the landscaping and re-vegetation of the development footprint. ▪ All temporary disturbed areas that do not form part of development, must be rehabilitated using only indigenous vegetation. All impacted areas must be restored as per the EMPr requirements. A Rehabilitation Plan should be compiled and implemented during the decommissioning phase.	**Low**

9.4 Environmental Impact Statement

9.4.1 Key Findings

9.4.1.1 Agroecosystems and Agricultural Compliance

Based on the on-site agroecosystems assessment, it is my professional opinion that the proposed roofing factory development will have minor if any, significant negative impacts on agricultural land use and potential agricultural land use.

9.4.1.2 Ecological and Wetland Assessment

The ecological and wetland assessments conducted on a portion of land of the farm Bult Fontein, 18269/ES, UMzimkhulu, KwaZulu-Natal in lieu of the proposed establishment of a warehouse facility. Wetlands within 500 meters of the subject and other features of ecological significance were identified, delineated and evaluated. Based on the findings presented in this report the following statements are provided with regards to the nature of the site and the proposed development:

1. The subject site in has been disturbed and modified as a result of past agricultural activities, road way establishment (the R56 and district road), rural settlement and unmanaged grazing /poor veld management.
2. Four HGM units are present, of which 1, HGM unit S1, is likely to be influenced by the proposed activity. HGM unit S1 is a channelled valley bottom wetland consisting of seasonal and temporary wetland conditions and dominated by graminoid vegetation.
3. Such actions have negatively impacted on the wetland systems existent within the site – as evident through the PES score of C "Moderately modified. A moderate change in ecological processes has taken place but the system remains predominantly intact" – as obtained through a level 1 WET-Health assessment (see Table 5 detailing the results).
4. Despite the reduced ecological state of the subjected wetlands, it is evident that HGM unit S1 provides important eco-services at an "intermediate" level overall. Two ecoservices were rated as "moderately high" - Flood Attenuation and Toxicant Removal.
5. The present warehouse design footprint does not encroach into any wetland environment or impede any feature of ecological significance. The proposed footprint is located 185 to 190 m away from HGM unit S1.
6. Given the nature of the site, the establishment of the warehouse facility is considered to be a 'low impact' and 'low risk' activity provided the recommended mitigation measures are implemented.

9.4.1.3 Terrestrial Biodiversity Impact Assessment

Based on the field survey conducted on the 2nd of June 2021 for the site, 7 species of conservation concern were noted Desktop Analysis studies, and 5 for field results for the vegetation assessment (Table 12 & Table 18). The plant species *Senna didymobotrya* was identified, during the filed survey within the project site, and is category 1b listed invasive species. The spreading or allowing the spread of any specimen of a listed invasive species is prohibited, according to National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) Alien and Invasive Species Lists, 2016 (Table 4). The proposed project area shows signs of disturbance and transformation, from the presence previously cultivated land covering the project site, and bare land patches, and walking paths within the project site area. The majority land cover type within the project site is disturbed grassland, which is close to its natural state, with minimal impacts.

All impacts are noted to have a high, medium-high, medium or medium-low significance before mitigation measure can be implemented. These significance ratings are due to the removal of vegetation from the development footprint size, causing soil erosion, habitat loss, faunal and floral disturbance, and the infestation of alien invasive species. The generation of waste caused by the type of activity (Industrial), causes a higher significance rating, leading to bad odours in and around the study area and the potential risk of respiratory health conditions development to the surrounding community. All impacts are however noted to have a low or very low significance rating if all mitigation measures are strictly adhered to.

9.4.1.4 Phase 1 Cultural Heritage Impact Assessment

The proposed Roof Sheeting Factory is situated on the east bank of the R 56 approximately 28 km to the south of the UMzimkhulu CBD. The footprint covers an area of approximately 580m x 440m. It is covered by disturbed grasslands and it is also evident that the area has been cultivated previously. There is no evidence for any heritage site, feature, or artefact associated with the actual footprint. The main anthropogenic footprint is a footpath. There are no visible graves. A rural cemetery occurs approximately 300m to the north of the proposed development. However, these graves are not threatened by the proposed development and there is no need for mitigation. It is also important to note that the footprint does not form part of any known cultural landscape.

9.4.2 Sensitivity Mapping

A cumulative sensitivity map has been drafted for the proposed development.

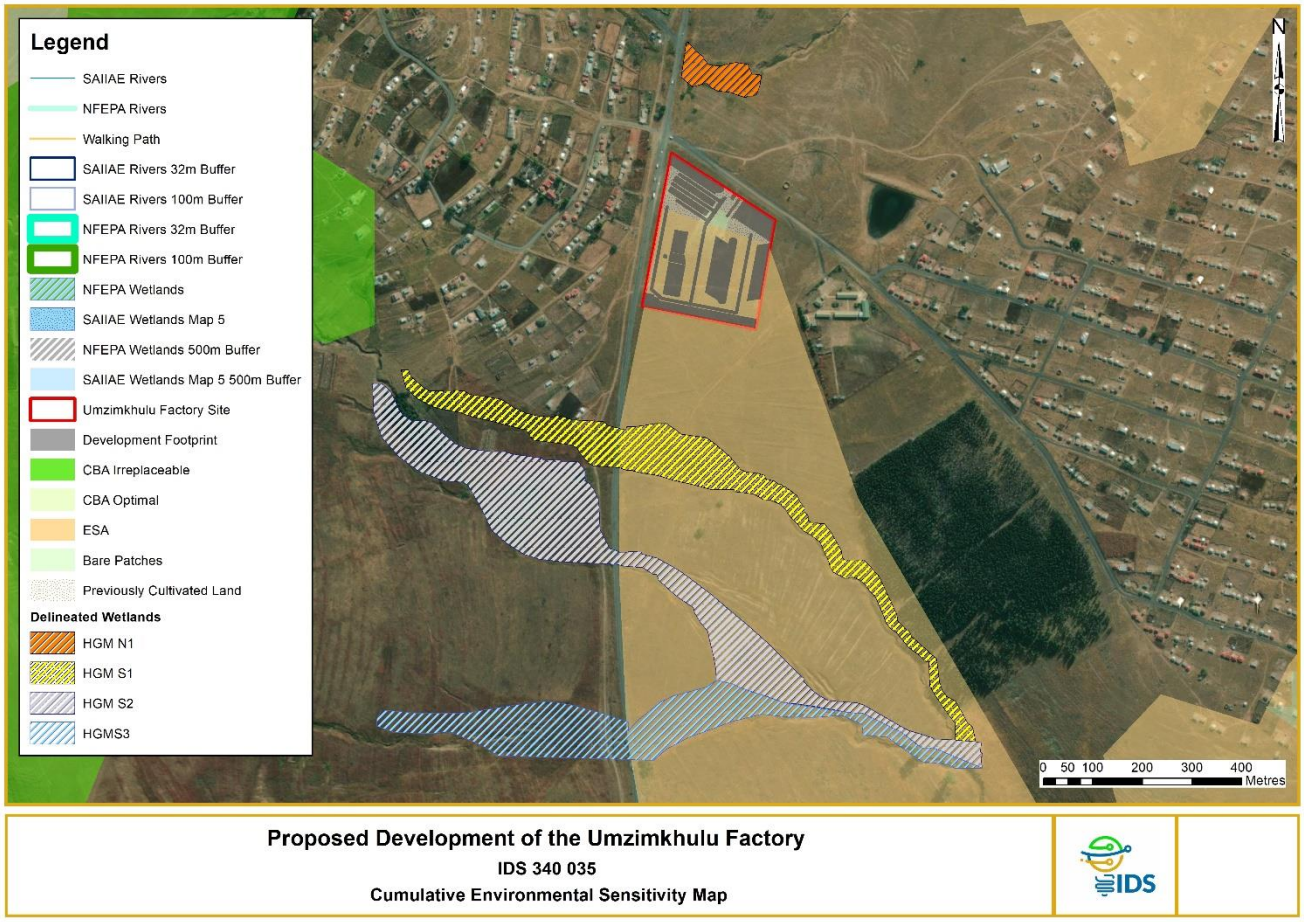

Figure 33: Cumulative sensitivity mapping

9.5 Assumptions, uncertainties or gabs in knowledge

The EIA Regulations, 2014 outline specific requirements that a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures must be provided in the EIR.

The assessments undertaken are based on conservative methodologies and these methods attempts to determine potential negative impacts that could occur on the affected environmental aspects.

These impacts may however be of smaller magnitude than predicted, while benefits could be of a larger extent than predicted. This section outlines various limitations to the specialist studies that have been undertaken and indicates, where appropriate, the adequacy of predictive methods used for the assessment. This has been done to provide the authorities and interested and affected parties with an understanding of how much confidence can be placed in this impact assessment.

9.5.1 Terrestrial Assessment

- Due to the nature of fauna and flora, not all species were likely to have been seen and recorded during the time of the survey. It is for this reason that existing literature is consulted in conjunction with field survey results; and
- The information represented in this report is based on a single dry season site survey conducted on the 2nd of June (winter). For more accurate results, it is feasible to conduct site surveys during each season.
- The assessment was limited to the project area and adjacent areas were not considered for groundtruthing

9.5.2 Ecological and Wetland Assessment

It is assumed that the information provided is up to date and relevant. The study has been undertaken during the month of October 2020, a spring/early summer period. No comparable data is available for other seasons. Seasonal variability in the wetland footprint has not been directly considered, however where possible perceived seasonal variations have been inferred and incorporated into the assessment and interpretations where possible. Recent burning and heavy grazing were noted on site. As a result, floral diversity may be under represented.

10 RECOMMENDATIONS

The recommendation below were developed to address and mitigate impacts associated with the proposed development. These recommendations also include general management measures which apply to the proposed development as a whole. Mitigation measures have been developed to address issues in all phases throughout the life of the operation from planning, through to construction and operation.

- The development of an alien invasive vegetation control and removal plan, which will be implemented during construction and the operational phase of the project;
- A waste management plan for all waste generated during the operational phase of the project must be developed prior to construction taking place;
- Air quality Management plan must be developed before the Construction phase begins; and
- An air quality assessment must be done on a bi-annual basis, to ensure the safety of the air, for the surrounding communities to remain safe from health risk from the air emissions.
- The negative impacts regarding soil and site pollution during the construction and management phases of the development must be mitigated via adaptive management.
- The riparian habitat of 0.9 ha on the southern boundary as well an adjacent buffer of 32 m (total extent is 1.8 ha) must be excluded from the developmental footprint and be retained as a conservation area.
- Maintain the substantial existing setbacks. Changes to the footprint that may result in a smaller setback must be reviewed and the need for a formal buffer setback considered.
- The revised and preferred alternative footprint must be implemented. The Original alternative encroaches in to the adjacent HGM unit.
- Implementation of construction and operation phase stormwater management measures.
- Revegetation of disturbed areas post construction using an *Eragrostis tef* based grass seed mix.
- General construction phase management must be implemented.

11 FINANCIAL PROVISION

No financial provision is required for this type of development in terms of Chapter 2 of the EIA Regulations 2014 as amended. Chapter 2 section 4 states that an applicant or holder of a right or permit must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, exploration, mining or production operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.

12 CONCLUDING STATEMENT FROM EAP

Based on the findings of the Basic Assessment process for UMzimkhulu sheet factory project, it is the opinion of the EAP that the project is authorised on condition that the mitigation measures provided within this report and the EMPr are met and complied with. The EMPr therefore has been identified as an extension of the Environmental Authorisation which the applicant must adhere to. The attention of the applicant is also drawn to the mitigation measures provided by the specialist assessments.

The project applicant, i.e. Leratong Victim Empowerment Co-operative Ltd, is being assisted under the DFFE Special Needs Programme on a pro bono basis as the applicant qualifies as having “special needs”, in particular, in that they do not have the financial means to conduct with BA process without financial support. However, the applicant does not have financial resources to consider site alternatives as the process would require due to the land being tribal land.

The Basic Assessment Process for the proposed project has been undertaken in accordance with EIA Regulations published in Government Notice 982 to 985 of 4 December 2014 (as amended in 2017), in terms of the National Environmental Management Act (NEMA; No107 of 1998). The Basic Assessment Process is aimed at ensuring informed decision-making and environmental accountability, and to assist in achieving environmentally sound and sustainable development. In terms of NEMA (No 107 of 1998), the commitment to sustainable development is evident in the provision that “development must be socially, environmentally and economically sustainable and requires the consideration of all relevant factors”.

NEMA also imposes a duty of care, which places a positive obligation on any person who has caused, is causing, or is likely to cause damage to the environment to take reasonable steps to prevent such damage. In terms of NEMA’s preventative principle, potentially negative impacts on the environment and on people’s environmental rights (in terms of the Constitution of the Republic of South Africa, Act 108 of 1996) should be anticipated and prevented, and where they cannot be altogether prevented, they must be minimised and remedied in terms of “reasonable measures”.

In assessing the environmental feasibility of the proposed project, the requirements of all relevant legislation has been considered, including inter alia:

- The Constitution of South Africa (No. 108 of 1996);
- National Environmental Management Act (Act No. 107 of 1998) (as amended) and EIA Regulations 2014 (as amended in 2017);
- National Environmental Management: Waste Act (Act No. 59 of 2008) (as amended);
- National Environmental Management Biodiversity Act (Act No. 10 of 2004);
- National Environmental Management: Protected Areas Act (Act No. 57 of 2003);
- National Environmental Management: Air Quality Act (Act No. 39 of 2004);
- National Water Act (Act No. 36 of 1998) (as amended);
- National Heritage Resources Act (Act No. 25 of 1999);
- Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended);
- Hazardous Substance Act (Act No. 15 of 1973) and Regulations; and
- Occupational Health and Safety Act (Act No. 85 of 1993).

12.1 Reasoned opinion as to whether the proposed activity should or should not be authorized

Due to the site having low impacts following implementation of mitigation measures, it is therefore recommended by the EAPs that the proposed layout and preferred site (this proposal) be included in the Environmental Authorisation (should such authorisation be granted for the proposed project).

The public has been requested for their comments. All comments received during the Public Participation Process has been included in this BAR and EMPr. These comments have been addressed as far as possible to the satisfaction of the interested and affected parties. The management of the impacts identified in the impact assessment for all phases of the proposed project will be undertaken through a range of programmes and plans contained in the EMPr. Consideration of the programmes and plans contained within the EMPr, layouts and method statements compiled for the project, which is assumed will be effectively implemented, there will be significant reduction in the significance of potential impacts.

Based on the above, it is therefore the opinion of the EAP that the activity should be authorised.

12.2 Period for which the Environmental Authorisation is required

It is requested that the Environmental Authorisation, if issued by the Competent Authority, be valid for a period of ten (10) years from the date of signature.

13 DECLARATION BY EAP

I, **TERISA BALMITH**, ID Number; **8602240114087**, as the appointed EAP hereby declare/affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any 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, and that:
- In terms of the general requirement to be independent:
    - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
    - am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);

- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Competent Authority or the objectivity of any report, plan or document prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;

28/06/2021

Signature of the EAP: Date:

INFORMATION DECISION SYSTEMS

Name of company (if applicable):

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