



Emvelo Quality and Environmental consultant (PTY) Ltd
Promenade Building, 1st Floor, Unit D2, 24 Lira Link CBD,
Richards Bay, 3900. P.O. Box 101672, Meerensee, 3901
Tel: 035 789 0632, Cell: (078) 2849 332 Fax: 086 577 5220,
email: info@emveloconsultants.co.za

DRAFT BASIC ASSESSMENT REPORT

DC28/0001/2021: KZN/EIA/0001482/2021

**THE PROPOSED CULTIVATION OF LAND FOR THE
PLANTATION OF SUGARCANE ON THE WILTON
PARK FARM, WITHIN THE JURISDICTION OF THE
CITY OF UMHLATHUZE MUNICIPALITY, KING
CETSHWAYO DISTRICT, KWAZULU-NATAL.**

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Prepared by:

**Emvelo Quality and Environmental
Consultant (PTY) Ltd.**

Prepared for:

Zululand Nguni (PTY) Ltd

Name of the Developer	Zululand Nguni (PTY) Ltd
Contact Person	William Christjan McGeer
Address	Portion 3, Ntambanana, Empangeni
Contact Number	081 366 0268
Email Address	williemcgeer@gmail.com

Environmental Assessment Practitioner (EAP) Details

Name of Consultancy	Emvelo Quality and Environmental Consultant (PTY)Ltd
Professional affiliation body	Pr. Sci. Nat (SACNASP) EAPASA IAIAsa Affiliate Member
Name of EAP's	Phumzile Lembede (BSc. Honours in Environmental Management) Selby Mabuza (BSS in Geography and Environmental Management)
Reviewer	Dumisani Myeni (BSc. Honours in Environmental Management)
Postal Address	P.O. Box 101672, Meerensee, 3901
Physical Address	Promenade Building, 24 Lira Link, Unit D2, 1st Floor, Richards Bay CBD.
Telephone Number	035 789 0632
Cell Phone	078 284 9332
Fax Number	086 577 5220
Email Address	info@emveloconsultants.co.za

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LIST OF ACRONYMS

BAR	Basic Assessment Report
BSP	Biodiversity Sector Plan
COM	City of uMhlathuze
CFP	Chance Finds Procedure
DWS	Department of Water and Sanitation
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DOT	Department of Transport
EMPr.	Environmental Management Programme
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
KCDM	King Cetshwayo District Municipality
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act 107 (Act 107 of 1998)
NEMPAA	National Environmental Management: Protected Areas, 2003 (Act 57 of 2003)
I&AP	Interested and Affected Parties
EAP	Environmental Assessment Practitioner
GA	General Authorisation
SCADA	Supervisory Control and Data Acquisition
SCC	Species of Conservation Concern

GLOSSARY OF ITEMS

ARCHAEOLOGICAL RESOURCES: includes (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artifacts, human and hominid remains and artificial features and structures; (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation; wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, 1994 (Act 15 of 1994), and any cargo, debris or artifacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artifacts associated with military history which are older than 75 years and the site on which they are found.

BIODIVERSITY: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

BASIC ASSESSMENT: The process of collecting, organizing, analyzing, interpreting and communicating information that is relevant to the consideration of the application, in terms of Listing Notice 1 (GNR 327 and 324 of 2017) of NEMA (as amended).

CONTRACTOR: companies and or individual persons appointed on behalf of the client to undertake activities, as well as their sub-contractors and suppliers.

DEVELOPMENT FOOTPRINT: any evidence of physical alteration because of the undertaking of an activity.

ENVIRONMENT: in terms of the NEMA (as amended), the “environment” means the surroundings within which humans exist and that are made up of:

- the land, water, and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) of (ii) and the interrelationships among and between them;

- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

ENVIRONMENTAL CONTROL OFFICER (ECO): an individual nominated through the client to be present on-site to act on behalf of the client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities as prescribed in NEMA.

ENVIRONMENTAL IMPACT: the change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr): a detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the lifecycle of the project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

GENERAL WASTE: waste that does not pose an immediate hazard or threat to health or the environment and includes domestic waste; building and demolition waste; business waste; and inert waste.

GENERAL WASTE LANDFILL SITE: a waste disposal site that is designed, managed, permitted and registered to allow for the disposal of general waste.

HAZARDOUS WASTE: hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

HYDROLOGICAL SYSTEM: water bodies and their connectivity to the welfare of an ecosystem.

INDIGENOUS VEGETATION: refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

INTERESTED AND AFFECTED PARTY (I&AP): for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, an interested and affected party contemplated in Section 24(4) (a) (v), and which includes (a) any person, group of persons or organization interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

MITIGATION: the measures designed to avoid reduce or remedy adverse impacts.

POLLUTION: NEMA defines pollution to mean any change in the environment caused by the substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people or will have such an effect in the future.

REHABILITATION: rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before the disruption.

WATER POLLUTION: the National Water Act, 1998 (Act 36 of 1998) defines water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful (a) to the welfare, health or safety of human beings; (b) to any aquatic or non-aquatic organisms; (c) to the resource quality, or (d) to property.

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

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

EXECUTIVE SUMMARY

Zululand Nguni (PTY) Ltd proposes to cultivate land for the plantation of sugarcane on the Wilton Park Farm, within the jurisdiction of the City of uMhlatuze, King Cetshwayo District, KwaZulu-Natal. This will require the clearance of 17.8ha of indigenous vegetation. The total size of the farm is 65ha, and it is located on Portion 2 of the Remainder Farm 11484 at the Wilton Park Farm, 2km North-East of Empangeni Town.

The farmer also intends to clear some alien invasive plants that are within the farm, along the Mandozi River, an unnamed stream, and a few national wetlands. Other activities on site will include ploughing, planting, and harvesting of sugar cane as well as soil fertilizing, weed management, pest, and disease control to ensure optimum production.

Within and around the farm there are two (2) Hydrogeomorphic (HGM) units, which are classified as Channelled Valley-bottom wetlands systems. The southern part unit (HGM 1) is characterised by cultivated sugarcane plantations and alien invasive species, and lesser extents of Bullrush.

The vegetation of the study area is described as Maputaland Coastal Belt (CB 1) and its regional conservation status is Vulnerable. A small portion of the study area falls under the Subtropical Alluvial Vegetation (Aza 7) and its regional conservation status is Least Threatened. There are no faunal or floral species of conservational concern that were identified on site.

Envelo Quality and Environmental Consultant has been appointed by Zululand Nguni (PTY) Ltd (the applicant), as the independent Environmental Assessment Practitioner (EAP), to facilitate the Basic Assessment Processes required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) for this application.

The NEMA, and the Environmental Impact Assessment (EIA) Regulations (2014) as amended in 2017, govern the process of applying for environmental authorization for certain developments. A provision in the EIA Regulations is made for two forms of assessment: Basic Assessment and Scoping & EIA, depending on the scope of the activity. The EIA regulations specify that: Activities identified in Listing Notice 1 and 3 (GNR 327 and 324 of 2017) requires a Basic Assessment while activities identified in Listing Notice 2 (GNR 325 of 2017) are subject to a Scoping and EIA. This application will follow a Basic Assessment. The listed activity associated with the proposed development is Listing Notice 1, Activity 27.

The Public Participation Process (PPP) has, to date, included: displaying onsite notices, placing an advertisement in the Zululand Observer Newspaper (local isiZulu newspaper), distribution of Background Information Documents (BIDs), as well as the circulation of the draft Basic Assessment Report (BAR) to the relevant Interested and Affected Parties (I&APs).

1 INTRODUCTION

Emvelo Quality and Environmental Consultant has been appointed by Zululand Nguni (PTY) Ltd, to undertake an Environmental Impact Assessment (EIA) for the proposed cultivation of land for the plantation of sugarcane on the Wilton Park Farm, within the jurisdiction of the City of uMhlathuze Municipality, King Cetshwayo District, KwaZulu-Natal.

This will include the facilitation of the Basic Assessment Processes as required in terms of the NEMA for this application.

2 PROJECT TITLE

The proposed cultivation of land for the plantation of sugarcane on the Wilton Park Farm, within the jurisdiction of the City of uMhlathuze Municipality, King Cetshwayo District, KwaZulu-Natal.

3 PROJECT DESCRIPTION

Zululand Nguni (PTY) Ltd proposes to cultivate land for the plantation of sugarcane on the Wilton Park Farm, within the jurisdiction of the City of uMhlathuze, King Cetshwayo District, KwaZulu-Natal. This will require the clearance of 17.8ha of indigenous vegetation. The farmer also intends to clear some alien invasive plants that are within the farm, along the Mandozi River, an unnamed stream, and a few wetlands.

The total size of the farm is 65ha, and it is located on Portion 2 of the Remainder Farm 11484 at the Wilton Park Farm, 2km North-East of Empangeni Town.

4 PROJECT LOCALITY

The development is on the Wilton Park Farm, located on Portion 2 of the Remainder Farm 11484, which is approximately 2km North-East of Empangeni Town, within the City of uMhlathuze, King Cetshwayo District, KwaZulu-Natal.

Figure 1 provides the geographical context of the proposed development site, in relation to major towns or cities within the municipality.

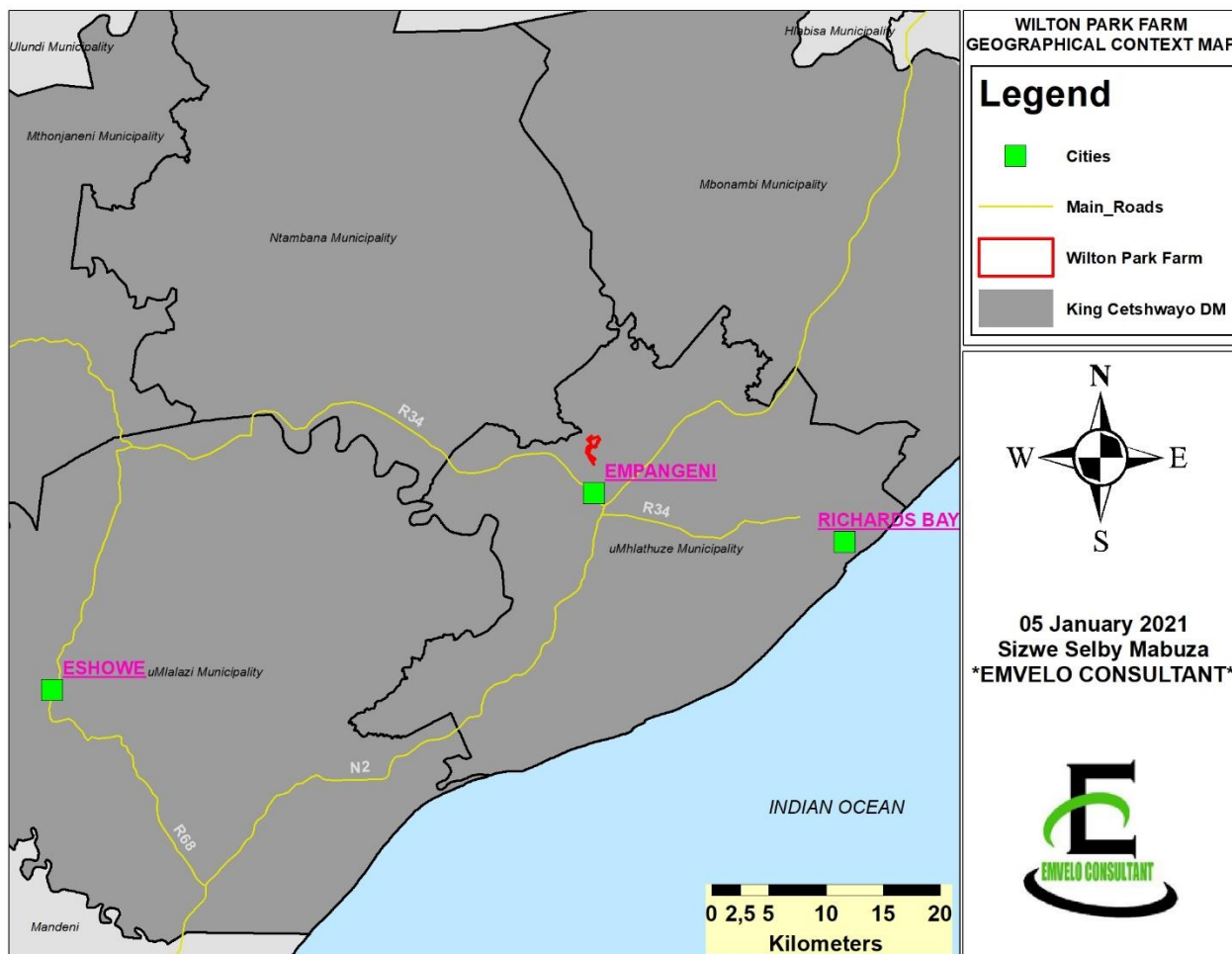


Figure 1: Geographic context of Wilton Park Farm

Table 1 provides the geographical co-ordinates for the proposed development site.

Table 1: Co-ordinates

WILTON PARK FARM			
Latitude & Longitude	Degrees	Minute	Seconds
South	28°	43'	10.57"
East	31°	53'	51.05"

Table 2 provides the 21-digits Surveyor General Code (SGC)

Table 2: 21-digits Surveyor General Code

N	O	G	S	0	0	0	0	0	0	0	0	8	2	8	1	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

The Figure 2 below is the locality map for development, indicating the farm boundary, a 500m buffer of the farm, NFEPA and National Wetlands, NFEPA river, local streams as well as the indigenous vegetation cover within the proposed farm.

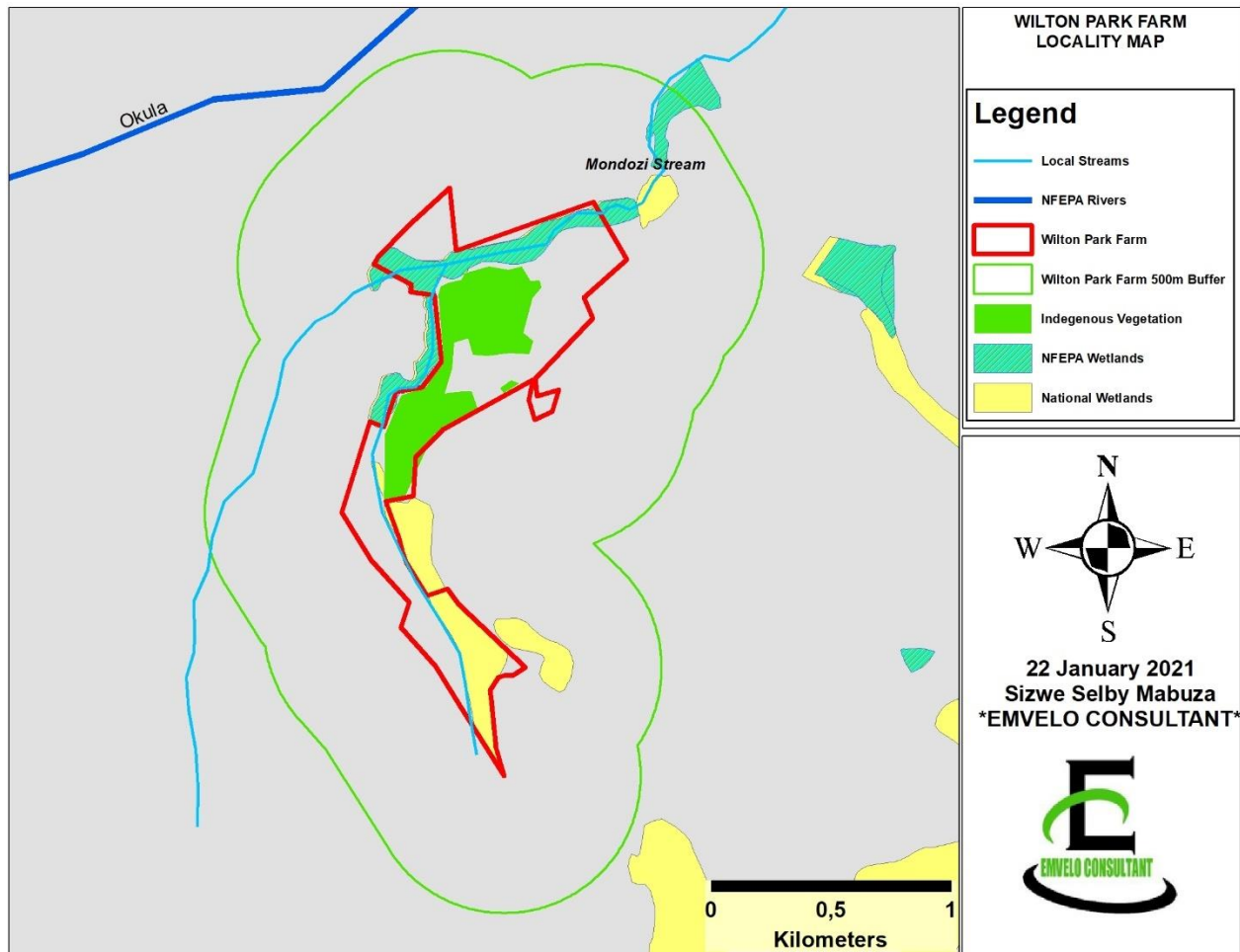


Figure 2: Locality map of the project area

5 SITE ACCESS

The site can be accessed via the western bypass, coming from Life Empangeni Private Hospital. From the Life Empangeni Private Hospital, head north west on Ukula street for 600m, then turn right, to the western bypass road. You continue on the western bypass road for 1.2km, and turn right to the P337 road, then continue for 400m, and you arrive to the site.

6 SUGARCANE FARMING

The following sugarcane planting methodology has been adopted by the farmer, as per the Sugarcane Production Guideline provided by the Department of Agriculture, Forestry and Fisheries (DAFF, 2014).

6.1. Soil preparation

The farmer will use the hand tools / mechanical land preparation approach to prepare their land for sugarcane cultivation. Ploughing will ensure that the soil is broken into fine even particles to help the roots of the new sugarcane plants reach food and moisture and also to incorporate previous crop residues and organic manures. Destruction of the old crop can be done by either mechanical or chemical means. Chemical preparation and planting is to be undertaken by means of furrow openers.

Sugarcane does not require a fine tilth, through the excessive use of machinery damaging soil structure. Land shaping will be done to provide the required gradient for draining excess water during rainy season.

6.2. Fielding

It will involve the initial levelling of the field, contour planning and the designation of roads to ensure ease of access to the field, without affecting areas outside of the farm. Sugarcane will be planted by adopting two systems, i.e., furrows system and flat system. In all these systems sugarcane setts are directly planted.

In the finely prepared field, ridges and furrows are formed using a tractor and some small farmers open furrow manually also. Flat system: for planting, shallow furrows are opened with a plough and the setts are dropped and covered by soil.

6.3. Planting

The cane setts will be manually placed end to end (or overlapping) together with fertilizer in the furrow and then covered with soil.

Timing of the planting operation

Under rain-fed conditions planting is recommended to be done from September to November (spring) once the rain has soaked the soil.

Row spacing

Closer spacing tends to result in higher yields, provided there is adequate moisture in the soil. Row and plant spacing for manual planting is 1.0 to 1.3m x 0.5 m. The setts are planted at a degree angle or laid horizontally in a furrow and thereafter are covered lightly with soil until they sprout then the sides of the furrow are turned inwards. Optimum cover is 50 mm of soil. Covering of the soil is best done by hand and compressed by foot to eliminate excess air pockets.

Depth of planting

Furrows for planting should be approximately 100 mm deep. Sets should be cut into five bud lengths.

6.4. Fertilisation

Fertilisers will be applied to promote development of the plant. Fertiliser will be spread by hand by applying a standard container of fertiliser over a predetermined length of cane row. Mechanical distributors may also be used to apply fertilizer. Sugarcane crop producing huge quantity of biomass generally demands higher amounts of nutrient elements. For producing higher cane and sugar yields on a sustainable basis application of adequate amounts of fertilizer nutrients viz., N, P and K is essential.

A soil analysis for the correct quantity of fertilisers for sugarcane will be undertaken.

6.5. Irrigation

The sugarcane will be rain-fed. This will eliminate the need to extract water from the surrounding watercourses, which could negatively affect aquatic life.

6.6. Weed control

Weed control methods employed will be either hand weeding or by application of herbicides. It is necessary to spray herbicide (weed killer) in order to prevent weed competition and losses in sugarcane production.

Weeds can also be removed from the field manually by hand hoeing. It is also important to note that when the sugarcane is taller, sunlight cannot reach the ground, preventing most weed growth.

6.7. Harvesting

Cane will be cut annually and manually by cane cutters from the surrounding local communities so to promote maximum employment opportunities for unskilled and semi-skilled people from the local community.

Harvest maturity

Sugarcane can be harvested after 12 to 16 months when it is 2 to 4 m tall. It is ideal to harvest sugarcane between April and December when rainfall is less frequent and the plant's sugar content is at its highest. Traditionally, sugarcane is burnt before harvesting to remove leaves, weeds and other trash that delay harvesting and milling. Sugarcane is harvested green rather than burnt. It is necessary to harvest green sugarcane.

For this development the cane will be burnt for the first few years, until the whole farm is replanted then the farmer will make use of trashing, which will entail no burning at all.

Harvesting methods

The sugarcane will be harvested by hand. Harvesting is done manually using various types of hand knives (such as cane knives) or hand axes. Among the several tools, the cutting blade is usually heavier and facilitates easier and efficient cutting of sugarcane.

When harvested by hand, the field is first set on fire. The fire spreads rapidly, burning away dry, dead leaves, but leaving the water-rich stalks and roots unharmed. With knives, harvesters can cut the standing sugarcane just above the ground. With mechanical harvesting, sugarcane combine, or chopper harvester is used. Machines move along the rows of cane removing the leafy tops of the cane and cutting the stalks into short pieces.

7 ACTIVITY MOTIVATION

The King Cetshwayo District Municipality (KCDM) has developed a strategic focus, of intensifying and formalising existing agriculture and providing the necessary support and infrastructure, rather than expanding cultivation agriculture into marginal areas (KCDM IDP).

Also, in accordance with the National Government promotion of Local Economic Development Initiatives, the City of uMhlathuzes' IDP promotes a diversity of economic activities and the Local Economic Development Plan makes provision for growth in the commercial sector by encouraging new initiatives (COM IDP 2020).

7.1 The need

Agriculture is a national and provincial development priority mainly for food security and economic development, and of which in its various forms is expressed as the high potential areas as mapped at a National scale by the DAFF (COM IDP 2020).

The proposed farming project will play a huge role in boosting the economy of the region, and national GDP, through the optimization of arable land, for national food security and employment opportunities. This will be mostly from the total agricultural harvesting, processing, and manufacturing of raw and refined sugar, syrups, specialised sugars, and a range of by-products.

Also, the proposed farming project entails the removal of alien invasive species, which were identified within and along the streams and wetlands on the proposed farm. The removal of these alien invasive species will allow for the rehabilitation of these water sources, to regain their aquatic and ecological functioning.

7.2 Desirability

The KCDM EMF states that securing economic opportunities to support livelihoods for all the inhabitants of the KCDM is a high priority. According to the municipality, most of these opportunities are associated with forestry and paper mills, mining and processing, heavy industry, the Richards Bay Port and IDZ, sugarcane farming and mills (agriculture), tourism and the public sector. The City of uMhlathuze also identified high rate of unemployment and a sluggish economic growth as one of the key challenges (COM IDP 2020).

It must be noted that the agriculture, as any economic activities has an economic multiplier effect. The proposed farming project will have positive economic impacts, as many livelihoods and associated businesses within the region will benefit from the farm operation.

Also, during the lifecycle of the proposed project, it is expected that there will be more social and economic opportunities for the local people, through the creation of long-term employment, which will enable the transfer of skills and boost to local economy.

8 SITE ALTERNATIVE

The Department of Environmental Affairs provides guidelines on the assessment of alternatives, to which the impact assessment be considered DEAT (2004a) and DEAT (2006). These alternatives are; location (site), activity (project), site layout, design, scale, routing, scheduling, process, demand, input and no-go alternatives.

It is, however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the applicant and the appointed Environmental Assessment Practitioner (EAP), which in some instances culminates in a single preferred project proposal.

For this study, the Zululand Nguni (PTY) Ltd is proposing to remove 17.8 ha of indigenous vegetation, for the purpose of cultivating the land to plant sugarcane on the Wilton Park Farm. The proposed project site is privately owned by the Zululand Nguni (PTY) Ltd, hence the site alternative is not being considered, as this is the only property currently available for the proposed activities. Also, the current land-use of the proposed site is agricultural, and the neighbouring sites are sugarcane plantations.

Activities on site for the proposed development will include the clearance of vegetation, ploughing, planting, and harvesting of sugarcane. The sugarcane will be removed; cut and stacked for removal by a loader. Manual cutting and stacking allows for employment opportunities for unskilled and semi-skilled people from the local community.

The following alternatives have been identified for this project.

8.1 Alternative A (Most Preferred Location and Site Layout Alternative)

The proposed Location and Site Layout alternative has been chosen for the following reason: The farming should take place in arable land; The land is one of the fixed commodity privately own by the company.

This alternative proposes for the cultivation of arable land within the farm, with the exclusion of all water courses (wetlands, rivers, dams, and pans) as part of developable land. All areas identified as wetlands that have been degraded will be rehabilitated to regain their functioning, as per the wetland delineation study, and the representation in figure 3 below.

Moreover, a 32 meters buffer will be applied on all watercourses as per recommendations from the specialists. This will aid in preventing, and minimizing potential impact on these watercourses

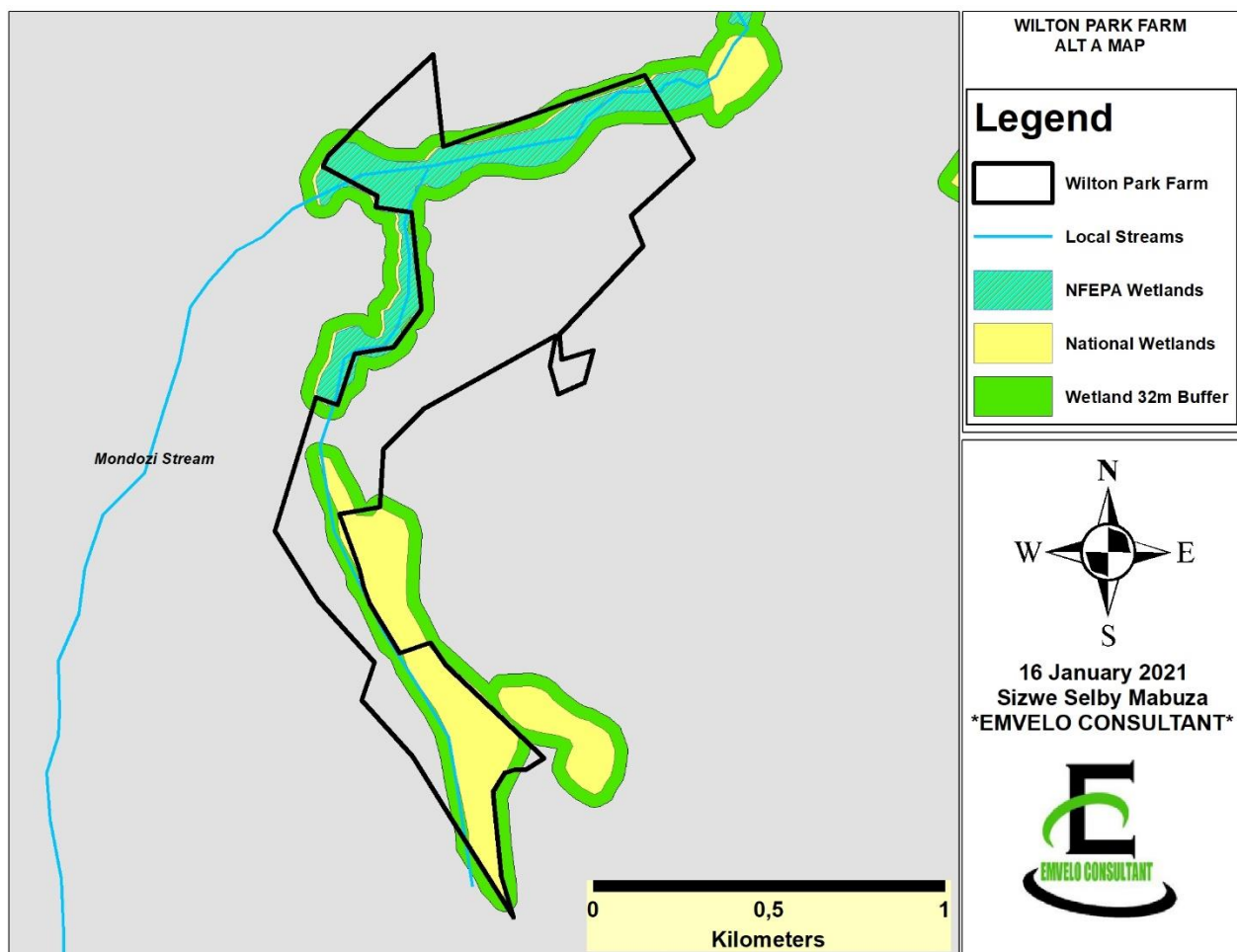


Figure 3: Alternative A Map showing the 32m Buffer of the identified wetlands

Therefore, all areas within the proposed farm, that are not represented as either wetlands or rivers or within the 32 meters buffer zone, will be cultivated by the farmer, see figure 3 above.

8.2 Alternative B

This alternative proposes for the cultivation of all available and arable land, including the parts of the farm where there are functional and already degraded wetland units. This alternative is not favorable as it will result in a complete destruction of all wetland areas on site, and hence affecting the nearest Mandozi stream, and the overall aquatic functioning of the area.

8.3 Alternative C (No-Go Alternative)

This alternative considers the option of 'doing nothing' and maintaining the status quo. There will be no clearance of indigenous vegetation, and no planting of sugarcane will happen, therefore there will be no negative impacts associated with the proposed activity. The ecological functioning and integrity would be preserved. However, there will also be no positive impacts associated with the project, for instance, local economic growth, provision of job opportunities and skills development, as well as the rehabilitation of the already disturbed wetlands units etc.

The EAP is therefore of the view that the NO-GO option is undesirable in the face of social, environmental, and economic needs of the local people and South Africa's National Development Plan 2030 objectives.

9 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

In terms of the Environmental Regulations promulgated under the NEMA, an EIA must be conducted for any development or activity that requires an Environmental Authorisation. The listed activities in the NEMA, relevant to this project, that triggers the need for an Environmental Authorisation are listed below:

Table 3: Environmental Statutory Framework

Legislation	Relevance
Constitution of the Republic of South Africa, (No. 108 of 1996)	<ul style="list-style-type: none"> ➤ Chapter 2 – Bill of Rights. ➤ Section 24 – Environmental Rights.
National Environmental Management Act (NEMA) (No. 107 of 1998)	<ul style="list-style-type: none"> ➤ Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment). ➤ Section 28 – Duty of care and remediation of environmental damage. ➤ Environmental management principles. ➤ Authorities – Department of Environmental Affairs (DEA) (national) and Department of Economic Development Tourism and Environmental Affairs (provincial).
GN No. 326 (7 April 2017)	<ul style="list-style-type: none"> ➤ Purpose - regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing, and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to EIA, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.
	<ul style="list-style-type: none"> ➤ Purpose – to identify activities that would require environmental authorizations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA.

	<ul style="list-style-type: none"> ➤ The investigation, assessment, and communication of the potential impact of activities must follow the procedure as prescribed in regulations 19 and 20 of the EIA Regulations published in terms of section 24(5) of the Act. However, according to Regulation 15(3) of GN No. 327, Scoping and an Environmental Impact Report (S&EIR) must be applied to an application, if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities. ➤ Activities under Listing Notice 1 and Listing Notice 3 that are relevant to this project. 	
<p>GNR No. 327 (7 April 2017) Listing Notice 1.</p>	<p>Activities under Listing Notice 1 that are relevant to this project are as follows;</p> <p>Listed activity 27: The clearance of an area of 1 Hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for -</p> <ul style="list-style-type: none"> (i) The undertaking of linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan. 	<p>Approximately 17.8ha of indigenous vegetation will be cleared prior to the sugarcane cultivation.</p>
<p>National Water Act (Act No. 36 of 1998)</p>	<ul style="list-style-type: none"> ➤ Chapter 3 – Protection of water resources. ➤ Section 19 – Prevention and remedying effects of pollution. ➤ Section 20 – Control of emergency incidents. ➤ Chapter 4 – Water use. ➤ Authority – Department of Water and Sanitation (DWS). 	
<p>National Environmental Management Air Quality Act (Act No. 39 of 2004)</p>	<ul style="list-style-type: none"> ➤ Air quality management ➤ Section 32 – Dust control. ➤ Section 34 – Noise control. ➤ Authority – EDTEA. 	

<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<ul style="list-style-type: none"> ➤ Management and conservation of the country's biodiversity. ➤ Protection of species and ecosystems. ➤ Authority – EDTEA.
<p>Occupational Health & Safety Act (Act No. 85 of 1993)</p>	<ul style="list-style-type: none"> ➤ Provisions for Occupational Health & Safety ➤ Authority – Department of Labour.
<p>National Heritage Resources Act (Act No. 25 of 1999)</p>	<ul style="list-style-type: none"> ➤ Section 34 – protection of structure older than 60 years. ➤ Section 35 – protection of heritage resources. ➤ Section 36 – protection of graves and burial grounds. ➤ Authority – KwaZulu-Natal Amafa and Research Institute
<p>National Road Traffic Act 1996 (Act No. 96 of 1996)</p>	<ul style="list-style-type: none"> ➤ Authority – KwaZulu-Natal Department of Public Works, Roads, and Infrastructure.

10 DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE ACTIVITY

This section provides a general description of the status quo of the receiving environment in the project area. This serves to provide the context within which the Basic Assessment exercise was conducted. It also allows for an appreciation and identification of sensitive environmental features and possible receptors of the effects of the proposed project.

10.1 Climate

The King Cetshwayo District Municipality (KCDM) lies within the summer rainfall area of South Africa. The City of uMhlathuze is characterized by a warm to hot and humid subtropical climate, with warm moist winters.

The figure 4 below presents the climatic graph of the Empangeni Town.

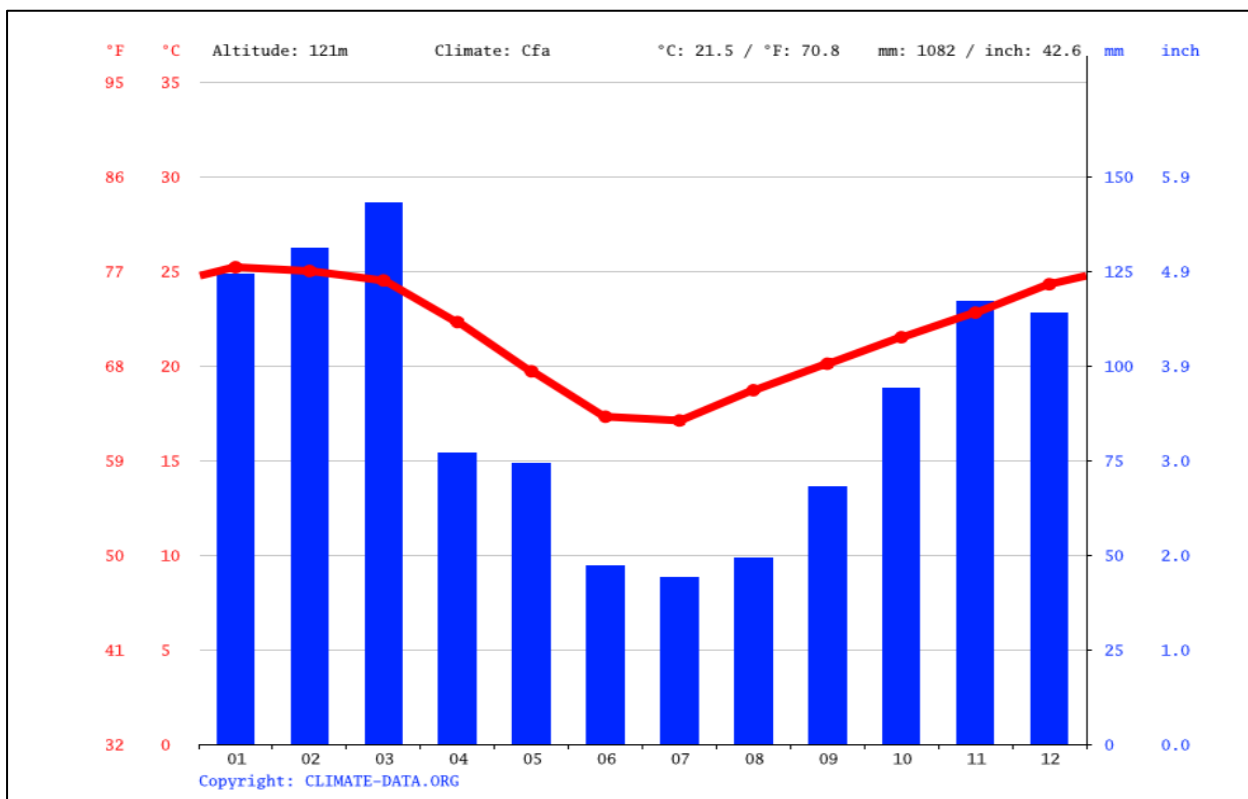


Figure 4: Empangeni Town climate graph [Source: Climate-Data.Org]

The mean annual precipitation in Empangeni is 1042 mm, mainly falling in summer. Empangeni receives the lowest rainfall (44 mm) in July and the highest (143 mm) in March (Figure 4). The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Empangeni range from 17.1°C in July to 25.2°C in January (Figure 4).

10.1.1 Potential impact

There are no direct adverse impacts foreseen in terms of the project to the climate. It is however expected that sugarcane cultivation will increase the crop cover in the area, hence increasing rainfall infiltration, which will be beneficial for the crop growth and groundwater, but also to increase transpiration, which will impact on the climate of the area. The measures to reduce the project's carbon footprint will be considered further in the EMPr.

10.2 Topography

The King Cetshwayo District has a varied topography that extends from the flat coastal plains to inland hilly areas and steep valleys. The flat coastal region comprises of the Natal Coastal Belt and Zululand Coastal Plain with altitudes ranging from sea level to 450 metres. Inland adjacent to the coastal belt, the Lowveld of Zululand to the north east and the Eshowe Block to the west are characterized by hilly topography with altitudes increasing to 900 metres. The terrain becomes more extreme towards the north-west, and in places, the area is characterized by steeply incised valleys with altitudes between 900 and 1 400 metres. The Valley of the Tugela River bounds the district on the west (Uthungulu District BSP, 2014).

The topography of the proposed development site is shown on figure 5 below.

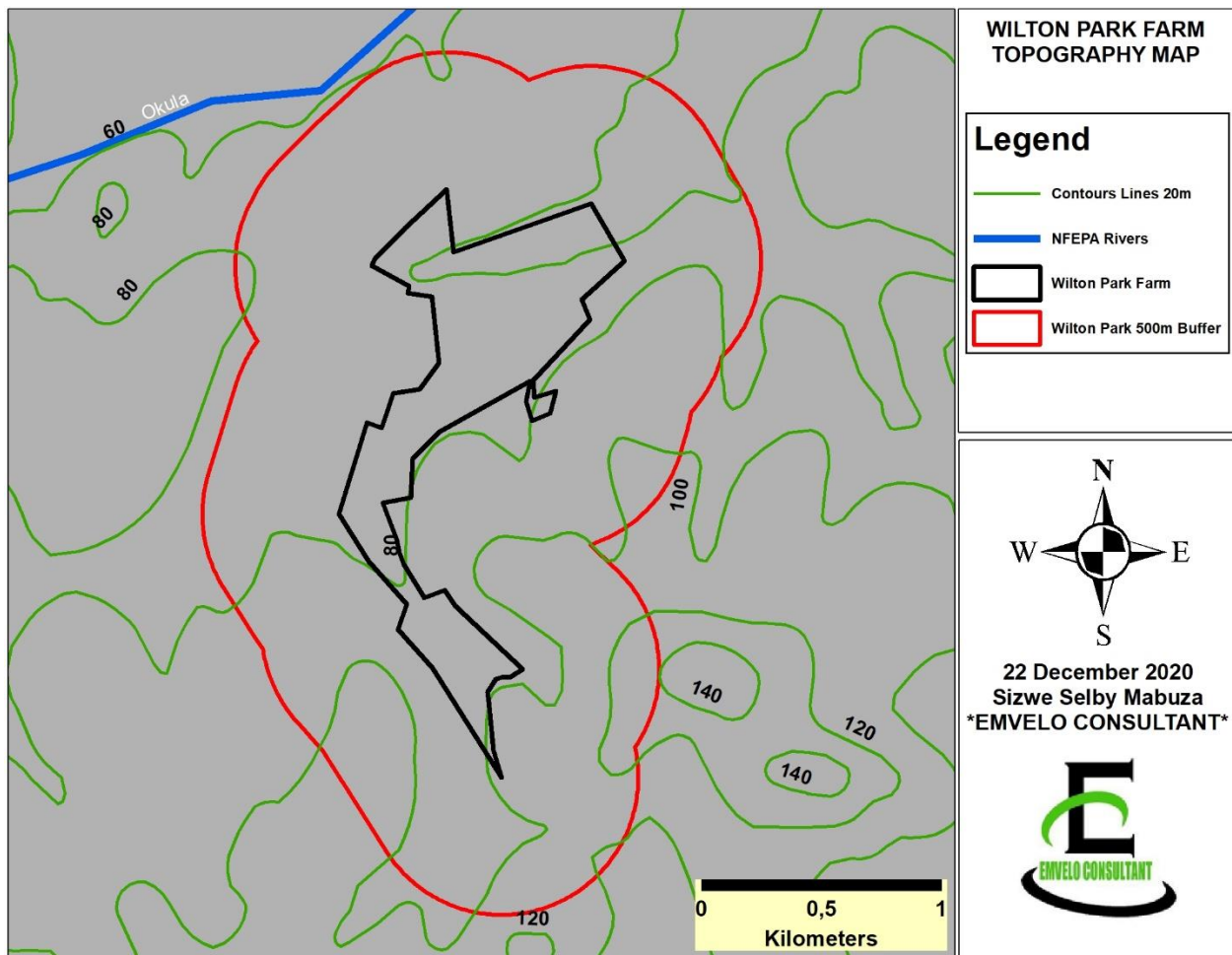


Figure 5: Map showing the topography within the project area

The development site is located between 60 and 100 meters above sea level on the northern section of the local municipality, which is characterized by gentle to steep surfaces.

10.2.1 Potential impacts

Coastal Dune areas are sensitive to change and erosion remains a key concern along a coastline that is susceptible to the sea level rise.

The proposed development will have minimal impacts on the overall topography of the area, provided that soil erosion is prevented. This can be achieved by the mitigation of activities that might exacerbate surface run-off, through carefully implementation of recommendations given by EAP, Specialists, and as well as on the EMPr.

10.3 Geology and Soil

The variation in elevation across the District creates a diverse range of geological forms and thereby soil types. The Coastal belt areas are underlain by Cainozoic and Recent series which include sand stones, shales, and mudstones. This band is narrow to the south and widening northwards towards Mtubatuba. The area being relatively flat has a low risk of erosion. The Central area is underlain by the Ecca and Table Mountain series including granite, sandstone, shales, and limestones. The Ecca derived soils are prone to slight to moderate erosion whilst the Table Mountain series is prone to moderate to severe erosion.

The extreme topography characteristic of the western region is a result of the underlying Table Mountain Series gneiss and granite of the Natal Monocline. Granite derived soils vary considerably but are generally highly productive but are prone to erosion particularly when cultivated on a slope.

The geological makeup of the proposed site is presented on the map below.

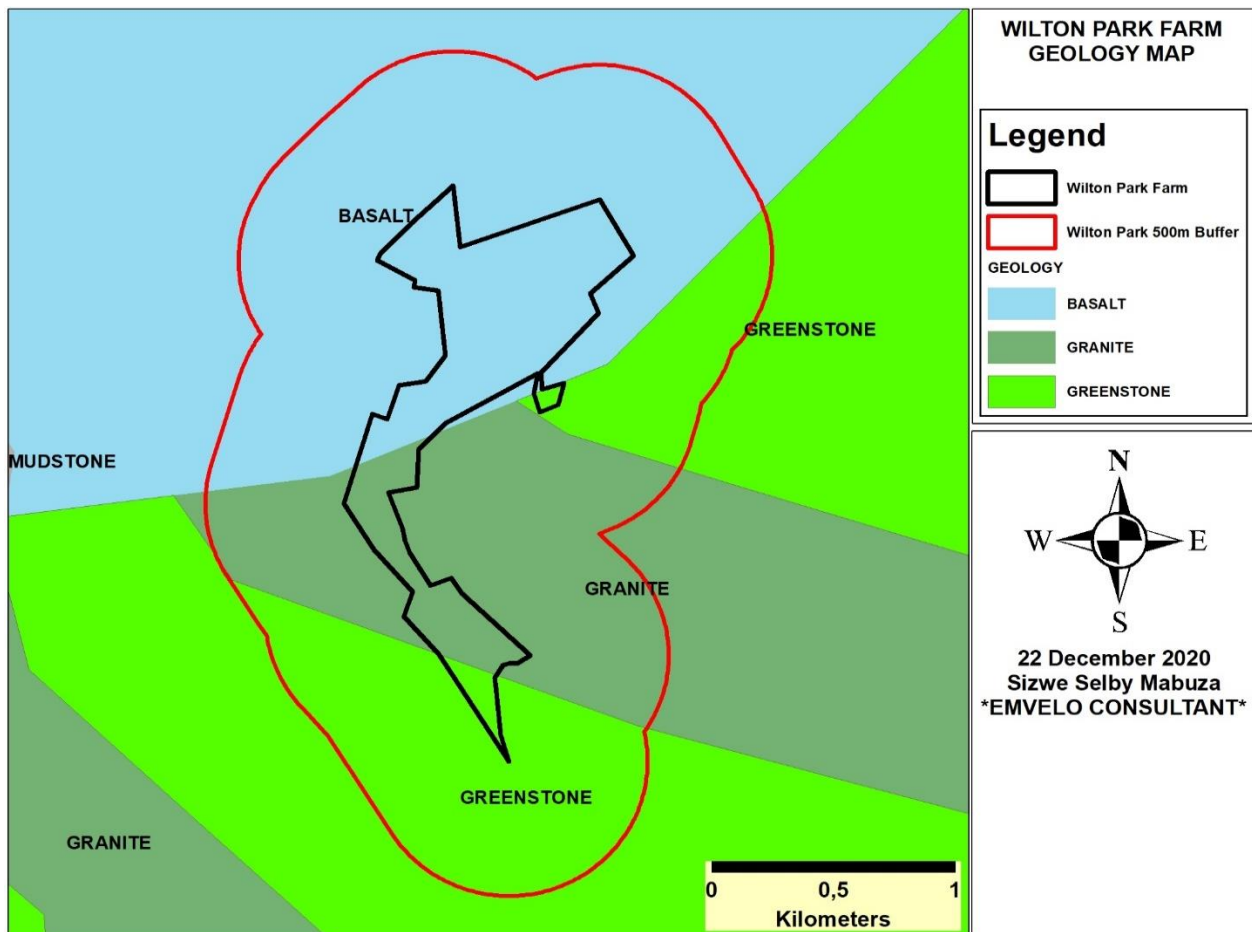


Figure 6: Map showing a dominance geological formation within the project site

The geological composition of the study area is largely dominated by basalt and with some portions having granite and greenstone geological formation (**Figure 6**).

The land type of the project area is the Fb341 land type. The soil forms within this landscape position are the Fernwood (Fw10/Fw 11) soil form and has soil texture of Sandy Loam (SaLm).

The geology and soils of most of the study area consists of Quaternary sediments of marine origin, mainly yellowish and argillaceous redistributed sands (Berea and Muzi Formations of the Maputaland Group, respectively) (Mucina and Rutherford 2006). The geology and soils of a small portion on the study area consists of the recent alluvial deposits with deep fine-structured sandy to loamy soils, waterlogged as it is often exposed to floods and salt often accumulates in the alluvial soils (Mucina and Rutherford 2006).

10.3.1 Potential impacts

The geological formation or makeup of the area may be impacted on due to potential erosion, degradation, and loss of topsoil due to vegetation clearance activities as well as stormwater runoff. Also, the inappropriate handling and storage of hazardous substances, spillages from equipment and plant and poor waste management, wastewater and cement mixing could cause soil contamination.

10.4 Hydrological Features

The geology and geomorphology of the area controls the transport and storage of water and influences the hydraulic functions of the ground water system. Furthermore, the soils are very permeable and almost all the rainfall infiltrates into the groundwater, where it is temporarily stored before being discharged into the streams, lakes and wetlands. Consequently, the streams are generally perennial and seldom stop flowing even in drought conditions. This also creates a large underground storage reservoir that consistently sustains the coastal lakes which form the main water supply resources for the municipality (COM IDP 2020).

The quaternary catchment, rivers, dams and wetlands around the project area are discussed in the following sub-sections.

10.4.1 Quaternary Catchment Areas

The study area is located in the Quaternary Catchment W12H, within the Pongola to Mtamvuna Water Management Area (WMA). The Mean Annual Precipitation (MAP) of the study area is 1 042mm and the Mean Annual Evaporation (MAE) of the study area is 1 350mm (WR 2012). The water from the project area drains towards the northerly direction into the Mandozi River.

The conservation status of the catchment at the study site is **Available**, which is a remaining sub-catchment not selected in the prioritizing process.

10.4.2 Rivers and dams

There is only one major dam within the district, the Goedertrouw dam, found on the Mhlathuze River north of Eshowe. Water is transferred to Goedertrouw Dam via the Thukela-Mhlathuze Scheme (Thukela Water Project). In addition to supplying water for irrigation, domestic and industrial uses, the dam also provides a number of water sports, camping and picnic sites (Uthungulu District BSP, 2014).

The coastal Lakes (Lake Mzingazi, Lake Cubhu and Lake Nsezi) are important water resources for the municipality. The development of Richards Bay in particular, with its industrial development, has seen a significant increase in the abstraction rates of these lakes over the past 20 years.

The figure below indicates the rivers and dams that are within and around the farm.

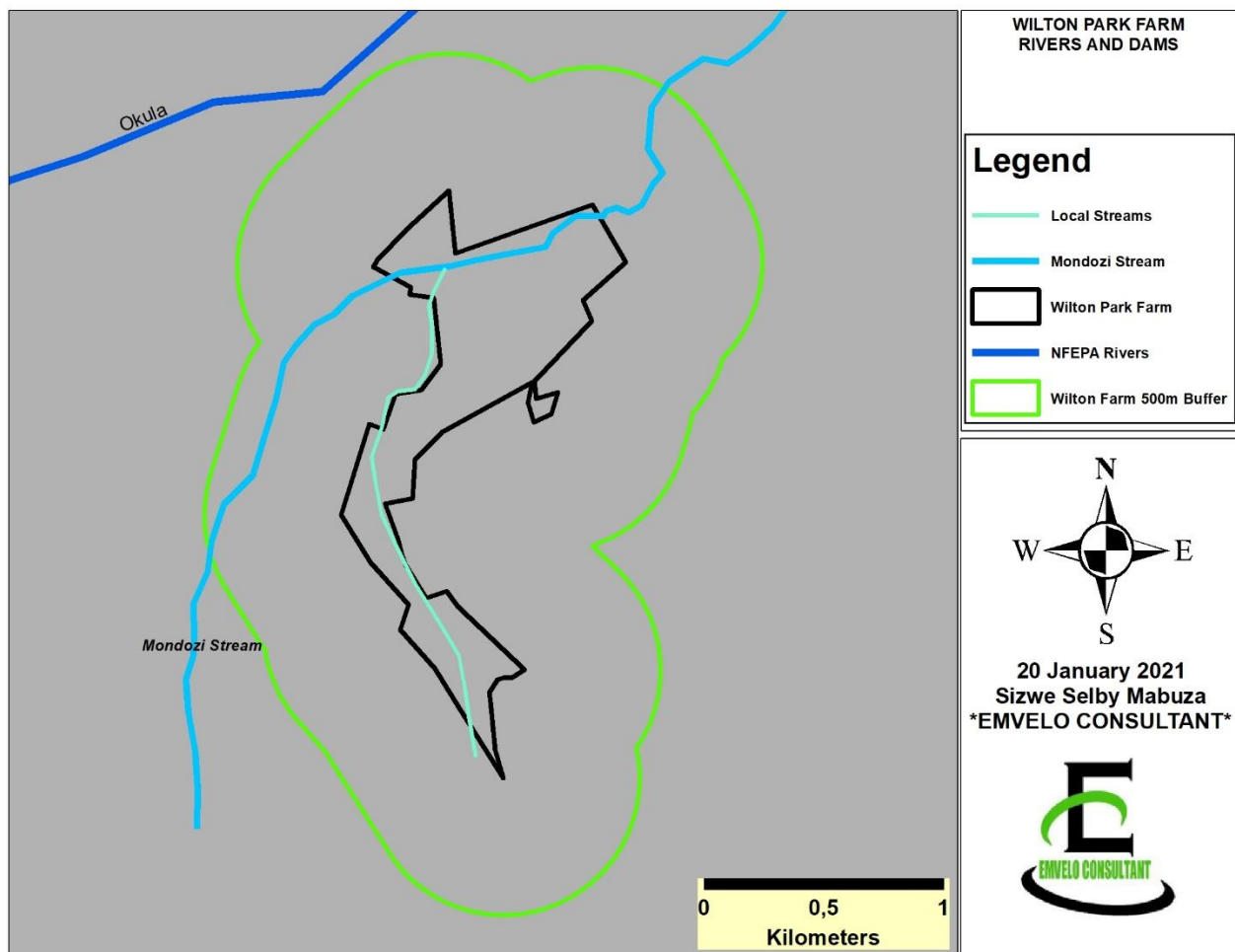


Figure 7: Map showing rivers and dams around the project area

The figure above indicates that around the project site there is the Mandozi river, and an unnamed stream, which has a relatively low water flow (mainly due to the invasive species along the riverbank).

10.4.3 Wetlands

The flat coastal plains have resulted in a number of wetlands and freshwater lakes. Notable wetlands found within the district include Lake Cubhu and the Greater Mhlathuze Wetland System to the south of Richards Bay at Esikhawini, which includes the riverine wetlands on either side of the Mzingwenya River and its tributaries and the lake margin wetlands around Lake Cubhu. The Mbongolwane Wetland found on the upper reaches of the Amatikulu River is also of ecological importance (Uthungulu District BSP, 2014).

The figure below indicates the wetlands that are within and around the farm.

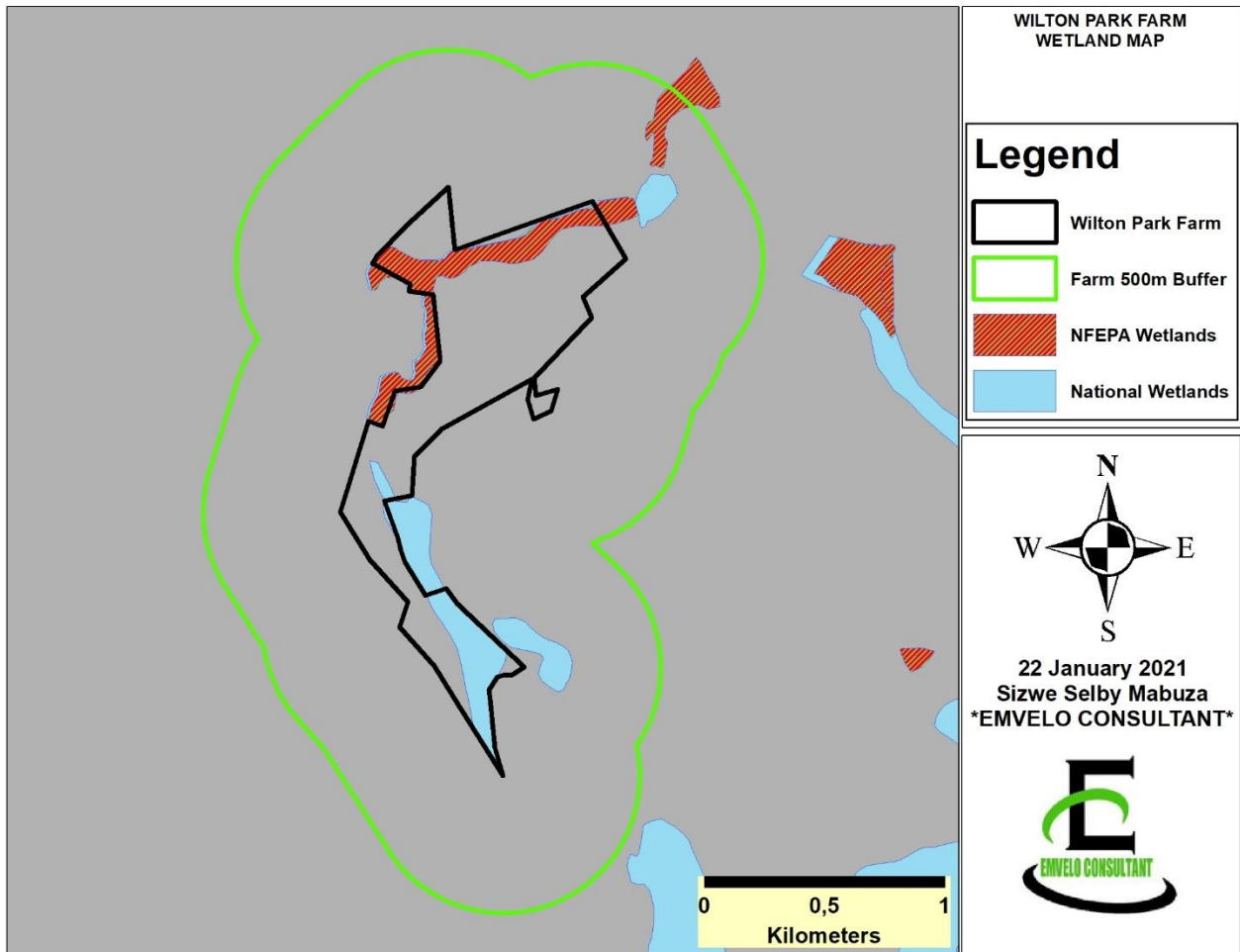


Figure 8: Map showing the wetland features within and around the project area

The figure above indicates that there are two wetland units within and along the boundary of the proposed site. Upon field verification, parts of the southern national wetland unit, indicates signs of degradation, as they have been infested by the alien invasive plants around the farm.

The results of the wetland study also indicated that there is a total of two (2) Hydrogeomorphic (HGM) units, which are classified predominately as Channelled Valley-bottom wetlands systems. The southern part unit is characterised by cultivated sugarcane plantations and alien invasive species, and lesser extents of Bullrush (*Typha capensis*), which serves as a wetland vegetation indicator.

These wetlands form part of the *Indian Ocean Coastal Belt Group 1* (NFEPA WetVeg). The landscape settings of the identified wetlands are described as valley floors.

10.4.4 Ground water availability

The Lake Mzingazi, the Harbour and the Sanctuary (Richards Bay Nature Reserve) are three large water bodies that lie parallel to the coastline within the Mhlathuze Municipality (Uthungulu District BSP, 2014). These bodies collect runoff and subterranean water from the immediate drainage catchment of Richards Bay and from the Mhlathuze in the north-west. The three water bodies are linked to one another via channels and flow into each other depending on the tide and the runoff. These water bodies and their associated drainage systems play a key role in the functioning of the wetland environmental of Richards Bay (Uthungulu District BSP, 2014).

10.4.5 Potential impacts on the project hydrological features

Anticipated impacts include.

- Alteration of the natural flow regime.
- Possible pollution of the river caused by contaminated run-off.
- Potential for increased sediments to enter the system through surface water dispersion.
- Potential for fertilizers and herbicides to enter the wetlands.
- Potential for hydrocarbons leaks and spills to enter.

It is however anticipated that the removal of the alien invasive plants, as per the ecological and wetland specialist recommendations, will assist in ensuring that the watercourses around the proposed site regain their ecological and aquatic functioning, hence improving the whole aquatic system of the local area.

The project would therefore have minimum impact. The recommendations by the Wetland Specialist and the EMPr must be adhered to minimise any impacts that may arise.

10.5 Biomes

The KCDM traverses eight (8) biomes, namely Azonal Forest, Forest, Savanna, Fynbos, Grassland, Indian Ocean Coastal Belt, Wetlands and Open Water and contains 47 vegetation types.

The figure below indicates the biome types that are around the project location.

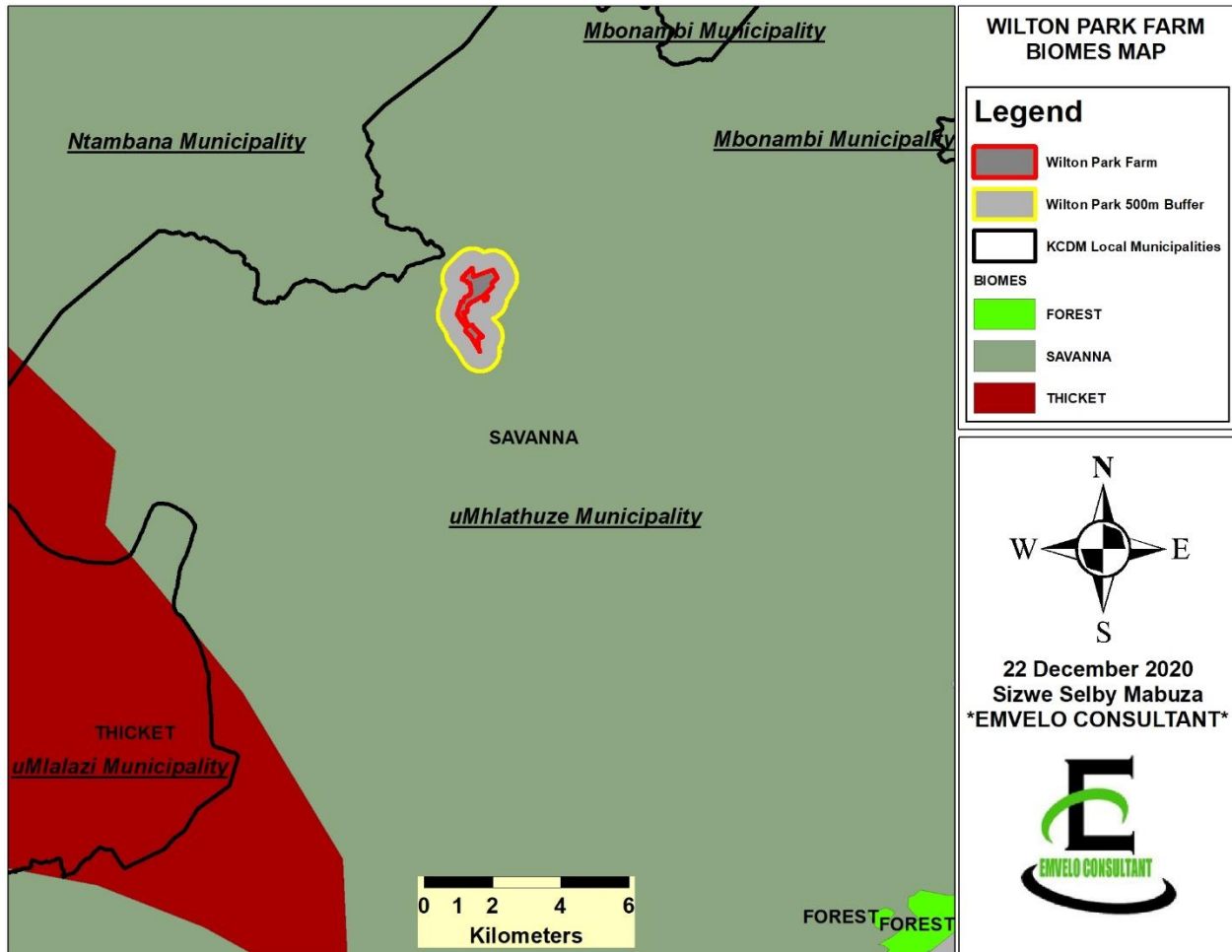


Figure 9: Map Showing the biomes surrounding and within the project area

The proposed site is on the Savanna Biome, which is characterized by the following Vegetation types and Conservation statuses; Eastern Valley Bushveld (*Least Threatened*), KwaZulu-Natal Coastal Belt Thornveld (*Vulnerable*), KwaZulu-Natal Highland Thornveld (*Least Threatened*), KwaZulu-Natal Hinterland Thornveld (*Least Threatened*), Northern Zululand Sourveld (*Least Threatened*), Thukela Thornveld (*Least Threatened*), Thukela Valley Bushveld (*Least Threatened*), Zululand Coastal Thornveld (*Critically Endangered*), as well as the Zululand Lowveld (vulnerable).

10.5.1 Potential Impacts

Potential impacts are associated with the clearance of vegetation for the purpose of cultivation, to plant the sugarcane crops. This may destroy a number of important species found within the vegetation type of the biome where the farm is located.

10.6 Flora

The KCDM has a wide variety of ecosystems and habitats that allows for high levels of biodiversity. According to the KwaZulu-Natal Conservation-Plan, some areas have especially high conservation value with an irreplaceability value of one (the area is totally irreplaceable) due to the presence of endemic species.

Within the district, large, consolidated areas of biodiversity/ecosystem importance remain intact south of the Hluhluwe-iMfolozi Park towards the Fundimvelo/Thula-thula Reserves, while in the west in Nkandla LM, a scattered network of critical biodiversity areas and threatened vegetation types are still in a natural state. East of Eshowe and north of Empangeni, very isolated patches of critical biodiversity remain in a natural state. Also, areas identified as important climate change adaptation (Ecosystem-base Adaptation Areas), are associated with, and stretch across the large forest patches from Qudeni Forest Reserve to Nkandla and Ngoye Forest Reserves.

The City of uMhlathuze falls within the Maputaland-Pondoland-Albany Biodiversity hotspot which is recognized as the second richest floristic region in Africa: containing approximately 80% of South Africa's remaining forests, rich birdlife and many other significant flora and fauna species. The uMhlathuze Municipal Area supports a total of 174 Red Data species, which has been reported as amongst the highest in the country for an area of its size. This remarkable concentration of Red Data Species is one of the main reasons that the remaining percentage of its surface area under indigenous cover is considered largely irreplaceable by KZN Wildlife for meetings its conservation objectives in the province (COM Final IDP 2019).

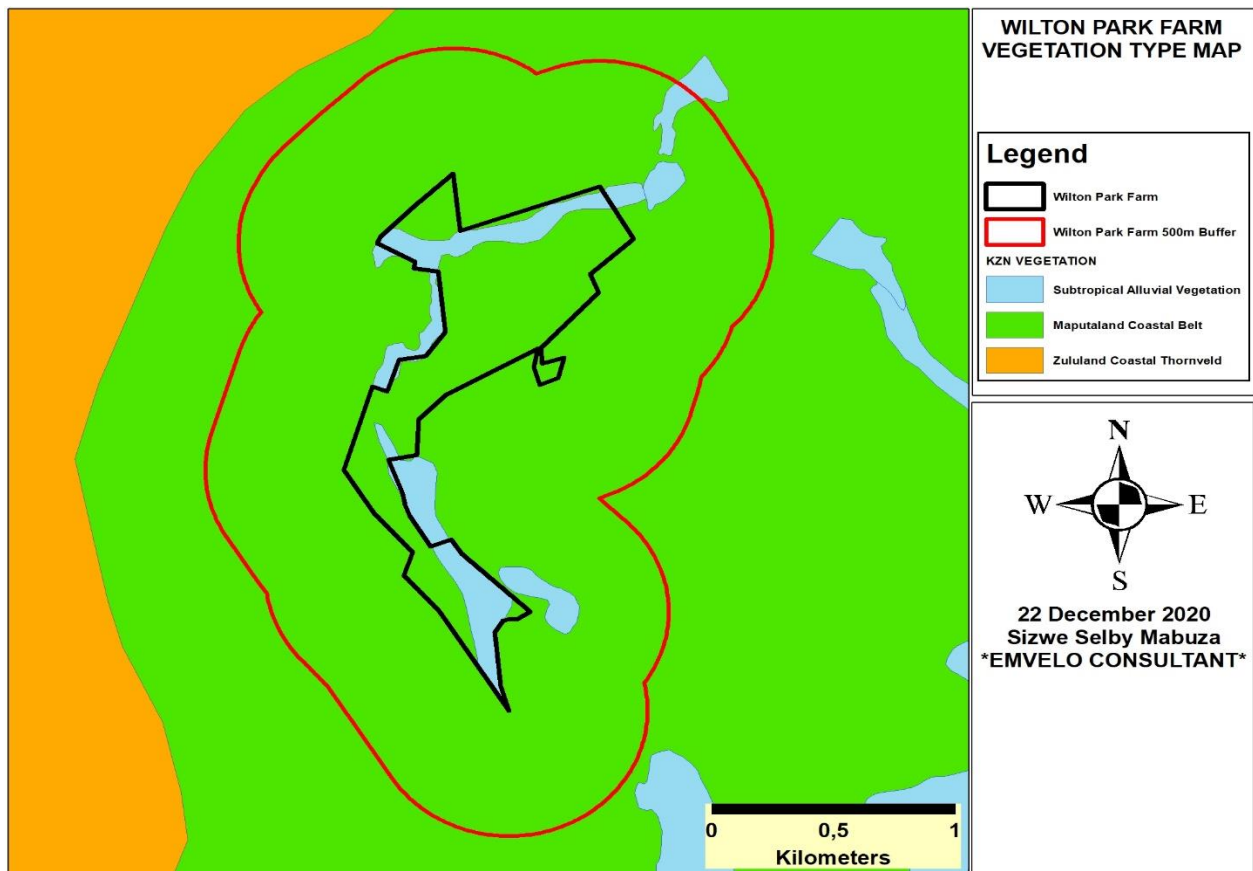


Figure 10: Map showing the vegetation types of the farm

The study area falls under the Maputaland Coastal Belt (CB 1) as well the Subtropical Alluvial Vegetation, which are both endemic (**Figure 10**).

Some of the species found within the Maputaland Coastal Belt (CB 1) include low shrubs: *Agathisanthemum bojeri*; woody climbers: *Abrus precatorius*; herbs: *Achyranthes aspera*; graminoids: *Diheteropogon amplexans*. The conservation status of the Maputaland Coastal Belt is **Vulnerable**, with a 25% conservation target.

The species found within the Subtropical Alluvial Vegetation include *Vachellia spp.* in the riparian thicket; *Phragmites australis* in Reed beds; *Cyperus immenus* and *Cynodon dactylon* in Flooded grasslands and herblands. The conservation status of the Subtropical Alluvial Vegetation is **Least threatened**, with a 31% conservation target.

The majority of the site has been transformed from original vegetation into cultivated agricultural fields in the past. The vegetation condition was relatively poor based on the current observation

of the dominance of *Sporobolus Africana* (Rat's tail dropseed grass), *Sporobolus prymadalis* (Cat's tail dropseed grass) and alien invasive species were also common such as *Lantana camara* (Ubhici), *Psidium guajava* (Guava) and *Schinus terebinthifolius* (Brazilian pepper). In total, 34 species of trees, forbs, grasses, and sedges were identified on site on the 13th of January 2020.

There were no species of conservational concern that were encountered on site.

10.6.1 Potential Impacts

Potential impacts to vegetation could result from the proposed land cultivation for the plantation of sugarcane crops, which will involve the clearance of indigenous vegetation. This may also result in the possible spreading of alien invasive species on disturbed areas.

Also, on the Uthungulu Biodiversity Sector Plan (2014), it was recorded that the Maputaland Coastal Belt had a total cover of 13648.673 hectares, from a historical cover of 76215.5530 hectares, which indicates a total loss of vegetation of 82.09%. It is therefore of vital importance that all the mitigation measures on this report, the specialist report as well as the EMP are adhered to, to prevent and mitigate any further loss of vegetation within this vegetation type.

10.7 Biodiversity Status

Critical Biodiversity Areas are natural or near natural landscapes that are considered critical for meeting biodiversity targets and thresholds, and which safeguard areas required for the persistence of viable populations of species and the functionality of ecosystems (Uthungulu District BSP, 2014).

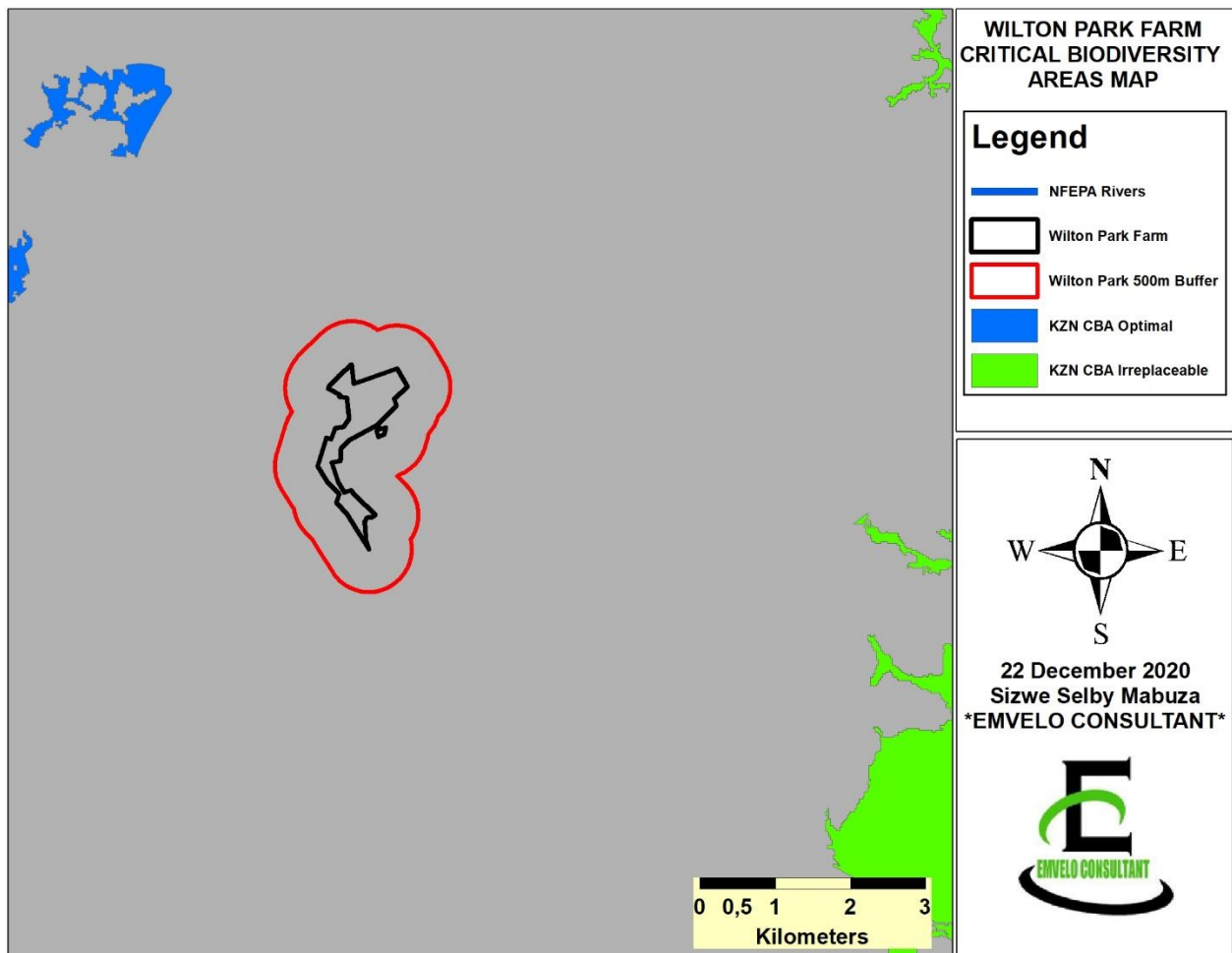


Figure 11: Map showing the Biodiversity Status of the area

There are no CBAs within or in close proximity of the proposed site. The study area is however largely infested by alien invasive plants such as Brazilian pepper. Alien invasive plants directly impact on habitat integrity and biodiversity through the replacement of species and loss of habitat.

The current study site mainly falls under a **Biodiversity Area** which is an area which has not been identified as a Biodiversity Priority area.

10.7.1 Potential impacts

International population growth and development expansion, leading to habitat *destruction*, *degradation*, and *fragmentation*, are the major factors behind biodiversity loss, with South Africa being no exception.

Within the municipality, a large proportion of the Biodiversity Hotspot is being transformed and degraded by human activities, resulting in many vegetation types being vulnerable to further disturbances. These disturbances threaten species complexity and lead to imbalances within ecosystem (COM IDP 2020). Biodiversity is impacted through the direct removal of habitat and species (Uthungulu District BSP, 2014).

The proposed activity may result in the permanent loss of unidentified plant SCC. Also, the clearing of the area for cultivation purposes, as well as other already disturbed areas in the project area are most likely to be infested by the alien vegetation.

10.8 Protected Areas

Protected Areas are terrestrial, aquatic, or marine areas that are formally protected by law and managed mainly for the purpose of biodiversity conservation. Formal Protected Areas are gazetted in terms of the National Environmental Management: Protected Areas Act (NEMPAA).

The KCDM contains a number of formally protected areas (mostly being forest reserves), community conservation areas and game ranches. Although iSimangaliso Wetland Park and Hluhluwe-Imfolozi Park are not within the District, portions of their buffers fall within the District.

The Ngoye Forest Reserve contains species which are common in the area but rare in South Africa, Nkandla Forest Reserve consists of a number of forest reserves and has been, throughout the Zulu history a place of mystery, while Dlinza Forest is one of South Africa's prime birding spots.

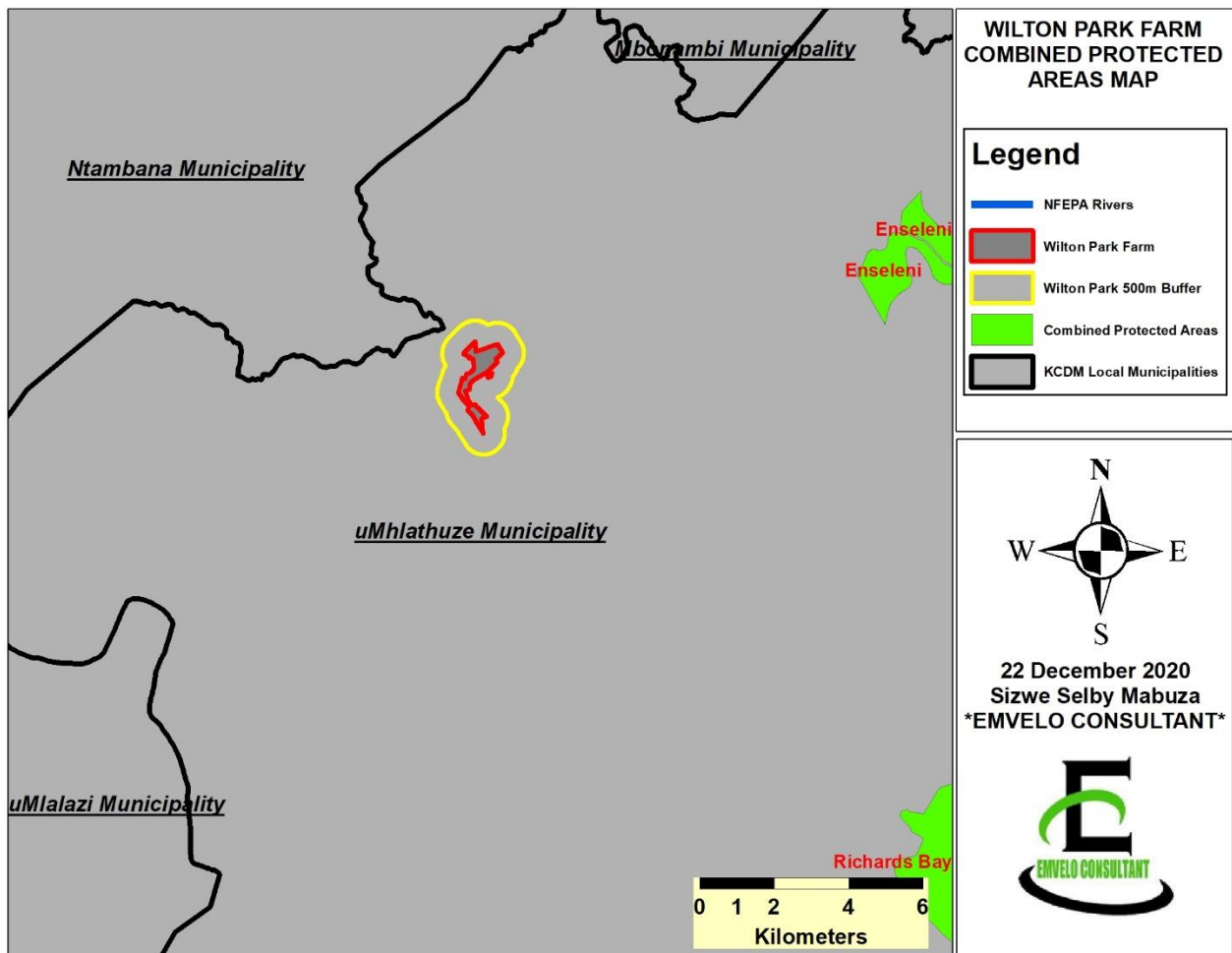


Figure 12: Map showing Protected Areas around the Empangeni Town

Enseleni Nature Reserve is the closest protected area and has coastal forest and grasslands with a wide variety of flora and provides habitat for freshwater species such as hippos and crocodiles.

10.8.1 Potential Impacts

Vegetation clearance can lead to fragmentation, reduction, and loss of habitat as well as the migration of animals away from the area. Therefore, an Environmental Management Programme (EMPr) has been designed to ensure mitigation and management of identified impacts.

10.9 Fauna

The recorded faunal data for the KCDM includes three (3) Critically Endangered species (Black Rhino, Dlinza Forest Pinwheel & Discus Pinwheel), seven (7) Endangered species, ten (10)

Vulnerable species, and 102 rare and endemics. The Dlinza Forest Pinwheel snail (*Trachycystis clifdeni*) is only known to occur within a small patch of the Dlinza forest, and the Discus pinwheel (*Trachycystis placenta*) is only known to occur in the Nkandla Forest patches both of which are formally Protected Areas.

There were no wild animals or nesting areas observed on site. Small mammals such as rodents, ground squirrels, bats and a variety of insects, amphibians, reptiles, and birds are however, expected to occur on site.

10.9.1 Potential Impacts

Vegetation clearance can lead to fragmentation, reduction, and loss of habitat as well as the migration of animals away from the area. Another threat to the fauna around the site can be the poaching and wilful harming of animals by the farm workers. Although, there were no fauna species encountered during the Environmental Study, the site is suitable for development, provided that the recommendations given by the Ecological Assessment and EMP are adhered to.

10.10 Visual environment and land use character

Subject to the direct visual influence of the proposed project, the zone of visual influence can be experienced at different scales by receptors located at various distances from the site. The viewshed area and zone of visual influence for new developments is classified as follows:

- High visibility - Visible from a large area (several square kilometres, >5km radius)
- Moderate visibility - Visible from an intermediate area (several hectares, 2.5 – 5 km radius).
- Low visibility - Visible from a small area around the project site (<1km radius).

Land use within the district comprises of agricultural land, subsistence farming, areas of high-density settlement and natural areas. Most of the agricultural land is under sugarcane and commercial forestry, with the sugarcane been located around Amatikulu, Felixton, Empangeni and Matubatuba, and plantations around Eshowe, Melmorth, Mtunzini, Kwambonambi and Nseleni.

While modified areas cannot provide the same level of biodiversity value as natural areas, they can still play a role in providing for biodiversity and ecosystem services. The modified areas defining the district can be defined as either “soft” or “hard” modification, with “soft” modification having a smaller impact on ecological processes and biodiversity than “hard” modification. ‘Soft’ modified areas include all forms of agriculture (e.g., plantations, sugarcane, orchards, etc.) whereas ‘hard’ modified areas refer to various types of built-up land uses (e.g. urban areas, rural dwellings, roads, mines, etc.). Certain “soft” modifications are known to provide more biodiversity value than others do. As an example, areas under annual cultivation, (“soft” modification but high intensity agriculture), may provide higher value to biodiversity and ecosystem services provision than “hard” modified areas, but less than other low intensity agricultural activities such as livestock farming or plantations.

Within the City of uMhlatuze, specific qualities of a landscape (natural vegetation, water bodies, landscaped parks etc.) provide aesthetically pleasing environments for the inhabitants of the area (COM IDP 2020).



Figure 13: Picture showing the Land Use of the area

The project area has indigenous vegetation within it, and is surrounded by a number of other sugarcane farms, making this proposed development to be streamlined with the local environment, and categorized as of soft modification.

Therefore, the viewshed area and zone of visual influence for the proposed sugarcane plantation is considered “**low visibility**” as it can be visible from a small area around the project site (<1km radius). The project area is a semi dense rural settlement with associated infrastructure, making this proposed development to be streamlined with the local environment.

10.10.1 Potential Impacts

Generally, within the municipality, the cumulative impact of development pressure and future planning scenarios pose a major threat to visual quality and a sense of place (COM IDP). The proposed farming project will blend in with existing land uses which is mostly dominated by other sugarcane plantations / farms. Therefore, this project is not anticipated to be highly visible from great distances and will be perceived by receptors in close proximity in the category of “**low visibility**”.

10.11 Heritage and cultural aspects

The City of uMhlathuze has high potential for archaeological heritage resources of different classes of significance. Although a considerable number of sites has been recorded, there remain gaps in availability of data on the local heritage. A desktop survey indicated a total of 125 recorded archaeological sites, which range from the Stone Age Period to the recent historic period. Most of the sites recorded indicated pressure from mining and infrastructure development within the municipal area (COM IDP 2020).

10.11.1 Potential Impacts

During the clearing of vegetation and excavation activities, heritage resources/places that might be buried underground may be affected. Moreover, soil preparation may expose objects of heritage significance. However, these potential impacts can be mitigated provided that the recommendation of this report and EMPr are adhered to.

10.12 Social and economic aspects

The King Cetshwayo District (KCD) is located in the north-eastern region of the KwaZulu-Natal province (KZN) on the eastern seaboard of South Africa (KCDM Profile 01/52). The headquarters of the KCD is in Richardsbay and the district is made up of five local municipalities, namely: Mthonjaneni, uMlalazi, Mfolozi, uMhlathuze and Nkandla.

In 2019, the District accounted for a total population of 982 726 or 8.6% of the total population in KZN slightly up from 971 135 in 2016. Females constituted 52.6% of the population. The total number of households decreased somewhat from 225 798 in 2016 to 222 000 in 2019. In 2016, 49.8% of households were headed by women, whilst 1 552 households were headed by children younger than 18 years of age. 80% of the KCD population and households are regarded as rural (KCDM Profile 01/52).

The District is among the key economic role players in KZN in terms of GDP contribution. It contributed 6.5% of the total estimated provincial GDP generated in 2016. It is within this context that KCD is among the largest contributing districts towards the provincial GDP such as eThekweni and uMgungundlovu at 59.5%, and 11.3% respectively. The largest contributing local municipalities to the GDP of the district are the City of uMhlathuze at 44.0%, followed by uMfolozi at 25.7% and uMlalazi at 21.3%. Although the economy of KCD is predominantly dependent on the tertiary sector at 47.9%, the secondary sector at 29% also plays a significant role in its economy especially the manufacturing sub-sector.

In 2019, uMhlathuze accounted for the highest proportion of the District's population at 421 000, followed by uMlalazi at 222 000, uMfolozi at 152 000, Nkandla at 109 000 and the lowest in Mthonjaneni at 79 000.

Gender, Age and Race

Females constituted 52.6% of the District's population. The district has a median age of 20 years, which is slightly lower than the provincial median age of 22 and the national age of 26. 49% of the population was younger than 19 years of age, whilst 44% was between 20 and 59 years of age. About 95% of the District's population is Black African, followed by 3% Whites and 2% Indian.

In 2019, there were a total number of 87 400 people unemployed in KCD, which is an increase of 27 900 from 59 500 in 2009. The total number of unemployed people within the District constitutes 9.71% of the total number of unemployed people in KwaZulu-Natal Province.

The proposed farming project is located at the Wilton Park Farm, approximately 2 kilometres from Empangeni Town, within the jurisdiction of the City of uMhlathuze Municipality, King Cetshwayo District.

10.12.1 Potential Impacts

It is expected that the surrounding communities will benefit through jobs during the construction, operation, and maintenance phase, which will enable the transfer of skills and boost the local economy. This will contribute to alleviating poverty and decrease the dependency ratio.

11 WASTE, EFFLUENT, AIR POLLUTION AND ATMOSPHERIC EMISSIONS

Agricultural activities, like other operations, also leads to pollution of air, land, and water bodies.

11.1 General waste management: construction phase

The general waste during the projects cycle will be sorted into recyclable and non-recyclable waste, in skip bins to be collected by the municipality for disposal at the Empangeni Landfill Site.

Suitable portable chemical toilet facilities will be provided and serviced by certified service provider during the duration of construction. Proper measures will be put in prevent to spillages as a result of toppled portable toilet, as prescribed by EMPr. The provision ratio for portable toilets per workers will be 1:20 and be provided for both males and females workers onsite.

11.2 Effluent

No effluent will be generated during the construction phase of the project. Proper measures will be put in place to contain any spillages (oil spills) occurring during construction, as prescribed by EMPr.

11.3 Ambient air pollution and atmospheric emissions

The proposed development itself will not have direct impact on air pollution and atmospheric emission. However, certain activities during cultivation could have a minor impact on the ambient air because of emissions from the onsite equipment, machinery, and vehicles. These include dust emanating from soil preparation activities and fumes (carbon monoxide) released by farm vehicles and machinery. These minor impacts can be mitigated through adherence to the EMPr.

The activity will, therefore, have an indirect but minor effect on the release of emissions. The release of significant emissions from any source will be controlled under the National Environment Management: Air Quality Act 39 of 2004.

11.4 Noise management

The project sites will emit different levels of noise due to the various farming activities, movement of heavy farming vehicles, use of machinery as well as from large number of workers on site. However, noise impacts are expected to be of short duration and only during certain times, especially during soil preparation, sugarcane planting and harvesting, which is likely to only have impacts to the immediate environment. The potential noise pollution impacts will be mitigated provided that the EMPr is adhered to.

12 WATER USE

The proposed sugarcane crops will be rainfed. Water for consumption for drinking, cleaning, and hygiene as well as dust suppression where required, will be supplied by the farmer.

13 THE PUBLIC PARTICIPATION PROCESS

Section 24 (4) (a) (v) of NEMA, provides that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment, must ensure, with respect to every application for an Environmental Authorisation, the public information and participation procedures which provide all interested and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures.

13.1 Background

Public participation (PP) is part of the EIA process which is governed under the principles of NEMA as well as the EIA regulations. It is defined as the process by which an organization consults with all interested or affected parties (I&APs) which include organizations, government entities, affected communities, non-governmental organisations (NGOs), etc. It is a two-way communication process and collaborative problem solving with the goal of achieving better and more acceptable decisions.

The PP process also provides all the stakeholders including the community with a platform to raise their environmental concerns before the Competent Authority can make a final decision regarding the issuing of the Environmental Authorization. This prevents and minimizes disputes before they become unsolvable. Chapter 6 of the EIA regulations emphasize that the information related to the proposed project must be made available to I&APs, prior to a final decision. Therefore, this process will allow I&APs to have access to the information relating to this project. The application was conducted according to Chapter 6 of the EIA Regulations 2017.

13.2 Objectives of public participation

The objectives are as follows:

- To inform and involve the community and the stakeholders about the proposed project.
- To identify and address the community and stakeholder's environmental concerns regarding this activity.
- To provide opportunities for the community, relevant government departments, surrounding businesses, the residents and other stakeholders to raise their environmental concerns, suggest solutions and identify priorities or issues.
- To protect the environmental rights of the local community.
- To optimise on local and indigenous knowledge of the area.

13.3 Notification of the Interested and Affected Parties (I&APs)

Section 41 of Chapter 6 of the EIA regulations have listed the different options, to be used when notifying the I&APs. The PP process for this project was conducted, as detailed in Table 5 and indicated by the green blocks.

Table 4: Public Participation Processes

<i>All the Interested and Affected parties were notified of the application by-</i>		
Fixing a notice board at the place conspicuous to and accessible by the public at the boundary, on the fence, or along the corridor of any alternative sites.	YES	NO
Any alternative site also mentioned in the application	YES	NO
<i>Has a written notice been given to-</i>		
Landowner or person in control if the applicant is not in control of the land	YES	NO
The municipal councillor of the Ward in which the site and alternative site of the proposed activity.	YES	NO
The municipality which has jurisdiction in the area and other organs of state	YES	NO
<i>Placing an advertisement in-</i>		
Local newspaper	YES	NO
Any official Gazette that is published specifically for providing public notice of applications	YES	NO
One provincial newspaper, any official Gazette that is published with the purpose of providing public notice of applications.	YES	NO

13.4 Comments from the registered Interested and Affected Parties (I&APs).

Section 43 of Chapter 6 of NEMA (EIA Regulations 2017) indicates that all I&APs are entitled to comment in writing on all reports produced by the applicant during the EIA process. This will bring the concerns raised to the attention of the applicant.

The I&APs were provided with the opportunity to raise their concerns and comments regarding the proposed development project. Firstly, a Background Information Document (BID) was sent to all relevant I&APs. The onsite notices in isiZulu and English were displayed onsite on 10th December 2021. Notices were displayed in strategic positions in the project area in order to enhance accessibility from the public. A newspaper advert in isiZulu newspaper was published on the Zululand Observer. Currently the PP process is at the stage of the circulation of the Draft Basic Assessment Report, of which all I&APs have 30 days to comment and/or provide their inputs. All comments and concerns raised are to be recorded on the I&APs Commenting Report, and to be attached in Appendix E of the final BAR.

14 IMPACT ASSESSMENT AND MITIGATION MEASURES

The Environmental Impact Assessment (EIA) conducted for the preconstruction, the construction and as well as the operational and decommissioning phases of the development, are discussed in (**section 14.1**) below.

Each impact identified is assessed in terms of probability (likelihood of occurring), scale (spatial scale), magnitude (severity) and duration (temporal scale). To effectively implement the adopted scientific approach in determining the significance of the environmental impact, a numerical value was linked to each rating scale.

The following criteria will be applied to the impact assessment for the proposed development:

Occurrence

- ✚ Probability - the probability of the impact describes the likelihood of the impact actually occurring.
- ✚ Impact duration - the duration of the impact describes the period of time during which an environmental system or component is changed by the impact.

Severity

- ✚ Magnitude – refers to the ‘degree of disturbance’ to biophysical systems and components which expresses the change in the health, functioning and/or role of the system or component as a result of an activity.
- ✚ Scale/extent - the extent of the impact generally expresses the spatial influence of the effects produced by a disturbance to an environmental system or component.

The following ranking scales were used:

<p><i>Probability = P</i></p> <p>5 – Definite (More than 80 % chance of occurrence)</p> <p>4 – Probable (Between 60-80% chance of occurrence)</p> <p>3 – Possible (Between 40-60% chance of occurrence)</p> <p>2 – Fairly Unlikely (Between 20-40% chance of occurrence)</p> <p>1 – Unlikely (Less than 20% chance of occurrence)</p>	<p><i>Duration = D</i></p> <p>5 – Permanent - The only class of impact that will be non-transitory (indefinite)</p> <p>4 - Long-term - The impact and its effects will continue or last for the entire operational life of the development (15 - 50years)</p> <p>3 - Medium-term - The impact and its effects will continue or last for some time after the construction phase (5 - 15 years)</p> <p>2 – Medium-short - The impact and its effects will continue or last for the period of a relatively long construction period and/or limited recovery time after this construction period (2 - 5 years)</p> <p>1 – Short Term - Likely to disappear with mitigation measures or through natural processes which span shorter than the construction phase (0-2 years)</p>
<p><i>Scale = S</i></p> <p>5 – International (beyond 200km)</p> <p>4 – Regional (50-200km radius)</p> <p>3 – Local (2-50km radius)</p> <p>2 – Surrounding area (within 2km)</p> <p>1 – Site (within100m)</p>	<p><i>Magnitude = M</i></p> <p>5 - High</p> <p>4– Medium High</p> <p>3 – Medium</p> <p>2 – Medium Low</p> <p>1 – Low</p>

Status of Impact

+ Positive / -Negative or 0-Neutral

The overall impact significance score/points (SP) for each identified impact is calculated by multiplying magnitude, duration, and scale by the probability of all this happening.

The range of possible significance scores is classified into seven rating classes (*refer to section 15.1*).

$$SP = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The impacts status can either be positive, negative, or neutral as depicted in table below.

Significance	Environmental Significance Points	Colour Code
Negligible	0-10	N
Very low	11-20	VL
Low	21-30	L
Medium	31-40	M
Medium-High	41-50	MH
High	51-60	H
Very high	61-75	VH

14.1 Impact significance evaluation for alternative A (Watercourses 32m buffer)

PRE-CONSTRUCTION (clearance of indigenous vegetation)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
<p>Loss of indigenous vegetation</p> <p>The farmer intends to remove 17.8 ha of indigenous vegetation for the purpose of cultivating the land, to plant sugarcane.</p> <p>Also, the Maputaland Coastal Belt, considered to be a “Vulnerable” vegetation type, may be impacted on.</p>	<p>SP = M+D+SxP SP = 5+5+2x5 SP = 60</p> <p>High</p>	<ul style="list-style-type: none"> ➤ An Environmental Control Officer (ECO) must be appointed to oversee construction activities. ➤ Vegetation must only be removed on the site demarcated and authorized for cultivation, and other related farming activities. ➤ A plan to actively rehabilitate the construction area post-construction needs to be developed 	<p>SP= M+D+SxP SP= 4+5+1x5 SP = 50</p> <p>Medium-High</p>
<p>Loss of plant and faunal species of conservational concern (SCC)</p> <p>A precautionary measure was adopted in assessing this impact due to a lack of supporting evidence from the ecological specialist. The ecological specialist found no plant species of conservation concern.</p> <p>Although no species of conservational concern were found on site, it is possible that they might be found during the vegetation clearance, soil cultivation and preparation phase, especially during the rainy season.</p>	<p>SP = M+D+SxP SP = 5+5+2x3 SP = 36</p> <p>Medium</p>	<ul style="list-style-type: none"> ➤ All species identified as of conservational concern must not be removed, or disturbed. ➤ If needed, approval must be obtained from the ECO, before any disturbance or removal of plant SCC. ➤ The farm area must again be surveyed prior to construction, so to locate and capture any SCC. 	<p>SP = M+D+SxP SP = 3+5+1x2 SP = 18</p> <p>Very Low</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
<p>Loss and disturbance to fauna</p> <p>The clearance of vegetation might result in a loss of animal species that could be found on site.</p> <p>Disturbance to fauna may be from noise, light, and other disturbances.</p>	<p>SP = M+D+SxP SP = 4+3+3x4 SP = 40</p> <p>Medium</p>	<ul style="list-style-type: none"> ➤ All workers must be trained to recognize threatened species on site. ➤ During site preparation, special care must be taken during the clearing of the works area in order to minimize damage or disturbance of roosting and nesting sites. ➤ No faunal species are to be trapped, hunted or killed during the construction phase. ➤ No fires should be allowed at the site. ➤ No dogs or other pets must be allowed on site. 	<p>SP = M+D+SxP SP = 3+3+2x4 SP = 32</p> <p>Medium</p>
<p>Loss and Fragmentation of Habitats</p> <p>Animals with limited mobility are often the first to be affected by habitat fragmentation due to its effects on population viability. Reptiles and small mammals may be separated into distinct populations.</p>	<p>SP = M+D+SxP SP = 5+5+2x5 SP = 60</p> <p>High</p>	<ul style="list-style-type: none"> ➤ All farming activities must take place within the area demarcated for the development. 	<p>SP = M+D+SxP SP = 5+5+1x5 SP = 55</p> <p>High</p>
<p>Encroachment of Alien Invasive Species</p> <p>Disturbed areas are most likely to be infested by alien vegetation (e.g., Brazilian Pepper).</p>	<p>SP = M+D+SxP SP = 5+5+3x5 SP = 65</p> <p>Very High</p>	<ul style="list-style-type: none"> ➤ An on-going alien invasive management plan must be developed and implemented during the clearance of vegetation. ➤ All areas disturbed areas must be monitored for colonization by invasive plants and must be controlled as they emerge. 	<p>SP = M+D+SxP SP = 2+1+1x2 SP = 8</p> <p>Negligible</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
		<ul style="list-style-type: none"> ➤ The clearing/eradication of alien species must be undertaken in all phases of development. 	
<p>Soil erosion and degradation of soil quality</p> <p>The clearance of vegetation will increase the rate of surface water runoff and therefore resulting in soil erosion and loss of quality.</p> <p>The most significant impact will be the changes in the soil structure and degradation of soil quality as a result of erosion and compaction. Additionally, spills and leaks may also occur from vehicles and heavy equipment used during the construction operations, which may result in soil contamination.</p>	<p>SP = M+D+SxP SP = 5+5+2x5 SP = 60</p> <p>High</p>	<ul style="list-style-type: none"> ➤ Vegetation clearance should commence on the upgradient sections and gradually progress downgradient, such that the undeveloped portion can serve as a natural erosion control, sediment retention, and stormwater attenuation mechanism. ➤ Farm machinery operating onsite must be routinely checked for fuel leaks or malfunctions to minimize the risk of oil spills. ➤ Sediment barriers such as berms, contour ridges or contour grass strips must be installed across all slopes. ➤ All sediment barriers must be installed or setup outside recommended wetland buffers. ➤ After every rainfall event, the farmer must check the site for erosion damage and immediately repair any damage recorded. 	<p>SP = M+D+SxP SP = 2+1+1x2 SP = 8</p> <p>Negligible</p>
<p>Potential loss of wetland habitat as well as the regulating and supporting services they provide</p>	<p>SP = M+D+SxP SP = 5+5+3x5 SP = 65</p>	<ul style="list-style-type: none"> ➤ Application of 32m buffer around all watercourses. 	<p>SP = M+D+SxP SP = 2+5+2x3 SP = 27</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
<p>This may be caused by the clearance of vegetation within and around the HGM 1 & 2 wetland's units on the farm.</p> <p>Supporting and regulating services include but not limited to Flood attenuation, Sediment trapping, Erosion control, and Carbon storage</p>	Very High	<ul style="list-style-type: none"> ➤ No clearance of vegetation must be done within the 32m buffer around watercourses. 	Low
<p>Deterioration in water quality</p> <p>This may be from the spilling of hydrocarbons and other hazardous substances from machinery and equipment used during the construction and operational phase;</p>	<p>SP = M+D+SxP</p> <p>SP = 5+5+3x5</p> <p>SP = 65</p> <p>Very High</p>	<ul style="list-style-type: none"> ➤ Machinery must be parked on the designated bunded areas and dip trays must be placed under the machinery, when not used to capture any possible oil leaks; 	<p>SP = M+D+SxP</p> <p>SP = 1+5+2x2</p> <p>SP = 16</p> <p>Very Low</p>
<p>Air pollution; Dust and Emissions</p> <p>Dust and emissions from farming vehicles and generation of dust because of land or vegetation clearing.</p> <p>The major dust sources will be from the movement of vehicles over the cleared working area and from vehicles transporting material and equipment to the working areas.</p>	<p>SP = M+D+SxP</p> <p>SP = 5+1+2x5</p> <p>SP = 40</p> <p>Medium</p>	<ul style="list-style-type: none"> ➤ Prohibit the clearance of vegetation during windy conditions. ➤ Bare (unvegetated) soils can be regularly dampened with water to suppress dust, especially when strong winds prevail. ➤ Limit on-site vehicle speed to 15-20 km/ph. 	<p>SP = M+D+SxP</p> <p>SP = 2+1+1x2</p> <p>SP = 8</p> <p>Negligible</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
Noise Pollution The main sources of noise associated with the proposed activities include the following: farm workers, activities and machinery.	SP = M+D+SxP SP = 4+5+2x5 SP = 55 High	<ul style="list-style-type: none"> ➤ All farm vehicles must be maintained in accordance with manufactures specifications to avoid excessive noise. ➤ All farm vehicles not in use must be turned off. 	SP = M+D+SxP SP = 2+1+1x3 SP = 12 Very Low
Loss of Heritage and Archaeological resources The removal of vegetation may require for excavation activities to be conducted, which may expose and damage objects of heritage and / or archaeological significance.	SP = M+D+SxP SP = 4+5+1x4 SP = 40 Medium	<ul style="list-style-type: none"> ➤ Monitoring during site clearance for possible human remains or burials and implement chance find procedure if any finds are uncovered. ➤ A Chance Finds Procedures (CFP) should be implemented where possible heritage finds are uncovered/ discovered. ➤ Should any artifact or heritage resource be encountered, the contractor is advised to stop the operation immediately and report the matter to the municipality. The discovered fossils must be protected and the appointed EO must report the matter to SAHRA. 	SP = M+D+SxP SP = 1+1+1x2 SP = 6 Negligible
Visual Impact During the pre-construction (site clearing) phase, residents who live in close proximity to or overlook the proposed project site will experience a change in their	SP = M+D+SxP SP = 4+5+2x5 SP = 55	<ul style="list-style-type: none"> ➤ The farmer must maintain good housekeeping on-site to avoid litter and minimize waste. 	SP = M+D+SxP SP = 3+5+2x5 SP = 50

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Pre-Construction Phase (Negative)			
existing views as residents will have a view of the site characterized by exposed earth, and farm machinery.	High	➤ Dust suppression is important as dust will raise the visibility of the development.	Medium High
Increased Traffic Temporal movement in and out of the farm may lead to increased traffic on the access roads used	SP = M+D+SxP SP = 4+5+1x4 SP = 40 Medium	<ul style="list-style-type: none"> ➤ All farm vehicles must use the existing access road to the farm. ➤ Road temporary signing, traffic control signals, delineators, message boards, must be used for traffic accommodation in the work zone, and must be visible to motorists and pedestrians. 	SP = M+D+SxP SP = 4+5+1x3 SP = 30 Low

CONSTRUCTION PHASE – SOIL PREPARATION AND CULTIVATION

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
<p>Loss of indigenous vegetation</p> <p>The development will result in the obliteration of vegetation on site for the purpose of soil preparation and cultivation works.</p>	<p>SP = M+D+SxP SP = 4+5+2x4 SP = 44</p> <p>Medium High</p>	<ul style="list-style-type: none"> ➤ Vegetation must only be removed on the site demarcated and authorized for cultivation. ➤ Where possible, all farming activities must be performed in previously disturbed areas. ➤ Where vegetation has been cleared, site rehabilitation in terms of soil stabilization and re-vegetation must be undertaken. 	<p>SP = M+D+SxP SP = 2+5+1x5 SP = 40</p> <p>Medium</p>
<p>Loss of plant and faunal species of conservational concern</p> <p>A precautionary measure was adopted in assessing this impact due to a lack of supporting evidence from the ecological specialist. The ecological specialist found no plant species of conservation concern.</p> <p>Although no species of conservational concern were found on site, It is possible that they might be found during the vegetation clearance, soil cultivation and preparation phase, especially during the rainy season.</p>	<p>SP = M+D+SxP SP = 3+5+2x3 SP = 30</p> <p>Low</p>	<ul style="list-style-type: none"> ➤ The development area must again be surveyed prior to construction, so to locate and capture any SCC. ➤ All species identified as of conservational concern must not be removed, or disturbed. ➤ If needed, approval must be obtained from the ECO, before any disturbance or removal of SCC. 	<p>SP = M+D+SxP SP = 2+5+1x2 SP = 16</p> <p>Very Low</p>
<p>Loss and Fragmentation of Habitats;</p> <p>Animals with limited mobility are often the first to be affected by habitat fragmentation due to its effects on</p>	<p>SP = M+D+SxP SP = 3+5+2x5 SP = 50</p>	<ul style="list-style-type: none"> ➤ All farming activities must take place within an area demarcated for the development. 	<p>SP = M+D+SxP SP = 3+4+1x3 SP = 24</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
population viability. Reptiles and small mammals may be separated into distinct populations.	Medium High		Low
Loss of fauna The proposed farming activities might result in a loss of animal species that could be found on site.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ All workers must be trained to recognize threatened species on site. ➤ During site preparation, special care must be taken during the clearing of the works area to minimize damage or disturbance of roosting and nesting sites. ➤ No faunal species are to be trapped, hunted, or killed during the construction phase. 	SP = M+D+SxP SP = 2+5+1x3 SP = 24 Low
Encroachment of Alien Invasive Species: Disturbed areas are most likely to be infested by alien vegetation.	SP = M+D+SxP SP = 4+5+3x5 SP = 60 High	<ul style="list-style-type: none"> ➤ An on-going proper alien invasive management plan must be developed. ➤ All areas disturbed by construction activities should be monitored for colonization by invasive plants and should be controlled as they emerge throughout the project life cycle. 	SP = M+D+SxP SP = 1+1+1x2 SP = 6 Negligible
Potential loss of wetland habitat This may be caused by conducting cultivation activities within and around the wetland units on the farm.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 Medium	<ul style="list-style-type: none"> ➤ A 32m buffer around all the identified wetlands must be applied and maintained. ➤ No farming activities must be carried out within these buffers. 	SP = M+D+SxP SP = 2+2+1x2 SP = 10 Very low

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
Which may result from Increased sediment deposit causing infilling of wetland as result of soil preparation (ploughing).			
<p>Deterioration in water quality</p> <p>The water quality around the farm may be impacted upon by having fertilizers, pesticides, and herbicide entering the wetland systems; and</p> <p>Increased sediment entering the wetland systems through surface water dispersion.</p> <p>Hydrocarbons spills and leaks from the machinery used in the farm.</p>	<p>SP = M+D+SxP</p> <p>SP = 5+3+4x4</p> <p>SP = 48</p> <p>Medium-high</p>	<ul style="list-style-type: none"> ➤ The farmer must ensure that he uses watercourse friendly chemicals. ➤ Machinery must be parked on the designated bunded areas and dip trays must be placed under the machinery, when not used to capture any possible oil leaks. ➤ Stormwater measures must be put in place that will limit the run-off from the agricultural fields. ➤ Erosion control measures must be implemented at the stormwater outlets that drain from the agricultural fields, these should make provision for energy dissipaters, etc. ➤ The application rate of fertilisers and herbicides water to the sugarcane fields must be minimized and controlled through an operational management plan that makes provision for the various quantities to be 	<p>SP = M+D+SxP</p> <p>SP = 2+1+1x1</p> <p>SP = 4</p> <p>Negligible</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
		applied during specific periods in the year / growing season.	
Alteration of the natural flow regime Impacts on wetlands and rivers due to cultivation of sugarcane within, and/or at the banks of these watercourses.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ Cultivation within the wetlands and buffer zones must be prohibited. ➤ Abstraction of water from the wetland area/river channel to supplement irrigation water requirements for the cultivated sugarcane plantation must be prohibited. 	SP = M+D+SxP SP = 2+1+1x1 SP = 4 Negligible
Ground water Contamination Surface and ground water pollution associated with farming activities i.e., contamination from fuels, chemicals, and oils, through run-off or as a result of leaks, as well as the application of fertilizers and pesticides.	SP = M+D+SxP SP = 5+5+4x5 SP = 70 Very High	<ul style="list-style-type: none"> ➤ Machinery used on site should be placed on an impermeable layer to avoid groundwater contamination. ➤ The farmer must ensure that he uses watercourse friendly chemicals and fertilizers. ➤ Suitable storage facilities for handling and storage of oils, paints, grease, fuels, chemicals, and any hazardous materials to be used, must be provided to prevent the migration of spillage into the ground and possible ingress into the groundwater regime. 	SP = M+D+SxP SP = 1+1+2x1 SP = 4 Negligible
Soil erosion	SP = M+D+SxP SP = 5+5+3x5 SP = 65	<ul style="list-style-type: none"> ➤ Sediment barriers such as berms, contour ridges or contour grass strips must be maintained across all slopes. 	SP = M+D+SxP SP = 2+1+1x1 SP = 4

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
The most significant impact will be the changes in the soil structure and degradation of soil quality as a result of erosion and compaction.	Very High	<ul style="list-style-type: none"> ➤ All sediment barriers must be installed or setup outside recommended wetland buffers. ➤ There must be no cultivation or plantation on very steep slopes. ➤ After every rainfall event, the farmer must check the site for erosion damage and immediately repair any damage recorded. 	Negligible
Soil Contamination and quality degradation Hazardous spills and leaks may also occur from farm vehicles and heavy equipment used, which may result in soil contamination.	$SP = M+D+SxP$ $SP = 4+5+2x5$ $SP = 55$ High	<ul style="list-style-type: none"> ➤ All farm machinery operating onsite must be routinely checked for fuel leaks or malfunctions to minimize the risk of oil spills. ➤ The farmer must ensure correct application of soil amendments, fertilizers, and chemicals to combat weeds, pests, insects, and fungi. ➤ Any soil contaminated by hydrocarbons (fuel and oils) must be removed and the affected area rehabilitated immediately. 	$SP = M+D+SxP$ $SP = 2+5+1x2$ $SP = 16$ Very Low
Air pollution; dust and chemicals from fertilizers Depending on the type of fertilizer, how it is applied as well as the weather condition, the application of fertilizers may cause air pollution especially where sprinklers or an aircraft is used.	$SP = M+D+SxP$ $SP = 4+1+2x5$ $SP = 35$ Medium	<ul style="list-style-type: none"> ➤ Prohibit soil cultivation activities during windy conditions. ➤ Bare (unvegetated) soils can be regularly dampened with water to suppress dust during soil preparation, especially when strong winds prevail. 	$SP = M+D+SxP$ $SP = 1+1+1x2$ $SP = 6$ Negligible

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
		<ul style="list-style-type: none"> ➤ Limit on-site vehicle speed to 15-20 km/ph. ➤ The farmer must ensure that he uses eco-friendly measures of soil fertilization and means of removal of pests. ➤ The farmer must minimize use of fertilizers and herbicides. 	
<p>Increase in general waste</p> <p>The amount of waste generated in the farm will increase during the construction phase of the project.</p>	<p>SP = M+D+SxP</p> <p>SP = 4+5+3x4</p> <p>SP = 48</p> <p>Medium-high</p>	<ul style="list-style-type: none"> ➤ The farmer must ensure that the collection of waste general waste is carried out within the proposed development. ➤ New waste collection routes for collection services must be done to accommodate the proposed development. 	<p>SP= M+D+SxP</p> <p>SP= 3+5+2x3</p> <p>SP= 30</p> <p>Low</p>
<p>Visual Impact</p> <p>During the construction (Plantation) phase, residents who live in close proximity to or overlook the proposed project site will experience a change in their existing views as residents will have a view of the site characterized by exposed earth, and farm machinery</p>	<p>SP = M+D+SxP</p> <p>SP = 4+2+2x5</p> <p>SP = 40</p> <p>Medium</p>	<ul style="list-style-type: none"> ➤ The farmer should maintain good housekeeping on-site to avoid litter. ➤ Dust suppression is important as dust will raise the visibility of the development. 	<p>SP = M+D+SxP</p> <p>SP = 3+2+1x5</p> <p>SP = 30</p> <p>Low</p>
<p>Noise pollution</p> <p>The main sources of noise associated with the proposed farming activities include the following: farming activities and equipment delivery. farming activities are likely to</p>	<p>SP = M+D+SxP</p> <p>SP = 5+1+2x5</p> <p>SP = 40</p>	<ul style="list-style-type: none"> ➤ Ensure that operating hours as determined by the EA are adhered to. Where not defined, development must be limited to working hours. 	<p>SP = M+D+SxP</p> <p>SP = 2+1+1x2</p> <p>SP = 8</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction (Negative)			
be confined to daytime and the noise levels will only affect the adjacent areas for a relatively short period of time.	Medium	<ul style="list-style-type: none"> ➤ All farm vehicles must be maintained in accordance with manufactures specifications to avoid excessive noise. ➤ All farm vehicles not in use must be turned off. 	Negligible
Destruction of Heritage Resources There may be heritage artifacts that may be discovered during the cultivation phase of the proposed farming project	SP = M+D+SxP SP = 5+5+2x4 SP = 48 Medium High	<ul style="list-style-type: none"> ➤ Should any human remain, graves, archaeological and historical residues be discovered, the KwaZulu-Natal Heritage Act requires that operations should cease immediately pending an evaluation by the heritage authorities. ➤ This finding must be reported to the heritage specialist or KwaZulu-Natal Amafa and Research Institute as a precaution measure 	SP = M+D+SxP SP = 2+5+1x2 SP = 16 Very Low
Increased Traffic Temporal movement in and out of the farm may lead to increased traffic on the access roads used	SP = M+D+SxP SP = 4+1+2x5 SP = 35 Medium	<ul style="list-style-type: none"> ➤ All farm vehicles must use the existing access road to the farm. ➤ Road temporary signing, traffic control signals, delineators, message boards, used for traffic accommodation in the work zone must be visible to motorists and pedestrians. 	SP = M+D+SxP SP = 2+1+2x2 SP = 10 Negligible

POST CONSTRUCTION (HARVESTING)

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Post-Construction Phase (Negative)			
Loss of indigenous vegetation Farm vehicles may destroy vegetation on adjacent area during the harvesting period.	$SP = M+D+SxP$ $SP = 4+4+2x4$ $SP = 40$ Medium	<ul style="list-style-type: none"> ➤ All farm machinery and vehicles must use the existing roads and must not travel on undisturbed areas. 	$SP= M+D+SxP$ $SP= 1+1+1x2$ $SP= 6$ Negligible
Faunal mortality and disturbance Faunal species may be lost or disturbed during the harvesting period, due to increased truck movement within and around the farm.	$SP = M+D+SxP$ $SP = 5+5+3x4$ $SP = 52$ High	<ul style="list-style-type: none"> ➤ Restrict and control the movement of people/vehicles outside of operational/working areas. 	$SP= M+D+SxP$ $SP= 3+2+2x3$ $SP= 21$ Low
Loss and Fragmentation of Habitats. Animals separated into distinct populations may not be able to come together again, leading a disruption in gene pool and natural speciation.	$SP = M+D+SxP$ $SP = 5+5+2x5$ $SP = 60$ High	<ul style="list-style-type: none"> ➤ Revegetate cleared areas with indigenous vegetation to attract animals back to the area. 	$SP= M+D+SxP$ $SP= 3+3+1x3$ $SP= 21$ Low
Encroachment of Alien Invasive Species: Disturbed areas are most likely to be infested by alien vegetation after the construction phase.	$SP = M+D+SxP$ $SP = 5+5+3x4$ $SP = 52$ High	<ul style="list-style-type: none"> ➤ An on-going proper alien invasive management plan must be developed and implemented during operational phase 	$SP= M+D+SxP$ $SP= 2+1+1x2$ $SP= 8$ Negligible

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Post-Construction Phase (Negative)			
Increase in general waste The amount of waste generated in the settlement will increase during the operational phase of the project.	SP = M+D+SxP SP = 4+5+3x4 SP = 48 Medium-high	<ul style="list-style-type: none"> ➤ The applicant should ensure that the collection of waste general waste is carried out within the proposed development. ➤ New waste collection routes for collection services must be done in order to accommodate the proposed development. 	SP= M+D+SxP SP= 3+5+2x3 SP= 30 Low
Increased pressure on the road network Which may be caused by the increasing number of truck vehicles transporting sugarcane from the farm to the mills.	SP = M+D+SxP SP = 3+5+2x4 SP = 40 Medium	<ul style="list-style-type: none"> ➤ All harvest collection or deliveries to be kept to normal working hours (8am to 5pm). ➤ Minimise the number of trucking activities per day. 	SP= M+D+SxP SP= 2+5+2x2 SP= 18 Very low
Aesthetic Impact; After the construction phase, residents who live in close proximity to or overlook the proposed project site will experience a change in their existing views as residents.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ All remaining farming infrastructure, and waste must be removed from the farm site. 	SP= M+D+SxP SP= 3+5+1x4 SP= 36 Medium

DECOMMISSIONING PHASE

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Decommissioning / Rehabilitation Phase (Negative)			
<p>Loss of indigenous vegetation</p> <p>Indigenous vegetation may not be able to naturally grow back after the cultivation and harvesting phase.</p>	<p>SP = M+D+SxP SP = 5+5+2x4 SP = 48</p> <p>Medium High</p>	<ul style="list-style-type: none"> ➤ All slope areas must be properly stabilized through compaction to ensure proper establishment of a vegetation cover. ➤ A Rehabilitation Management Plan must be implemented. Disturbed areas must be re-vegetated by seeding with plants that are indigenous to the area. 	<p>SP = M+D+SxP SP = 2+1+1x2 SP = 8</p> <p>Negligible</p>
<p>Loss of fauna</p> <p>Post construction and harvesting activities animals' species might not come back to the area.</p>	<p>SP = M+D+SxP SP = 5+5+3x4 SP = 52</p> <p>High</p>	<ul style="list-style-type: none"> ➤ All disturbed areas must be revegetated to attract faunal species back to the site after the construction phase. ➤ Local and indigenous vegetation must be planted in the area to attract wildlife. 	<p>SP = M+D+SxP SP = 3+2+2x3 SP = 21</p> <p>Low</p>
<p>Loss and Fragmentation of Habitats</p> <p>Animals separated into distinct populations may not be able to come together again, leading a disruption in gene pool and natural speciation.</p>	<p>SP = M+D+SxP SP = 5+5+3x5 SP = 65</p> <p>Very High</p>	<ul style="list-style-type: none"> ➤ Indigenous vegetation must be planted on the affected area as part of the rehabilitation process. 	<p>SP = M+D+SxP SP = 3+3+1x2 SP = 14</p> <p>Very Low</p>
<p>Encroachment of Alien Invasive Species</p> <p>Disturbed areas are most likely to be infested by alien species after the construction and operational phases.</p>	<p>SP = M+D+SxP SP = 5+5+3x5 SP = 65</p>	<ul style="list-style-type: none"> ➤ An on-going proper alien invasive management plan must be developed and implemented during operational phase. 	<p>SP = M+D+SxP SP = 2+1+1x2 SP = 8</p>

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Decommissioning / Rehabilitation Phase (Negative)			
Allowing invading species to expand will lead to a largescale alien invasion.	Very High		Negligible
Poor rehabilitation of moderate and highly sensitive Areas Poor rehabilitation of sensitive vegetation may lead to the permanent loss of these ecosystem. It will also allow invading alien vegetation species to expand.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ Implement the rehabilitation plan, under the supervision of the ECO. ➤ All sloping areas must be properly stabilized through compaction to ensure proper establishment of a vegetation cover. ➤ Disturbed areas must be re-vegetated using plants that are natural to the area. 	SP= M+D+SxP SP= 2+1+2x2 SP= 10 Negligible
Soil erosion due to loss of vegetation cover Poorly rehabilitated areas may trigger soil erosion	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ All sloping areas must be properly stabilized through compaction to ensure proper establishment of a vegetation cover. ➤ Disturbed areas must be re-vegetated by seeding with plants that are natural to the area. 	SP = M+D+SxP SP = 1+1+1x3 SP = 9 Negligible
Aesthetic Impact After the construction phase, residents who live in close proximity to or overlook the proposed project site will experience a change in their existing views as residents.	SP = M+D+SxP SP = 5+5+2x5 SP = 60 High	<ul style="list-style-type: none"> ➤ All remaining farming infrastructure, and waste must be removed from the site. 	SP = M+D+SxP SP = 2+5+1x4 SP = 32 Medium

15 CUMULATIVE IMPACT ASSESSMENT AND MITIGATION MEASURES

In terms of the EIA Regulations, a cumulative impact is considered from a holistic point of view. It means that the impacts of an activity are considered from the past, present and foreseeable future, together with the impact of activities associated with that activity. The activity itself may not be significant, but when combined with the existing and reasonably foreseeable impacts eventuating from similar or diverse activities may result in a significant change. “Cumulative impacts can be additive, synergistic, time crowding, neutralizing and space crowding” (DEAT, 2004b;14).

Table 5: Cumulative Impacts

Impact	Description	Mitigation
Synergistic: Fragmentation of indigenous Habitat	<p>Continuous agricultural expansion on the local area will have a significant cumulative impact on populations of different flora and fauna species.</p> <p>The transformation of natural sites which are identified to meet biodiversity patterns and process thresholds will disintegrate the network of these natural habitats.</p>	<p>All farming activities must take place within an area demarcated for the development.</p> <p>The type of fencing used must allow for faunal migration and indigenous vegetation spreading.</p>
Time crowding: Frequent and repetitive effect on soil nutrients and quality.	The continued cultivation of sugarcane crops without the application of proper soil amendment may degrade the quality of the soil by reducing the availability of soil nutrients.	The farmer must ensure correct application of soil amendments, fertilizers, and chemicals to combat weeds, pests, insects and fungi.
Soil erosion: Removal of vegetation on steep slopes	The clearance of vegetation, cultivation of soil, and as well as a number of activities during the project cycle may trigger loosen soil particles, which may lead to soil erosion, especially during heavy rainfall periods.	There must not be any clearance of vegetation, cultivation or movement of vehicles and people on steep slopes. All steep slopes must be vegetated with indigenous vegetation.
Deterioration of water quality in nearby water courses	Potential for increased sediments to enter the system through surface water dispersion causing siltation and other	Vegetation must remain intact where possible, to limit high

	<p>water pollution, as a result of excavation at riparian and riverine areas. The potential for hydrocarbon spills from the pump operation, during pump installation and operational phase(maintenance).</p>	<p>surface flows and mobilisation of sediments.</p> <p>cultivation at the riverbank where practical must be done by hand tools and not to be done during wet period or peak flow period.</p> <p>An ECO must oversee the implementation of the EMPr during all the phases of the project, with riverine, riparian, wetland, and streams areas as a priority.</p>
<p>Alien invasive plant species</p>	<p>The study area is largely infested by alien invasive plants such as Brazilian pepper. The clearing of the area for cultivation purposes, as well as disturbed areas in the project area are most likely to be infested by the alien vegetation.</p>	<p>An alien removal plan must be developed and implemented during the whole lifecycle of the project.</p> <p>All sites disturbed must be monitored for colonization by exotics or invasive plants and should be controlled as they emerge throughout the project life cycle.</p>

16 RECOMMENDATIONS BY SPECIALISTS

There were two specialist studies undertaken for this Environmental Assessment, namely:

- Wetland Impact Assessment.
- Terrestrial Biodiversity / Ecological Impact Assessment.

16.1. Wetland Impact Assessment

The wetland study for this project was conducted by Zonhla Hydro & Enviro Consulting (Pty) Ltd.

a) SUMMARY

The desktop study indicated that there are two wetland types that are within the 500m buffer of the project area as described by NFEPA, and they are classified as the Channelled Valley-bottom wetlands systems.

b) RECOMMENDATIONS:

The following mitigative measure are recommended in order to minimise any potential impact from the project on the wetland system:

- The identified wetlands and their Buffer zones (fiver meter) must be clearly demarcated, with the prohibition of cultivated sugarcane plantation inside of the demarcated wetlands and buffer areas.
- Existing access routes must be utilised. If new access routes are required, the construction of these should not be within the wetland and buffer zones.
- Stormwater measures must be put in place that will limit the run-off from the cultivated sugarcane plantation fields.
- Sediment control measures must be adopted in order to prevent sediments entering the wetlands.
- Vegetated berms should be created before the buffer zone to reduce sediment deposition in the wetland area.
- Vegetation should remain intact where possible to limit high surface flows and mobilisation of sediments.

- The amount of fertilisers and herbicide applications must be properly quantified and timed, in order to avoid applying excessive quantities that may not be required.
- Equipment used for the operational of the farm must be inspected regularly for faults and possible leaks. If required, servicing of these should occur outside of the wetland buffer zones.
- Ongoing alien plant control must be undertaken within the wetland area. An ongoing management plan must be implemented for the clearing/eradication of alien species.

Furthermore, the specialist opinion states that the project meets the requirements of the General Authorisation (GA) in terms of Section 39 of the NWA No. 36 of 1998, Water Uses as defined in Section 21(c) and (i)", Notice 509 of 2016. Therefore, a GA in terms of GN 509 must be applied for with the DWS for the proposed project.

16.2. Ecological Impact Assessment

The ecological study for this project was conducted by MONDISE ENVIRONMENTAL SERVICES (PTY) LTD.

a) SUMMARY

The proposed project site is located on the Maputaland Coastal Belt vegetation type that is classified by SANBI as "**endangered**". A small portion of the study area falls under the Subtropical Alluvial Vegetation type that is classified by SANBI as "**Least threatened**". Based on the KwaZulu-Natal Biodiversity Conservation Plan, the study area falls within the Biodiversity Area which is a natural and/or near natural environmental area not identified as a critical biodiversity area and a small portion is 100% transformed (that is the area that has a sugarcane plantation).

The vegetation condition of the study site was relatively poor based on the current observation of the dominance of *Sporobolus Africana* and *Sporobolus prymadalis* and alien invasive species were common especially along the stream on the Subtropical alluvial vegetation.

There are two NFEPA Wetlands with wetland condition code Z1, which is a heavily to critically modified wetland that overlaps with an artificial inland water body, within 500 m of the proposed construction of the dam for irrigation, and the plantation of the balance of land for dryland sugar/ grazing project area. Based on the KwaZulu-Natal Freshwater Systematic Conservation Plan

(FSCP), the conservation status of the catchment at the study site is **Available**, which is a sub-catchment that was not selected in the prioritizing process for conservation.

b) **RECOMMENDATIONS:**

During the Planning and Design, construction and Post-construction Phases of the proposed project, all mitigations outlined below need to be adhered to.

Planning and design phase

- An Environmental Control Officer (ECO) must be appointed to oversee construction activities.
- A plan to actively rehabilitate the area used for construction post-construction needs to be developed.
- Construction activities must be limited to the designated footprint of the project area.
- Where vegetation has been cleared, site rehabilitation in terms of soil stabilization and re-vegetation must be undertaken.

Construction phase

- Construction activities need to be restricted to the areas demarcated by the project plans.
- No indigenous vegetation outside the demarcated project boundaries must be removed.
- Only the approved haul road must be used and vehicles must not traverse virgin land.
- There should be minimal disturbance to areas in the immediate vicinity as successful vegetation recovery will depend on the remaining vegetation.
- Construction boundary must be demarcated and vegetation clearing and top soil removal limited to these areas.
- Construction activities must be limited to the designated development footprint.
- No poaching of any wild animals must be allowed.
- The development area must again be surveyed prior to construction in order to locate and capture any SCC and relocate them.

Operational phase

- All slope areas must be properly stabilized through compaction to ensure proper establishment of a vegetation cover.
- Disturbed areas must be re-vegetated by seeding with plants that are natural to the area.

- An alien removal plan must be implemented and run during operational phase.
- A Rehabilitation Management Plan must be implemented.

17 RECOMMENDATIONS FROM THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The EAP is of the view that the Environmental Authorization may be granted on certain conditions that are outlined in this section. After an Authorization has been granted, it is the applicants' responsibility to ensure that all recommendations outlined in this report as well as in the EMPr are properly implemented.

17.1 Recommendations during construction

The EAP recommends the authorization of this application. However, the following conditions and mitigation measures are recommended and should be considered in any authorization that may be granted by the competent authority in respect of the application, namely:

- a) Appoint an ECO to oversee and advise on site-specific environmental management requirements when needed.
- b) The local community must take priority when it comes to employment and all skills that can be sourced from the local communities. Only specialized skills must be sourced from outside of the surrounding communities.
- c) All reasonable precautions must be taken to minimize noise generated on-site.
- d) Mitigation measures for carbon footprint reduction must be considered to reduce risks of climate change.
- e) Farm vehicles and machinery must be kept in good working order so to avoid the generation of excessive noise levels.
- f) Storage areas must be managed properly by applying the suggested mitigation measures recommended in this document and EMPr.
- g) All employees and contractor staff must undergo environmental training covering the following areas: The Environmental Authorisation, the EMPr, Spill Management, Waste Management, Emergency Procedures and Evacuation Procedures.
- h) No workers are permitted to be accommodated overnight in the site except for essential security personnel.
- i) Only indigenous vegetation should be used during rehabilitation, and rehabilitation success should be monitored.

- j) Protected Areas and areas identified as critical for biodiversity or ecosystem maintenance, by the BSP, must be appropriately buffered from development and land use change impacts.
- k) Where possible limit the removal of existing trees or shrubs.
- l) The rehabilitation success must be monitored.

18 CONCLUSION

The decision to grant or refuse authorisation in terms of Section 24 of NEMA must be made in the light of the provisions of NEMA. Section 24 provides that, in order to give effect to the general objectives of integrated environmental management laid down in NEMA, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported on to the Competent Authority charged by the Act with deciding applications for environmental authorisation. A Basic Assessment Report (BAR) concerning the impact of the proposed activity and alternative activity options on the environment, has been compiled and submitted as prescribed and authorisation may only be issued after consideration of such report.

We submit that the environmental process undertaken thus far complies with these requirements and that this report covers the full suite of potential environmental issues related to the proposed development. All potential impacts have been evaluated and responded to by either complete avoidance where possible, or by recommendation of the most appropriate and feasible mitigation measures. The preferred/mitigated development proposal presented in this report is responsive to the integrated results of the assessment of potential impacts made by the various specialists on the project team.

Based on comparative evaluation of the various alternatives, including the No-Go option, it is evident that the current status quo is not necessarily the best environmental option and that the preferred watercourses 32m buffer Alternative can meet the required objections to offset the No-Go option (subject to the implementation of recommended development mitigation measures). This Draft BAR (DBAR) therefore concludes that the proposed development has been considered via a balanced approach, mindful of cumulative impacts, need and desirability of the project and that the overall negative environmental impacts will be of very low significance. As such, the project can be considered for environmental authorisation subject to implementation of the recommended phased approach and specialist mitigation measures as specified in the EMPr.

This DBAR is available for a review and comment period of 30 days, extending from 26th of February 2021 to the 5th of April 2021. Comments and submissions received in response to this report will be submitted to the competent authority.

Written submissions must be addressed to:

Emvelo Quality and Environmental Consultant (Pty) Ltd

Attention: **Ms Phumzile Lembede**

PO Box 101672, Meerensee, 3901

Tel: 035 789 0632 Fax: 086 577 5220

Email: admin@emveloconsultants.co.za

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APPENDICES

APPENDIX A. DECLARATION OF INFORMATION

I, the undersigned Phumzile Lembede, on behalf of **Emvelo Quality and Environmental Consultant**, hereby declare that the information provided in this application is correct and true.

26th February 2021

Signature

Date

EAP

**Emvelo Quality and Environmental
Consultant**

Position

Company

APPENDIX B. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

APPENDIX C. SITE PHOTOGRAPHS AND LOCALITY MAPS

C-1: CASE IMAGES

C-2: LOCALITY MAP

APPENDIX D. SITE LAYOUT

APPENDIX E. PUBLIC PARTICIPATION PROCESS

E-1: PUBLIC PARTICIPATION PLAN

E-2: PREAPPLICATION MEETING MINUTES

E-3: ONSITE NOTICES

E-4: NEWSPAPER ADVERT

E-5: REGISTER OF I&AP

E-6: BACKGROUND INFORMATION DOCUMENT

APPENDIX F: EAP'S CV(S)

APPENDIX G: SPECIALIST STUDIES

G-1: WETLAND DELINEATION STUDY

G-2: TERRESTRIAL ECOLOGICAL STUDY

APPENDIX H: WEB-BASED ENVIRONMENTAL SCREENING REPORT