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DRAFT BASIC ASSESSMENT REPORT

Ref: DC28/0013/2021: KZN/EIA/0001648/2021

THE PROPOSED DEVELOPMENT OF THE SIZANANI MAZULU PIGGERY MULTIPURPOSE AT THE ZAMAKUHLE AREA OF WARD 20, WITHIN THE JURISDICTION OF THE UMLALAZI LOCAL MUNICIPALITY, KING CETSHWAYO DISTRICT, KWAZULU-NATAL.

OCTOBER 2021

Prepared by:

Emvelo Quality and Environmental Consultant (PTY) Ltd.

Prepared for:

Sizanani Mazulu Piggery Co-op

PROJECT DETAILS

Developer (Dev)

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PROJECT TEAM	CLIENT CONTACT PERSON
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Overview: Assessment of impacts related to the proposed development of Sizanani Piggery Farm, in order to ensure the Client's compliance with all relevant environmental legislations.

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QMS - INFORMATION

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QMS-REVISION HISTORY

Revision	Revision Date	Details	Authorized	Name	Position
1	16-08-2021	Draft BAR	Y	Dumisani Myeni	Study Lead Env. Scientist
2	3-09-2021	Draft BAR	Y	Phumzile Lembede	Principal EAP

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LIST OF ACRONYMS

BAR	Basic Assessment Report
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
HGM	Hydrogeomorphic
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

DEVELOPMENT: the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration, or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

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).

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

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

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.

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

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

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

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.

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.

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.

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.

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.

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.

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; bbusiness waste; and inert 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.

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.

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.

EXECUTIVE SUMMARY

The Sizanani Mazulu Piggery Multipurpose farm proposes to develop a piggery at the Zamokuhle Area of Ward 20 in Mtunzini, within the jurisdiction of the uMlalazi Local Municipality, King Cetshwayo District, KwaZulu-Natal.

The farmer proposes to raise 80 sow units, which will be raised in 8 pigsties, six which will be 40x8m, and two will be 25x8m. The farmer expects to have more than 300 pigs in total as part of this development.

The project also includes the development of a 90m3 slurry sump for the collection and temporary storage of effluent waste. The farmer also proposes to install a borehole for the abstraction of water, to be used on the farm. The total footprint of the proposed project is 2320sqm.

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. The listed activity associated with the proposed development is Listing Notice 1, Activity 4. This application will therefore follow a Basic Assessment process.

Emvelo Quality and Environmental Consultant has been appointed by the Sizanani MaZulu Multipurpose (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 Public Participation Process (PPP) has, to date, included: displaying onsite notices, placing an advertisement in the Ilanga 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).

Table 1: Summarised Impacts Significance

Impact	Construction Phase		Operational Phase	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Erosion due to uncontrolled construction activities such as, clearing of vegetation, topsoil removal, degradation within the farm vicinity	Medium	Negligible	Negligible	Negligible
Solid waste during construction and operation	Medium-High	Negligible	High	Negligible
Effluent waste during construction, and effluent waste during operation (accumulation of effluent, such as slurry within the piggery facilities and farm vicinity)	Negligible	Negligible	High	Very-Low
Nuisance, environmental health and ambient odour	Negligible	Negligible	High	Very-Low
Alien invasive plant introductions through construction activities	Medium	Negligible	Medium	Negligible

The EAP 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 of Sizanani Piggery Farm. 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 project team.

1. INTRODUCTION

Emvelo Quality and Environmental Consultant has been appointed by Sizanani MaZulu Piggery Farm to undertake an Environmental Impact Assessment (EIA) for the proposed development of the Sizanani MaZulu piggery facility at the Zamokuhle Area of Ward 20 in Mtunzini, within the jurisdiction of the uMlalazi Local Municipality, King Cetshwayo District, KwaZulu-Natal.

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

2. PROJECT TITTLE

The proposed development of the Sizanani MaZulu piggery at the Zamokuhle reserve, Mtunzini, ward 20 of the uMlalazi local municipality, King Cetshwayo District, KwaZulu-Natal.

3. PROJECT DESCRIPTION

The Sizanani MaZulu Piggery farm proposes to develop a piggery facility at the Zamokuhle Area of Ward20 in Mthunzini within the jurisdiction of the uMlalazi Local Municipality, King Cetshwayo District, KwaZulu-Natal.

The proposed project entails the development of 8 pigsties, six which will be 40x8m, and two will be 25x8m, where 80 sow units will be raised. The farmer expects to have more than 300 pigs in total as part of this development.

The proposed development also includes the development of a $90m^3$ slurry sump for the collection of pig slurry. The farmer also proposes to install a borehole for the abstraction of water, to be used on the farm.

The total development footprint is 2320sqm.

4. PROJECT LOCALITY

The project locality is described in terms of geographic locational context and site context, as explained in (***Section 4.1 & 4.2***) below.

4.1 Geographical Locational Context

The proposed development (Sizanani MaZulu Piggery farm) is located at (28° 56.287'S, 31° 40.267'E) approximately 29km south-west of Empangeni, and approximately 20km east of Eshowe. Other Nearest towns are; Mtunzini (approximately 7km south-east) and Gingindlovu (approximately 12km south-west). The site is within Ward 20 in Mthunzini within the jurisdiction of the Umlalazi Local Municipality, King Cetshwayo District, Kwazulu-Natal (***Figure 1***).

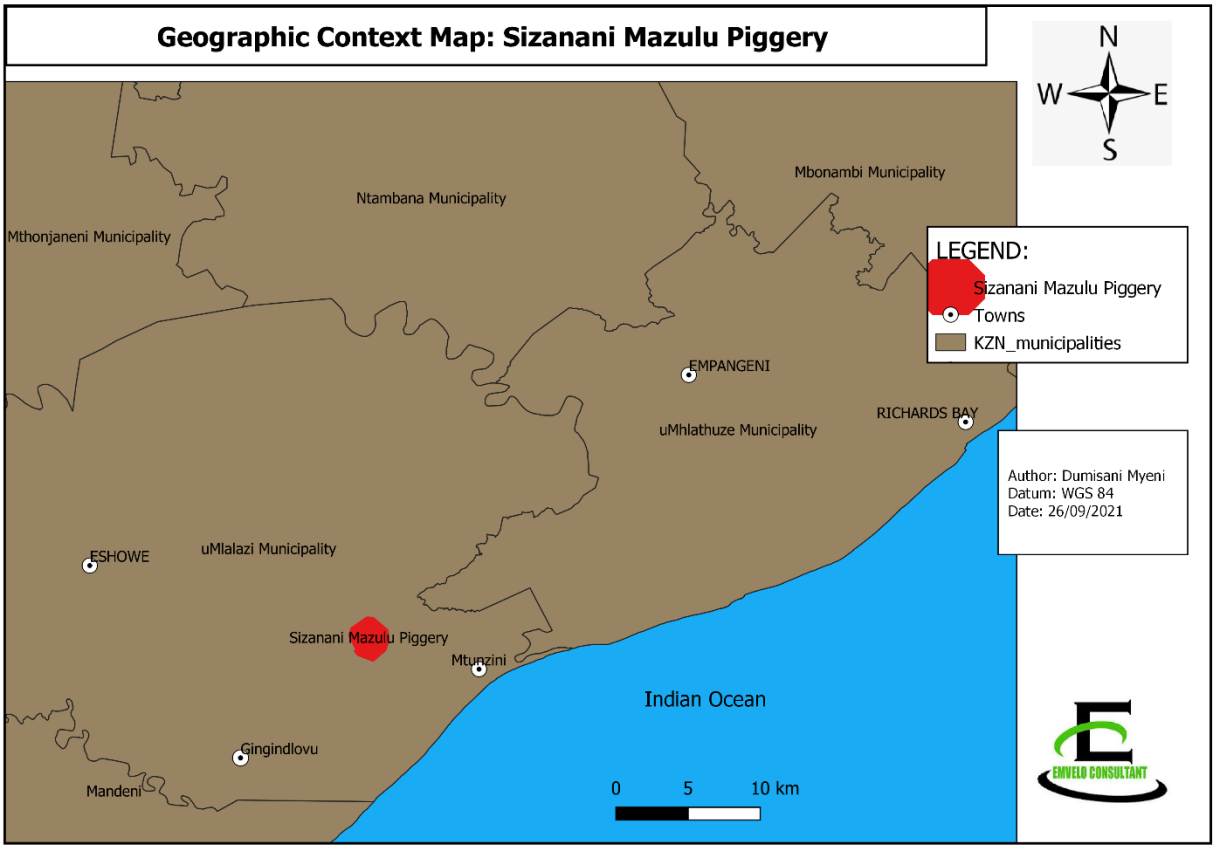

Figure 1: Geographical Context for Sizanani Piggery Farm

4.2 Site Locality Context

The site is located within Zamokuhle/Obanjeni area, ERF 15829, Reserve 9, Ward 20 in Mthunzini within the jurisdiction of the Umlalazi Local Municipality, King Cetshwayo District, Kwazulu-Natal (***Figure 2***).

The locality of the study area is currently zoned agricultural and has been historically utilised as an agricultural farm by the applicant, therefore it will not require a change of land use. The

surrounding land use is agricultural (classified as crops and ranch lands) and comprises of other farm dwellings.

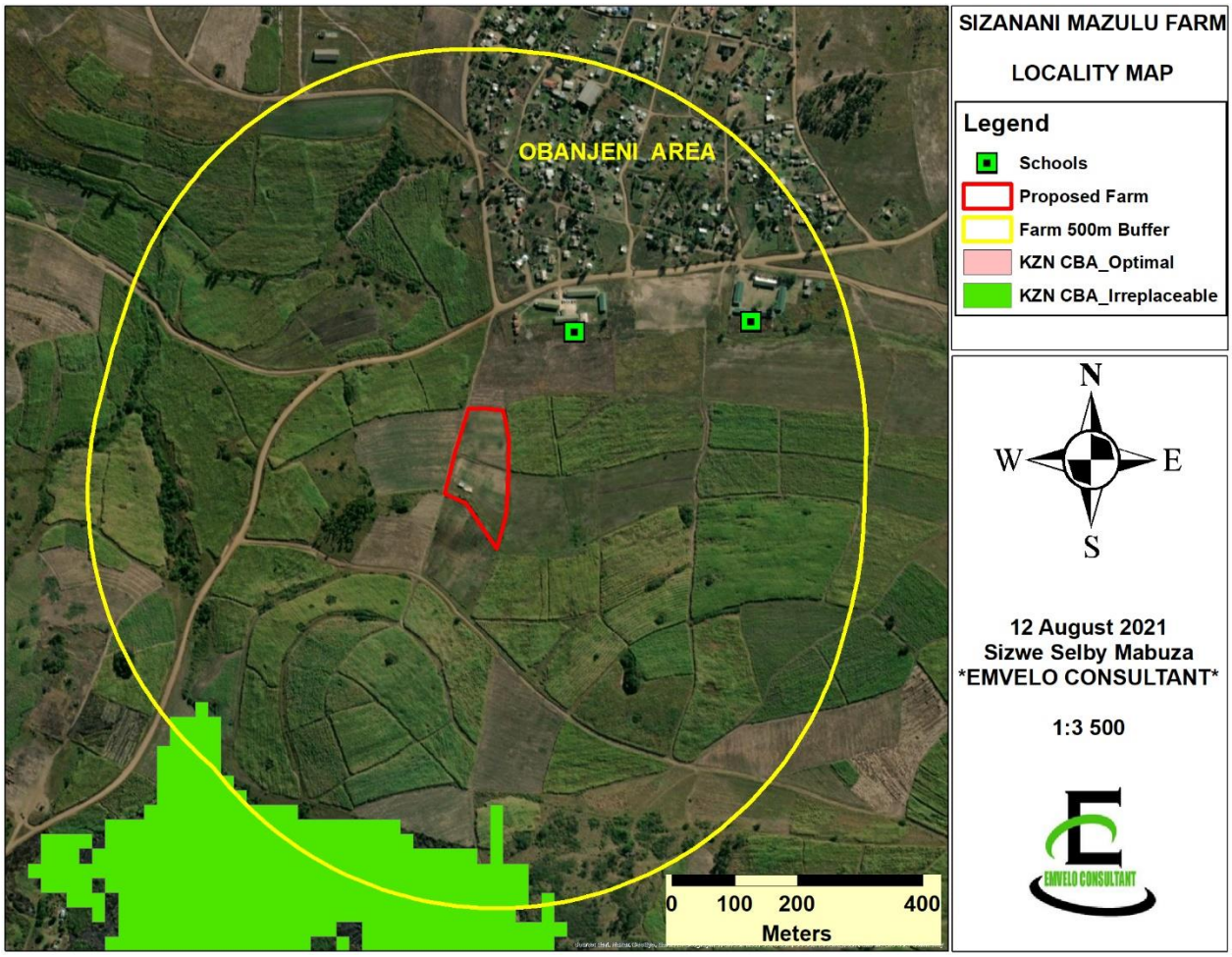

Figure 2: Locality map depicting a site layout

The (***Table 2***) below, provides the Global Positioning System (GPS) co-ordinates for the proposed development site.

Table 2: Site Activities Co-ordinates

Latitude /Longitude	Degrees	Minutes	Seconds
Within the Farm			
South	28°	56'	16.81''
East	31°	40'	16.24''

The (***Table 3***) below, provides the 21-digits Surveyor General Code (SGC)

Table 3: 21-digits Surveyor General Code

N	O	G	U	0	0	0	0	0	0	0	1	5	8	2	9	0	0	0	0	0

5. SITE ACCESS

The site can be accessed from R102 between Gingindlovu and Mtunzini via a local road, into Zamokuhle Area, in Mthunzini Ward 20.

6. ACTIVITY MOTIVATION

The Sizanani MaZulu Piggery Multipurpose (PTY) Ltd has venture into pork industry, because of growing market demand. The business proposes to develop a piggery facility that will produce approximately 300 porkers within a production cycle to supply the pork market.

6.1 The need

The Sizanani MaZulu Piggery Farm has observed an opportunity in the pork industry in South Africa and owns suitable land for the operation of these activities, which is in an area zoned for agriculture, and is surrounded by other agricultural farms. This business venture has been prompted by ever growing pork market demand in South Africa and internationally.

Therefore, in line with the Kwa-Zulu Natal Provincial Growth and Development Strategy (2011), District Growth and Development Planning policy and National Development Plan 2030, the agriculture industry not only provide food security but also a major employer and contributor to the GDP. In totality the development of Sizanani MaZulu Piggery farm like other businesses will have an economic multiplier effect through job creation and other suppliers and service provider servicing the industry.

6.2 Desirability

In addition, the Sizanani Mazulu expansion will provide employment to the host community, during the construction and operational phase. This will improve on skills development because the staff will be required to be competent with the care and health of the pigs. Therefore, this proposed

development of the farming project will allow the Farm to achieve socio-economic objectives of poverty alleviation and generation of employment hence contribute positively to the economy of our country.

7. DESIGN CRITERIA

The facility design of the proposed construction of Sizanani Piggery Farm to accommodate approximately 300 pigs is outlined in (***Table 4***) below:

Table 4: Design criteria for Expansion of Amandla Power Agri Piggery

Design parameter	Measurement
Unit size	200m^2, 320m^2 and 320 m^2
No. of Facilities	3
Total size of facilities	840 m^2
Facilitate types	50 Sows Unit: Boar and Dry Sows 25 Sow Unit: Farrowing and Weaners 50 Sow Unit: Growers
Flooring and partition	Weaners: PVC flooring and fibre support beams Farrowing: PVC, Cast iron slats and support beams Boar and Dry Sows: Concrete slat Growers: Concrete slat
Drainage system (Flush Pipes)	250mm diameter
Slurry sump storage capacity	90m^3
Slurry sum dimensions	L x W x H 9m x 7m x1.5m

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 however, 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. Therefore, after weighing all project alternatives for this project, the '***Site layout, Design and Technology alternatives***' were considered as the major development alternative that would meet the stated need for and purpose of the project, by providing proper mitigation measures.

8.1 Alternative A (Site Layout Alternative)

Based on the infrastructure technology and the location, the proposed location alternative has been chosen for the following reasons: firstly, the proposed project site is privately owned by the Sizanani MaZulu Co-op, and this is the only property currently available for the proposed activities, hence other site alternatives have not been considered. Also, the current land-use of the proposed site is agricultural, and the neighbouring sites are farms, which makes the proposed expansion activities to blend in well with the surrounding environment.

This alternative also includes a slurry sump (90 cubic meters) for the effluent that will be generated during the operational phase of the proposed development. This effluent will be temporary collected on the slurry sump by the service provider and will be recycled into fertilizer to be collected and used by other farmers for crops on their farms.

8.2 Alternative B (Design and Technology Alternative)

The design alternatives form an integral part of the project proposal and so become a part of the project description, as a result need not be evaluated as separate alternatives (DEAT, 2004a). The design alternatives form an integral part of the project proposal and so become a part of the project description, as a result need not be evaluated as separate alternatives (DEAT, 2004a). For this project, the project design provides for consideration additional eight (8) pigsties, which six (6) of (40x8m), and two (2) of (25x8m), and a 90m^3 slurry sump to temporary store the slurry from

the pigsties, in order to accommodate the expansion of piggery to host approximately 300 pigs exclusive of piglets.

The technological alternative aspects of the proposed activity will be realised during the operational phase. The facilities will be designed in such a manner that they address environmental health concerns associated with piggery farming, as the facility floors will be design for adequately flushing of the pig slurry away from the facilities unto the slurry sump through drainage systems (***Table 4***).

8.3 Alternative C (No-Go Alternative)

In the absence of the proposed development, the Sizanani MaZulu Piggery will miss an economic opportunity, to supply and grow the much aspiring pork industry and meet the market demand. This will not only affect Sizanani Mazulu piggery, but the local economy of Umlalazi Local Municipality, King Cetshwayo District and KZN at large would have a missed opportunity, as the farming like other industries has economic multiplier effect through job creation and other suppliers and service provider servicing the industry (***refer to section 6.1& 6.2***).

The EAP is therefore of the view that the NO-GO option will be undesirable, in the face of socio-economical aspects for the local economy and districts DGDP, as well as the South African 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 5: Environmental Statutory Framework

Legislation	Relevance
Constitution of the	➢ Chapter 2 – Bill of Rights. ➢ Section 24 – Environmental Rights.

Republic of South Africa, (No. 108 of 1996)	
National Environmental Management Act (NEMA) (No. 107 of 1998)	➢ 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)	➢ 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.
➢ 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. ➢ 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. ➢ The proposed project triggers the Activities under Listing Notice 1.	
	Activities under Listing Notice 1 that are relevant to this project are as follows;

GNR No. 327 (7 April 2017) **Listing Notice 1.**	**Activity 4;** The development and related operation of facilities or infrastructure for the concentration of animals [for the purpose of commercial production] in densities that exceed - (ii) 8 square meters per small stock unit and; b. more than 250 pigs per facility excluding piglets that are not yet weaned	The farmer proposes to raise 80 sow units, which will be raised in 8 pigsties. The farmer expects to have more than 300 pigs in total as part of this development.
National Water Act (Act No. 36 of 1998)	➢ 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).	
National Environmental Management Air Quality Act (Act No. 39 of 2004)	➢ Air quality management ➢ Section 32 – Dust control. ➢ Section 34 – Noise control. ➢ Authority – EDTEA.	
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	➢ Management and conservation of the country's biodiversity. ➢ Protection of species and ecosystems. ➢ Authority – EDTEA.	
Occupational Health & Safety Act	➢ Provisions for Occupational Health & Safety ➢ Authority – Department of Labour.	

(Act No. 85 of 1993)	
National Heritage Resources Act (Act No. 25 of 1999)	➢ 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
National Road Traffic Act 1996 (Act No. 96 of 1996)	➢ 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 Southern African region is divided into three climatic regions; wet, dry, moderate, and the region of the KwaZulu Natal encompasses both, with categories such as humid subtropical (Cfa), oceanic climate (Cfb), hot semi-arid climates (BSh) and tropical savanna climate (Aw), but the most prevalent ones are Cfa and Cfb (Climate-Data.org).

The study region of King Cetshwayo District has a temperate climate with winters being very mild and summers that can be hot and humid, with mostly precipitation received during the summer season. The mean annual temperature varies between 21°C along the coast to 16°C inland.

Umlalazi Municipality (Eshowe) lies on 538m above mean sea level, and its climate falls under the Cfa also classified as warm and temperate, with the mean annual temperature of 19˚C, and mean annual precipitation of 1119mm, experienced during summer season, but some

precipitation also experienced even in dry season (Ezemvelo KZN Wildlife, 2014; Climate-Data.Org).

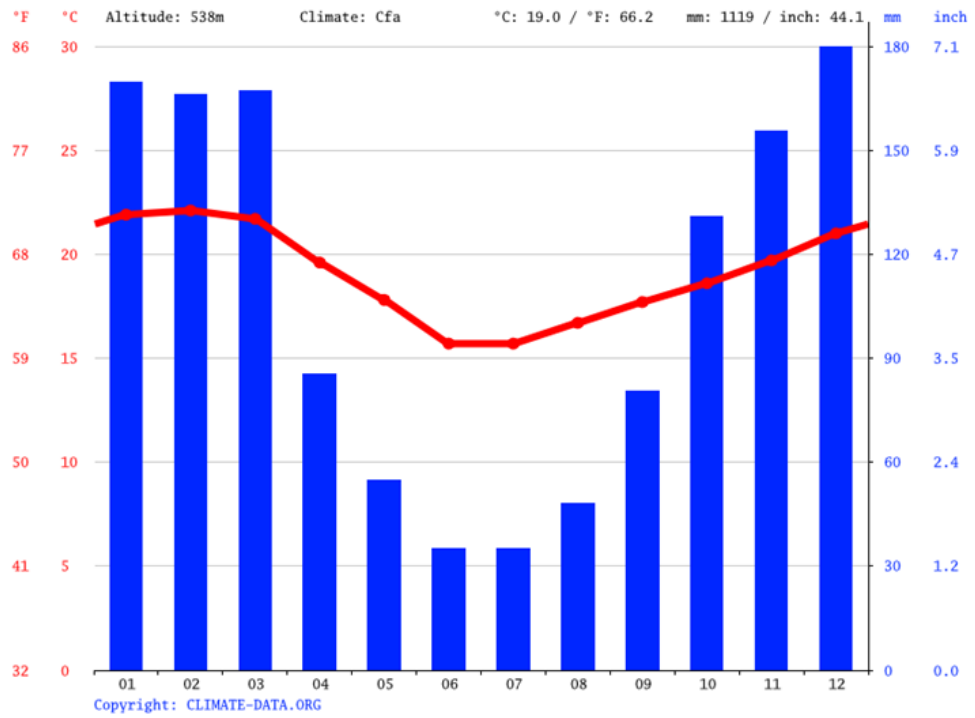

Figure 3: Eshowe climate graph [Source: Climate-Data.Org]

10.1.1 Potential impact

The proposed development does not directly rely on climate, as the operation and does not directly affect the climate change as there are no emission, except from methane from the piggery. The measures to mitigate the potential impacts will be considered further in the EMPr.

10.2 Hydrology

The uMlalazi municipality has two key hydrological features namely, the uMlalazi estuary which lies below the Mtunzini Village and the Mbongolwane Wetlands, which is a prime example of a read marsh, it remains wet even through the dry season. The uMlalazi estuary is easily accessible by road and lies below the Mtunzini Village. It is approximately 54 km long with a catchment area of 492km^2, of which approximately 46% is agriculture and consists mainly of subsistence farming, sugar cane and commercial forestry. The catchment does not appear to be degraded and about

53% of the catchment is natural. This natural vegetation is comprised of grassland, bushland and forest(Ezemvelo KZN Wildlife, 2014).

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

10.2.1 Rivers and dams

Bordered by Thukela River at the South-West border and Mfolozi River at the North-Eastern border, the river systems in King Cetshwayo District are conglomerated within the central and coastal areas, with major rivers within the region, include; Nseleni, Matigulu, Mhlathuze, Mlalazi, Mfule, Nyalazi, Mzingwenya, Mfolozi River (Ezemvelo KZN Wildlife, 2014).

There were no rivers and stream within the reach of the study area (***Figure 5***). The figure below indicates that the Mlalazi NFEPA River traversing at the north-west of the project site.

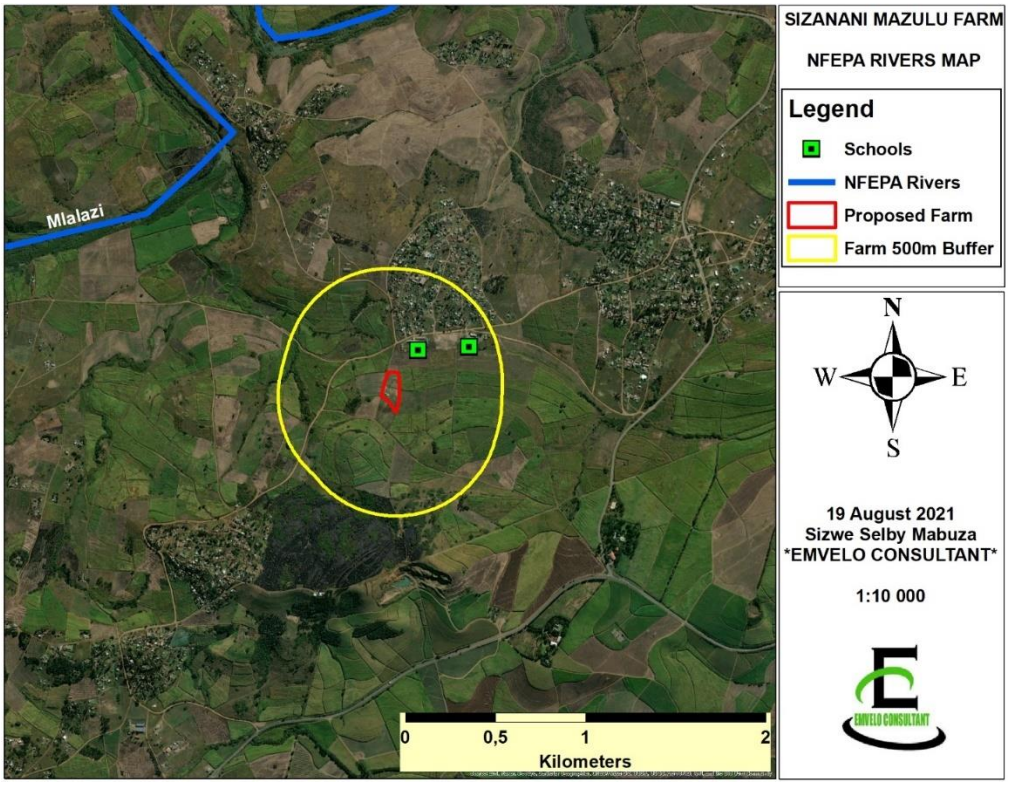

Figure 4: Map showing rivers and dams around the project area

10.2.2 Wetlands

The major wetlands at King Cetshwayo District are mainly formed at the coastal plain situated at the south-eastern and south-western parts, namely; Mhlathuze wetland systems which host Cubu lake, and Mbongolwane wetland system at the upper reach of Matigulu River, respectively. The Mbongolwane wetlands exist within the Umlalazi Municipality and many of these wetlands have been drained to make land available for commercial agriculture and as such, this wetland system is particularly critical. The Mbongolwane wetlands exist within the municipality and many of these wetlands have been drained to make land available for commercial agriculture and as such, this wetland system is particularly critical (Ezemvelo KZN Wildlife, 2014).

There were no wetlands encountered within 500m buffer coverage of the project site (***Figure 5***).

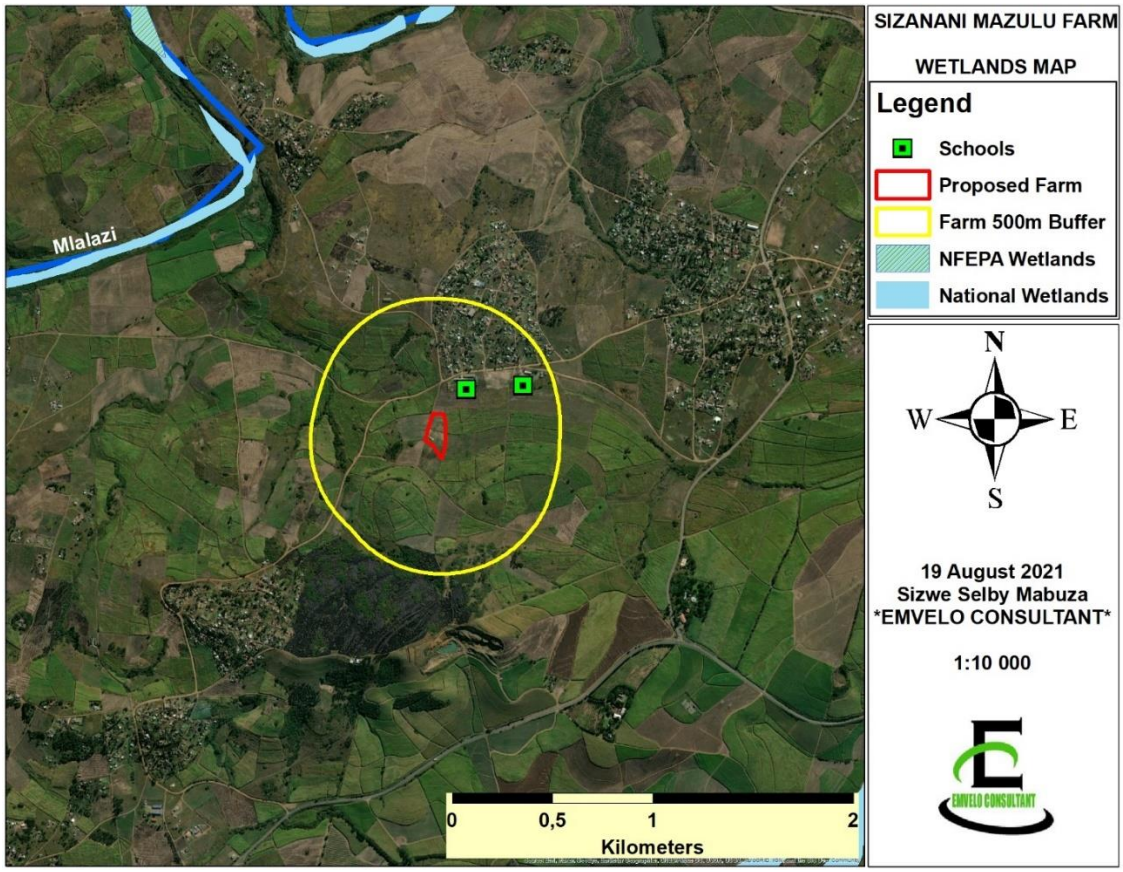

Figure 5: Map showing the wetland features around the project area

10.2.3 Potential impacts of the project hydrological features

The proposed development will have no impact in hydrological features as there are no hydrological components identified within the reach of the study area. However, the recommendations by the EMPr must be adhered to, to mitigate any impacts that may arise.

10.4 Topography

The King Cetshwayo District has a varied topography that extends from the flat coastal plains to inland hilly areas and steep valleys, each vegetation endemicity supplementary to its geographical location. In these aspects, the flat coastal region of approximately 450m above sea-level comprises of the Natal Coastal Belt and Zululand Coastal Plain. Whereas the Eshowe block as an inland adjacent to Coastal Belt comprise of hilly topography with altitudes increasing to approximately 900m above sea-level. The terrain become increasingly extreme towards the north-west which places those areas within the altitude ranging between 900 and 1400m above sea-level, in the process render those part of region to be characterized by steeply incised valleys (Ezemvelo KZN Wildlife, 2014).

The project area comprises of gentle to flat terrain with the altitude ranging between 20m and 100m above sea-level. (***Figure 7***).

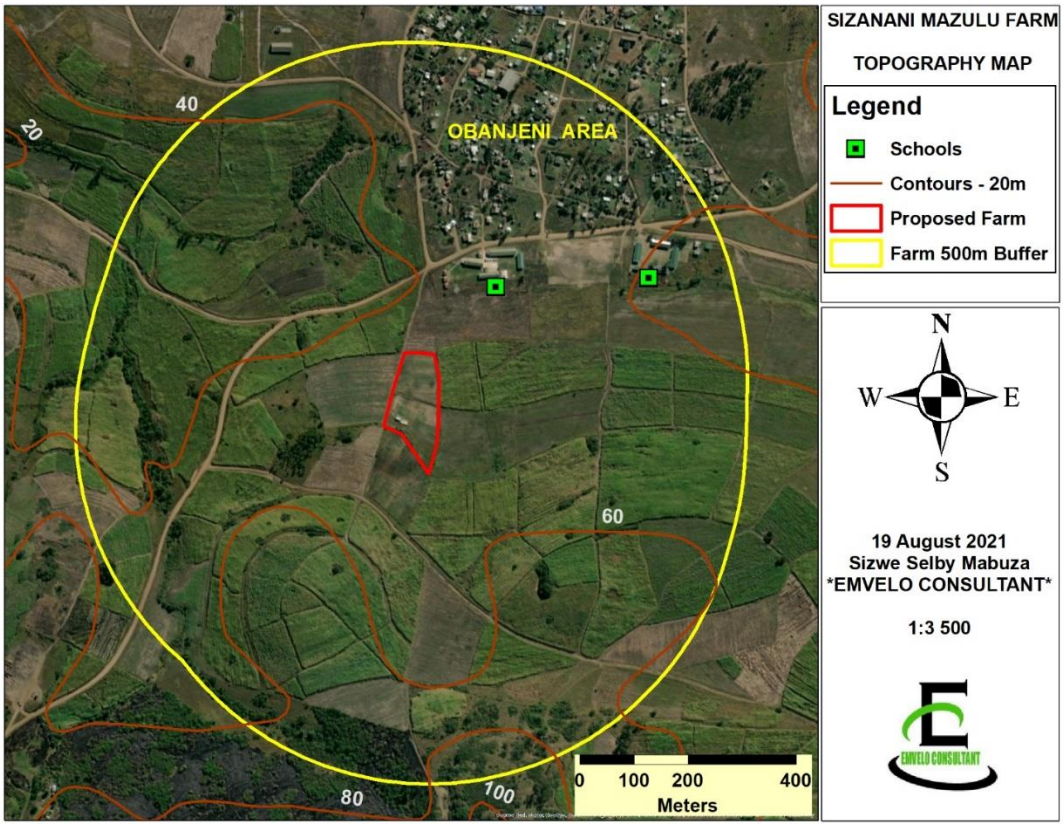

Figure 6: Contour Map showing elevations within the project area

10.4.1 Potential impacts

The gentle sloping terrain at vicinity of Sizanani Mazulu Piggery renders a smooth operation in terms of slurry flushing as the proposed slurry sump will be situated at down the slope gradient. Therefore, this gently sloping come as an advantage for proper functioning of drainage system, which will not require deep trenches etc. The potential impact could be experience as in most cases the sloping terrain renders the potential for run-off. However, proper mitigation can be achieved through carefully implementation of recommendations given by the EMPr.

10.5 Geology

The King Cetshwayo District features are stratified across the regions. The coastal region of King Cetshwayo District which is south-west and south-east is characterised of flat plains, which narrows towards south and widened towards north. This part of the District is underlain by Cainozoic and recent geomorphological series which include sand stones, shales and mudstones. The existence of relatively flat terrain renders this part of the region to be less susceptive to surface erosion. Whereas the western region characterised of complex undulating terrain underlain by

Table Mountain series, gneiss and granite of the Natal Monocline. Unlike the coastal region, the granite derived soils in western region vary considerably but significantly susceptible to erosion at slope areas. Moreover, the geological features at central region rise from the formation of Table Mountain series and also underlain by Ecca Group Formation, granite, sandstone, shales and limestones. The Ecca Group are susceptible to slight to moderate erosion whilst the Table Mountain series is moderate to severe erosion (Ezemvelo KZN Wildlife, 2014).

The study area is characterised of Arenite Geological Formation (***Figure* 5**).

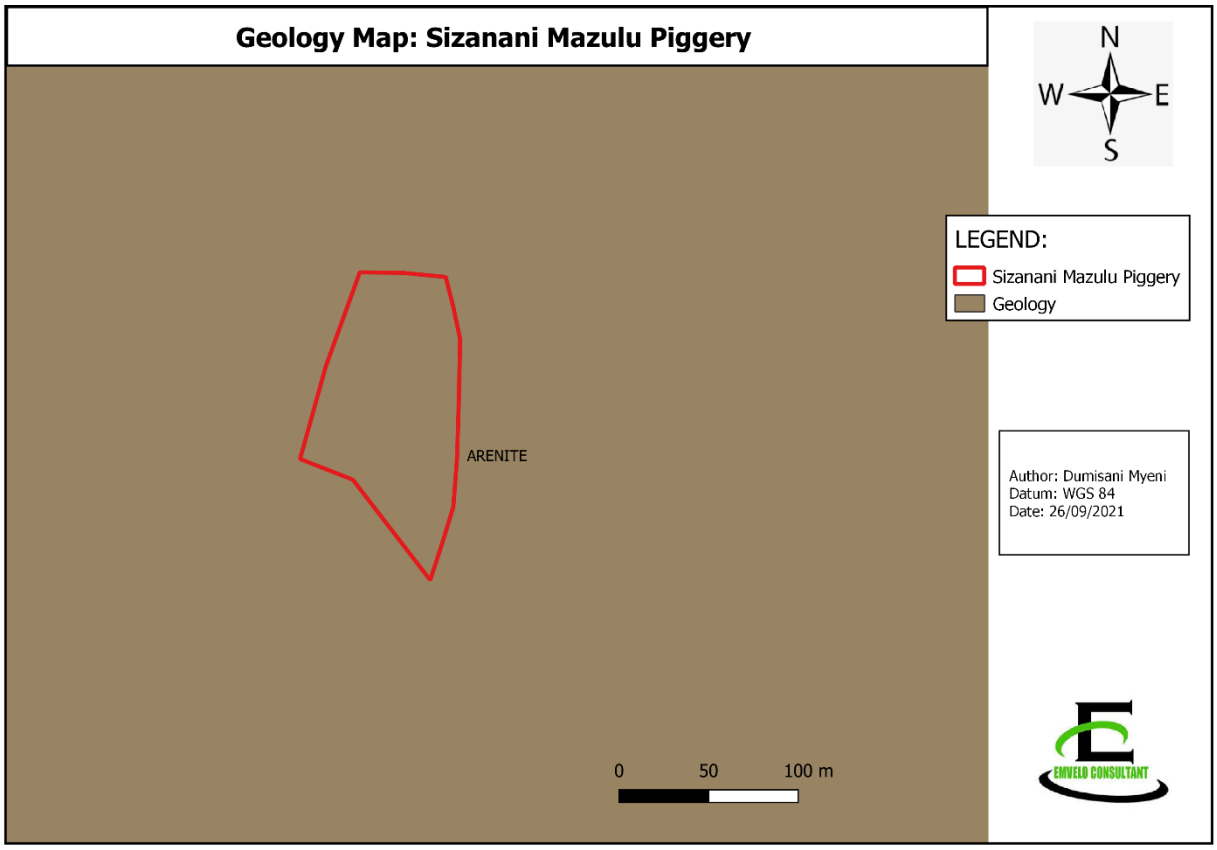

Figure 7: Map showing a dominance geological formation within the study area

10.5.1 Potential impacts

The construction activities for piggery include clearance for foundation, storm water system and slurry sump. These activities may have impact on geological stability as a result of run-off in case it is taken in a sloping topography. Therefore, the mitigation measures given by the EMPr must be adhered to in order to minimise any potential significant impacts that may arise.

10.6 Biomes

The uMlalazi local Municipality has four types of biomes: Namely Forest, Savanna, Grasslands, and Thicket biome. Much of the land cover is largely dominated by the Savanna, followed by the thicket, then the grassland on the northwest and small regions of the forest biome, found mostly along the Indian Ocean Coastal Belt.

The project area is characterised of Savanna Biome. (***Figure 6***).

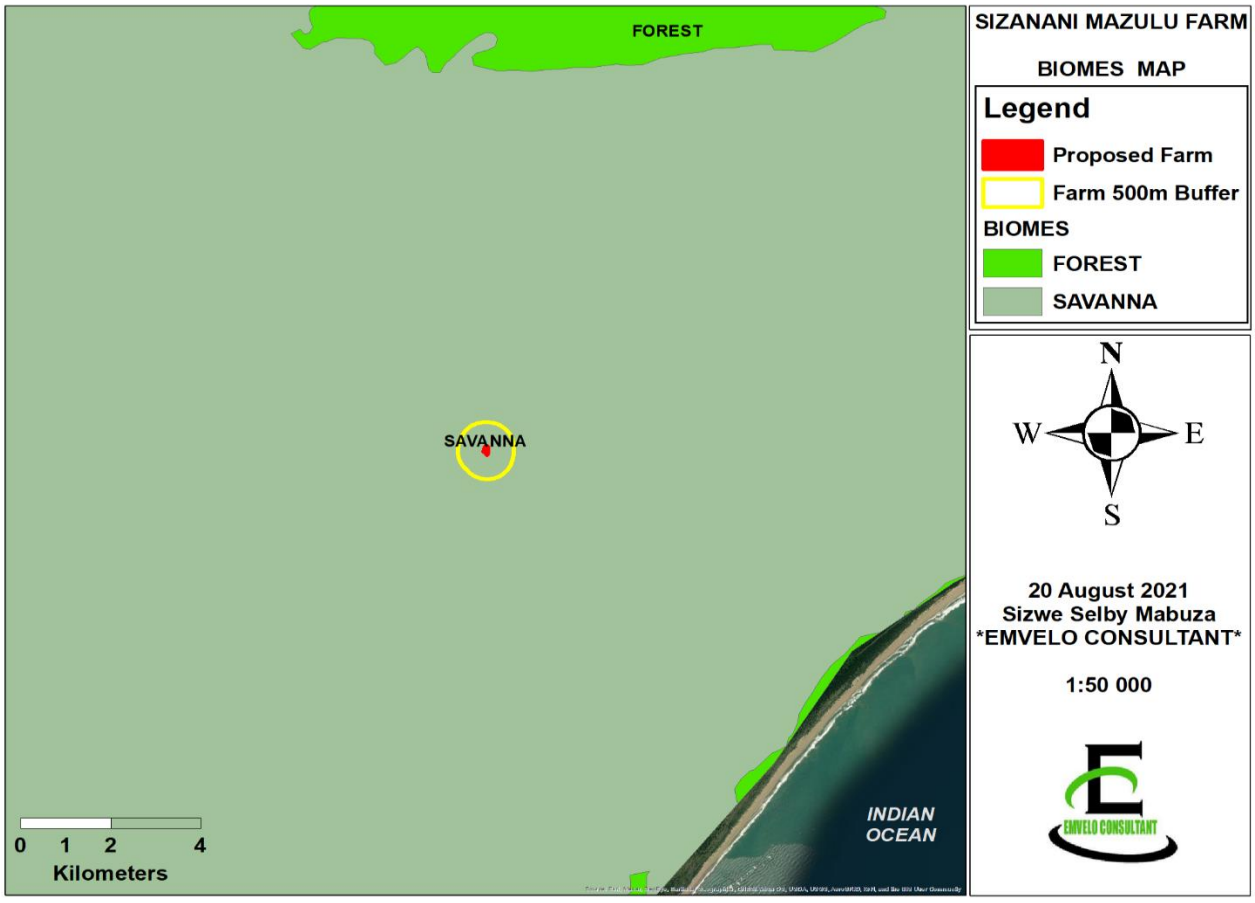

Figure 8: Map Showing the biome within the study area

10.7 Flora

The King Cetshwayo District Municipality area has large tracts of Biodiversity 1 and 3. These are designated areas with many protected and environmentally sensitive features (KCDM IDP, 2019).

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 uMlalazi Local Municipality occurs within one of the two biodiversity hotspots, the Maputaland Centre (of endemicity), in the Pondoland-Maputaland Region. The natural vegetation of the municipality is generally comprised of grassland, bushland, and forest, most of which consist of critical biodiversity areas (CBA) that are irreplaceable, as indicated in figure 9 of protected areas.

The vegetation within locality of the study area is dominantly the as KwaZulu-Natal Coastal Belt Grassland (

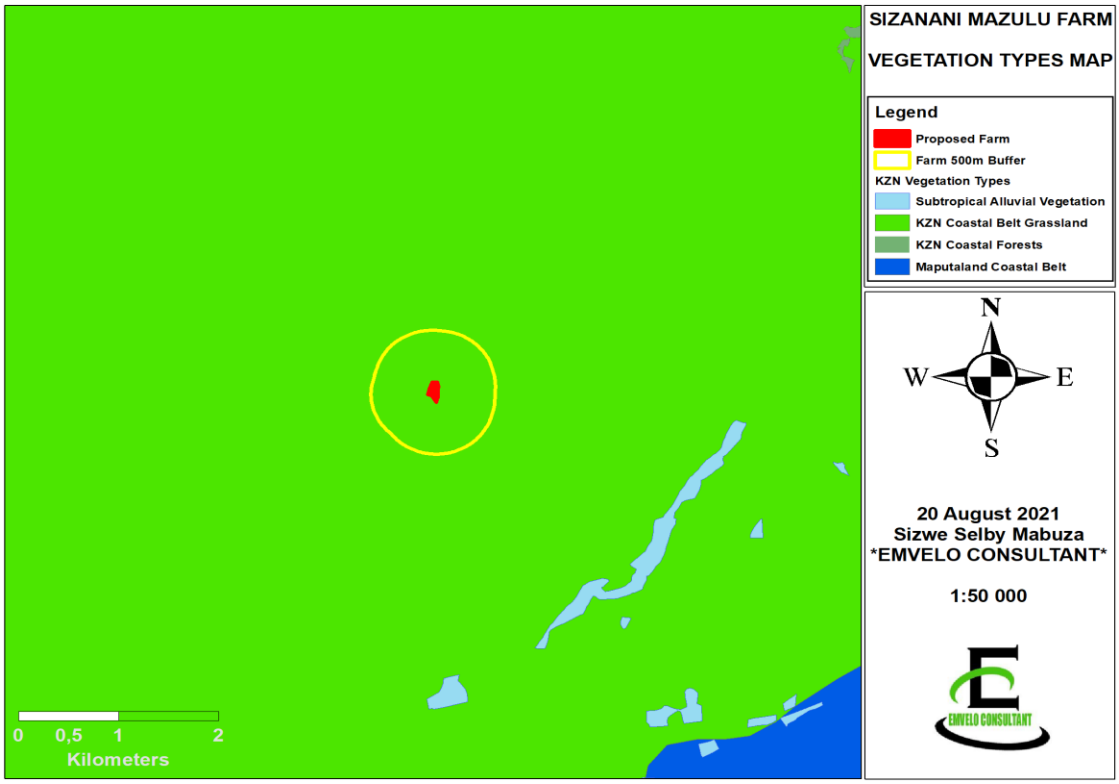

Figure 9: Map showing the vegetation types within the study area

There were no species of conservation concern (SCC) encountered within the farm. The project area is located approximately 8.5 km from a protected area, the Ngoye Nature Reserve.

10.9 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 Provincial Reserves are managed by Ezemvelo KwaZulu-Natal Wildlife (EKZNW), who is the primary Conservation Agency responsibility for the management of biodiversity in KZN.

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, the 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.

The Umlalazi Local Municipality has 4 proclaimed protected areas, namely, Entumeni forest, Ongoye forest, the Umlalazi Coastal Nature Reserve and the Dlinza forest. There numerous rare trees found within Ngoye Reserve, including the Giant Umzimbeet, Giant Pock Ironwood, Zulu Bead-string, Natal Krantz Ash, Forest Mangosteen, Forest Water Berry and the Pondo Fig (KCDM 2017/18 IDP). The uMlalazi Reserve, covers approximately 1 028 hectares of land, and together with the Amatikulu Reserve, they form the Siyayi Coastal Reserve, which stretches from the uMlalazi River in the north, in a narrow band along the coast southwards almost to the Thukela (Tugela) River. There are 5 different ecosystems within the reserve, namely estuarine, dune scrub, dune forest, coastal riverine and coastal forest.

The Ngoye Nature Reserve is situated at 8.5km north of the study area, while uMlalazi Reserve is situated at approximately 9.3km south-east of the study area (***Figure 10***).

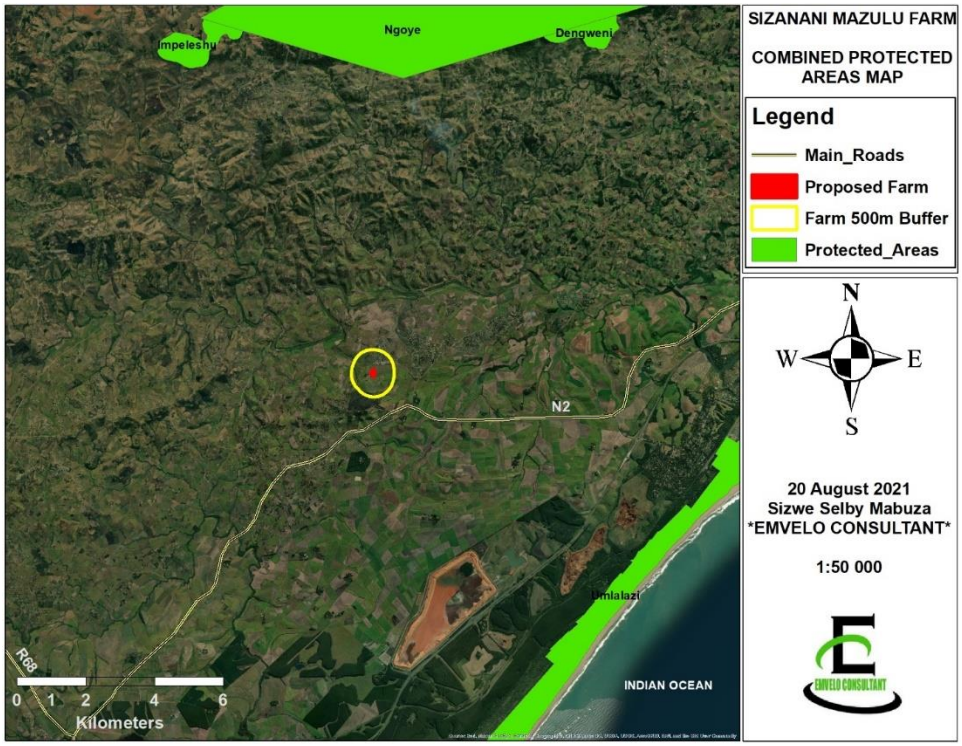

Figure 10: Map showing Protected Areas within the study region

Upon interrogation of the KZN Biodiversity Conservation Plan (KZNBCP) for terrestrial areas KZN Biodiversity Plan, it was observed that there were no protected areas and no CBAs within the reach of the study area (Figure 9). Moreover, there were no ESA within the reach of the study area. The project area reflects no biodiversity conservation significant ***(refer to table 6***).

Table 6: Subcategories of CBA and ESAs [Source: Ezemvelo KZN Wildlife,2016]

Critical Biodiversity Areas (CBAs) **– Crucial for supporting biodiversity features and ecosystem functioning and are required to meet biodiversity and/or process targets**	
Critical Biodiversity Areas: Irreplaceable	Areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems.
Critical Biodiversity Areas: Optimal	Areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding high-cost areas as much as possible (Category driven primarily by process, but is informed by expert input).
Ecological Support Areas (ESAs) – **Functional but not necessarily entirely natural areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within Critical Biodiversity Areas.**	
Ecological Support Areas	Functional but not necessarily entirely natural terrestrial or aquatic areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the Critical Biodiversity Areas. The area also contributes significantly to the maintenance of Ecosystem Services.
Ecological Support Areas: Species Specific	Terrestrial modified areas that provide a critical support function to a threatened or protected species, for example agricultural land or dams associated with nesting/roosting sites.
Ecological Support Areas: Buffers	Terrestrial areas identified as requiring land-use management guidance not necessarily due to biodiversity prioritisation, but in order to address other legislation/ agreements which the biodiversity sector is mandated to address, e.g. WHS Convention, Triggers Listing Notice criteria, etc.

Furthermore, the study area mainly falls under a transformed habitat, which has been used for crop production. Also, the were no SCC plant species identified within the study area (***refer to Section 10.6***).

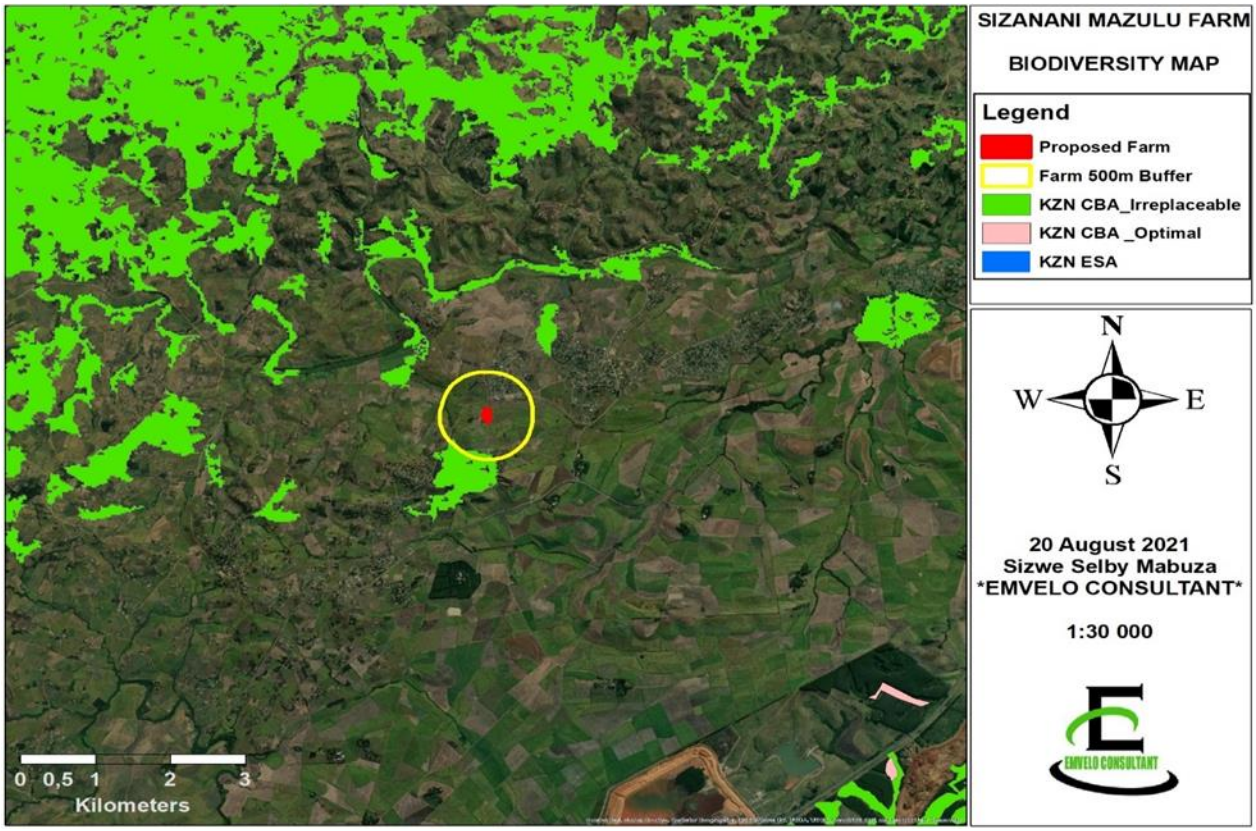

Figure 11: Map showing KZN Systematic Conservation within the study area

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

Measures to prevent the loss of Critical Biodiversity Areas have been analysed and presented on this report, as well as the EMPr.

10.10 Fauna

The Maputaland-Pondoland Albany hotspot records high levels of species and endemism for fauna, although this is lower than that recorded for plant diversity.

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.

10.10.1 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 construction 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 EMPr are adhered to.

10.11 Visual environment and land use character

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 being located around Amatikulu, Felixton, Empangeni and Matubatuba, and plantations around Eshowe, Melmorth, Mtunzini, Kwambonambi and Nseleni.

The uMlalazi Area is dominated by a band of commercial farms (mostly sugar cane plantations), covering an area from the west of Eshowe and along the R68 to Gingindlovu (ULM SDF). The largest portion of the municipal area is covered by land in the ownership of the Ingonyama Trust

and farming activities are extensive. This area is also characterized by poor land management practices and presents a challenge with respect to the unlocking of the agricultural potential that exists. This area also accommodates scattered residential settlements posing considerable pressures with respect to the provision of basic services.

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. (***Figure 12***).

Figure 12: Local environment (existing piggery, ranch land, and other farms)

The proposed Farm is surrounded by several other farms, making this proposed development to be streamlined with the local environment, and categorized as of soft modification. However, within 500m of the proposed site there is the Obanjeni rural settlement, a primary and a high school.

10.11.1 Potential Impacts

The proposed expansion will blend in with existing land uses which is mostly dominated by several other built-up areas and cultivated lands. 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 “medium / moderate visibility”.

10.12 Heritage and cultural aspects

Eshowe, a town within the uMlalazi municipality offers a window on history as it is the oldest town. This is where King Cetswayo was born and died, and it was King Mpande who first invited the Norwegian missionary, the Reverend Ommund Oftebro to settle his mission station here in 1861, thereby forever changing the face of Eshowe (ULM IDP).

During site visit, there were no graves or cultural aspects that were identified. Nonetheless, construction activities can cause negative impacts on cultural resources that might be buried underground. Therefore, precautionary measures must be practiced during construction activities e.g., excavations.

The inquiry has been lodged with AMAFA to ascertain whether there are any cultural and heritage sites within the study area. Findings will be incorporated into the final Basic Assessment Report.

10.12.1 Potential Impacts

Based on desktop studies and site investigation there are no records of archaeological resources, and a preliminary desktop study for palaeontological fossils sensitivity of the proposed site, reveals that the site falls within a very low sensitivity. Also, the proposed development will take place within a transformed land (agricultural land). Therefore, the project will have no negative impacts, provided that all archaeological and other cultural and heritage aspects are managed through proper implementation of recommendation provided by EMPr.

10.13 Social and economic aspects

The King Cetshwayo District (KCD) is 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 Richards Bay 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 eThekwini 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.

The uMlalazi Municipality is reliant on the Agricultural Sector for its economic well-being. This sector contributes 33% of the gross geographic product of the area and employs the majority of the workforce (ULM IDP 2010/11). Part of the reason for the dominance of this sector can be attributed to low levels of education for the adult population in the Municipality

The uMlalazi Municipality is reliant on the Agricultural Sector for its economic well-being. This sector contributes 33% of the gross geographic product of the area and employs the majority of the workforce (ULM IDP 2010/11). Part of the reason for the dominance of this sector can be attributed to low levels of education for the adult population in the Municipality

The census data obtained by StatsSA indicate that there has been a noticeable improvement in the employment status within uMlalazi Municipality. Census 2011 data indicated that the unemployment rate was 35.2% and this has positively declined further to 26.2%. This indicates not, only that the employable population is more active, but also that local economic development within the municipality is increasing favorably over the years (ULM IDP, 2018/2019).

10.13.1 Potential Impacts

In light with above (***Section 10.13***) explained situational analysis within uMlalazi Local Municipality. The proposed development will provide employment to the host community, during the construction and operational phase. This will improve on skills development because the staff will be required to be competent with the care and health of the pigs. Therefore, this proposed development of the farming project will allow the farmer to achieve socio-economic objectives of poverty alleviation and generation of employment hence contribute positively to the economy of our country.

11. WASTE, EFFLUENT, AIR POLLUTION AND ATMOSPHERIC EMISSIONS

Construction and operation activities, like other operations, also leads to pollution of air, land, and water bodies, due to the general and hazardous waste emanating from the activities.

11.1 Waste management

The construction and operational phase of the proposed activity will result in the generation general and hazardous waste.

Construction Phase:

The construction phase will generate general solid waste (rubble, cement bags, general domestic waste etc.) as well as hazardous waste such as empty chemical containers etc. The general waste during the construction will be sorted into recyclable and non-recyclable waste bins. The non-recyclable waste will be disposed of at uThungulu District Municipality landfill site.

Operational Phase:

The operational phase will generate both general and hazardous waste. General waste from various packaging and domestic waste, as well as biohazardous (medical equipment, unused animal medication) and hazardous waste (cleaning materials, oils, and other chemical solvents). The feed packaging such as sacks will be re-used to pack supplies or spilled feeds, and the hazardous waste will be collected by the certified waste services. Other general waste will be disposed of at nearest land fill site at uThungulu District Municipality landfill site.

The piggery will generate slurry waste which will be a mixture of waste feed, pig's urine, and faeces. This slurry waste will be flushed down through drainage system into a slurry sump. Also, in some case the pig's carcasses, which will be disposed of by digging and burying them to safely decompose naturally.

11.2 Effluent

Construction Phase:

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.

Operational Phase:

The operational phase of the proposed expansion pig farm will result in accumulation of wet slurry within the facility. The slurry comprises wash water, feed, faeces, and urine. The slurry will be flushed through the drainage system into the slurry pit on site for temporal storage, will then be emptied by the honey sucker tractor (service provider) and then distributed to local crop farmers for use as manure. Therefore, the slurry is regarded as a by-product for piggery operation.

11.3 Ambient air pollution and atmospheric emissions

The proposed development itself will not have direct impact on air pollution and atmospheric emission during construction and operational phase. However, certain activities associated with livestock farming is largely associated with nuisance and ambient odour issues if their

concentration and hygiene is unkept and not monitored. But these can be felt within the proximity of the facility. These impacts can be mitigated through adherence to the EMPr.

11.4 Noise management

The project will have no impact on noise pollution as the piggery facility is located within isolated farming area. The potential noise pollution impacts will be mitigated provided that the EMPr is adhered to.

12. WATER USE

The farm will use the borehole water, as a result Sizanani MaZulu Piggery is currently in an application stage of Water Use License. The water use will include water construction, piggery farming consumption, equipment cleaning and hygiene as well as drinking and consumption for farm compound.

13. ASSOCIATED INFRASTRUCTURE

Energy supply:

The provision of electricity falls under the mandate of Eskom. Therefore, the electricity supply with the farm areas comprises medium to low voltage.

Access road:

The farm makes use of existing access road traversing next to the piggery farm.

14. 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.

14.1 Background

Public Participation Process (PPP) 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 PPP 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.

14.2 Objectives of public participation

The objectives are as follows:

- To inform and involve the community and the stakeholders about the proposed development;
- 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; and
- To optimise on local and indigenous knowledge of the area.

14.3 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 7: Public Participation Processes

All the Interested and Affected parties were notified of the application by-		
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**
Has a written notice been given to-		
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**~~
Placing an advertisement in-		
Local newspaper (isiZulu News Papers)	**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**

14.4 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 were posted onsite on 13th August 2021. Notices were displayed in strategic positions in the project area to enhance accessibility from the public. Following, the posting of onsite notices, the newspaper advert in isiZulu was published by Ilanga

News Paper (*2 -4 August 2021 edition*). The Focus group meeting comprising of nearby farm dwellers and ward councillor was conducted. The community stakeholder was afforded an opportunity for public participation.

Public participation activities and reports are attached in Appendix E (Public Participation).

15. IMPACT ASSESSMENT AND MITIGATION MEASURES

The Environmental Impact Assessment (EIA) conducted for the construction phase and the operational phase for the site, are discussed in (***section 15***) 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 occurring.
- Impact duration - the duration of the impact describes the period 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 because 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:

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

15.1 Impact Analysis (Preferred Site Layout and Design Alternatives)

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Project Planning			
Unnecessary damage and disturbance to natural vegetation due to poor planning: Vegetation clearance and erosion due to poor planning, site layout and design such as, poor layout and demarcation.	**Low** **(24)** **SP= (M + D + S) × P** **SP= (3 + 3 + 2)× 3** **SP =24**	➢ Since the construction will take place within existing piggery farm, the clearance must be minimal, and limited only to farm boundary. ➢ Excavation for foundation should only take place where facilities are constructed, also be limited to construction footprint as demarcated and approved by project plans. ➢ Erosion at sloping zones must be mitigated by proper implementation of storm-water management plan. ➢ A construction site camp must be developed within the farm property or use existing buildings.	**Negligible** **(5)** **SP= (M + D + S) × P** **SP= (2 + 1 + 1) × 1** **SP =4**
Loss of plant Species of Conservation Concern (SCC): There were no SCC within the prosed site, as the site is within a piggery farm which is an already transformed habitat. Also, there were no CBAs within the project reach. However Poor planning and construction may result in the permanent loss of various plant species outside the site boundary.	**Very-Low** **(18)** **SP= (M + D + S) × P** **SP= (4 + 3 + 2) × 2** **SP =18**	➢ Develop site layout to demarcate site boundary ➢ The clearance must be minimal, and limited only to farm boundary ➢ Minimize clearance by only clearing areas as demarcated and approved by project plans.	**Negligible** **(5)** **SP= (M + D + S) × P** **SP= (2 + 1 + 1) × 1** **SP =4**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Project Planning			
Degradation of ground water quality as a result of poor planning. Poor design and / or implementation of the planned infrastructure associated with piggery would lead to ground water pollution.	**Medium-High** **(44)** **SP= (M + D + S) × P** **SP= (5 + 4 + 2) × 4** **SP = 44**	➢ Adequate drainage system ➢ Concrete lined slurry sump	**Negligible** **(5)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) ×1** **SP = 5**
Pollution as a result of poor piggery planning Poor design and / or implementation of the planned infrastructure associated with piggery would lead to ground water pollution.	**High** **(60)** **SP= (M + D + S) × P** **SP= (5 + 5 + 2) × 5** **SP = 48**	➢ Develop Integrated waste management plan ➢ All waste to be disposed of at registered landfill site ➢ Develop an environmental health policies	**Very-Low** **(15)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 3** **SP = 15**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
Loss of indigenous vegetation during construction: The proposed site is an existing piggery farm. Therefore, comprises of transformed habitat. However, uncontrolled construction activities beyond the required footprint of the project area.	**Medium-High (50)** **SP= (M + D + S) × P** **SP= (5 + 3 + 2) × 5** **SP =50**	➢ Clearance for the purpose of construction of piggery facility and associated infrastructure construction must be limited to only clearing areas demarcated and approved by project plans and layout. ➢ Only the approved existing farm access road must be used, and vehicles must not traverse virgin land. ➢ The project boundary must be demarcated and site clearing as well as topsoil removal must be limited to site only.	**Very-Low (12)** **SP= (M + D + S) × P** **SP= (3+ 2 + 1) × 2** **SP =12**
Loss of plant species of conservational concern: The proposed site is an existing piggery farm. Therefore, comprises of transformed habitat. Moreover, there are no plant SCC identified within the project, and no CBAs within the project reach. However, uncontrolled construction activities beyond the required footprint of the project area.	**Very-Low (20)** **SP= (M + D + S) × P** **SP= (5 + 3 + 2) × 2** **SP = 20**	➢ Although, the site is within the transformed habitat, the project site must be surveyed prior to construction for identification of plant SCC. ➢ Install fence/buffers to restrict development from encroaching the sensitive environment. ➢ If identified, establish buffer to section with plant SCC and declare it a no-go area. ➢ If possible, the plant species of conservation concern must not be removed, or disturbed. ➢ If needed, approval must be obtained from a specialized Botanist.	**Negligible (4)** **SP= (M + D + S) × P** **SP= (2 + 1+ 1) × 1** **SP = 4**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
Degradation of freshwater (aquatic) habitat as a result of construction activities. There are no watercourses (stream, wetlands etc.) within 32m and 500m buffer coverage of the proposed site (piggery farm).	**Negligible (4)** **SP= (M + D + S) × P** **SP= (1 + 1 + 2) × 1** **SP = 4**	➢ All drainage systems must channel to slurry sump. ➢ Unauthorized abstraction of water from water features must be prohibited.	**Negligible (3)** **SP= (M + D + S) × P** **SP= (1 + 1 + 1) × 1** **SP = 3**
Disturbance of terrestrial species habitat as a result of construction activities The proposed site is an existing piggery farm. Therefore, comprises of transformed habitat. Moreover, there are no animal SCC identified within the project, and no CBAs within the project reach. However, uncontrolled construction activities beyond the required footprint of the project area.	**Very-Low (20)** **SP= (M + D + S) × P** **SP= (5 + 3 + 2) × 2** **SP = 20**	➢ Although, the site is within the transformed habitat, the project site must be surveyed prior to construction for identification of potential animal SCC prior to construction to locate, capture and relocate any animal SCC. ➢ All construction activities must take place within an area demarcated for the development. ➢ Install fence/buffers to restrict development from encroaching the sensitive environment.	**Negligible (3)** **SP= (M + D + S) × P** **SP= (1 + 1 + 1) × 1** **SP =3**
Disturbance to surrounding wildlife and fauna: Uncontrolled construction activities: vehicle movements, noise and habitat destruction will disturb animals in the area. As a result, this is likely to result in the migration of species which are	**Medium-High (44)** **SP= (M + D + S) × P** **SP= (5 + 3 + 3) × 3**	➢ Construction activities must be limited to the designated development footprint. ➢ 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.	**Negligible (5)** **SP= (M + D + S) × P**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
endemic to the project area or a loss of animal species currently foraging around the project area.	**SP = 44**	➢ No faunal species are to be disturbed, trapped, hunted or killed during the construction phase. ➢ All construction and maintenance vehicles must stick to properly demarcated and prepared roads. ➢ Driving on virgin land must be strictly prohibited. ➢ No fires should be allowed at the site.	**SP= (2 + 1 + 2) × 1** **SP = 5**
Soil erosion: The in-situ material erodibility is considered to be moderate. However, uncontrolled construction activities beyond the required footprint, as well as poor construction process during site clearing, topsoil removal and excavation works could result in soil erosion. Furthermore, the disturbed soils are prone to surface run-off.	**Medium** **(36)** **SP= (M + D + S) × P** **SP= (5 + 5 + 2 × 3** **SP =36**	➢ Best construction practices to be followed to provide good drainage and prevent erosion. ➢ Clearance and topsoil removal must be kept as minimal as possible to areas as demarcated by the project plans and to make use of natural erosion suppressors such as good grassland cover. Do not wait for construction to finish in order to start rehabilitation. ➢ Excavated material must be stockpiled along the trench within the working servitude for later backfilling or levelling, and must not be more than 1.5m in height. ➢ Excavations must not be left open for extended periods and must not be	**Negligible** **(4)** **SP= (M + D + S) × P** **SP= (2 + 1 + 1) × 1** **SP = 4**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
		undertaken until such time that all required materials are available on-site. ➢ It is recommended that excavation be carried out along the guidelines given in SANS 1200 (current version).	
Encroachment of Alien Invasive Plant Species: Uncontrolled construction activities, such as vegetation clearance and excavation are likely to spread and/or exacerbate colonization and establishment of invasive alien species	**Medium (40)** **SP= (M + D + S) × P** **SP= (4 + 4 + 2) × 4** **SP = 40**	➢ Prevent large scale clearance, and only clear the areas as demarcated by approved layout. ➢ The control and eradication of invasive plant species must be carried out during and post construction within the project site. ➢ All sites disturbed by construction activities should be monitored for colonization by exotics or invasive plants and be regular removed.	**Negligible (8)** **SP= (M + D + S) × P** **SP= (2 + 1 + 1) × 2** **SP = 8**
Potential loss of wetland habitat: There are no watercourses (stream, wetlands etc.) within 32m and 500m buffer coverage of the proposed site (piggery farm). Uncontrolled construction works within a wetland and aquatic environment is considered highly sensitive.	**Negligible (4)** **SP= (M + D + S) × P** **SP= (1 + 1 + 2) × 1** **SP = 4**	➢ The project site servitude must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. ➢ All drainage system must channel to slurry sump. ➢ Unauthorized abstraction of water from water features must be prohibited.	**Negligible (3)** **SP= (M + D + S) × P** **SP= (1 + 1 + 1) × 1** **SP = 3**
Ground water contamination as a result of:	**Medium (36)**	➢ Suitable storage facilities for handling and storage of oils, paints, grease, fuels,	**Negligible (6)**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
The uncontrolled construction activities may have potential for leaks of hazardous substances from equipment on site. Such hazardous substances have the potential to enter the soil and watercourse systems.	**SP= (M + D + S) × P** **SP= (5 + 2 + 2) × 4** **SP = 36**	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. ➢ 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. ➢ Portable clean-up kits must be available on site to undertake immediate clean-up, should a spill occur.	**SP= (M + D + S) × P** **SP= (4+ 1+ 1) × 1** **SP = 6**
Disturbance of Paleontological and Heritage Resources: Uncontrolled construction activities could result in disturbance of surfaces and/or sub-surfaces which would be destroyed, damaged, altered, or removed from its original position of archaeological and paleontological material or objects. It must be noted that the project is within an existing piggery property. Moreover, the paleontological sensitivity within the area of a development site is very low.	**Very-Low** **(18)** **SP= (M + D + S) × P** **SP= (5 + 2 + 2) × 2** **SP = 18**	➢ Excavation must be limited only to layout site development areas, as approved by project plans and layouts. ➢ Construction vehicles must only use the approved access roads. All construction machinery must be parked at designated areas. ➢ Monitoring must take place during site clearance for possible infant and still-born burials and implement the Chance Finds	**Negligible** **(5)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1)× 1** **SP =5**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
		Procedure (CFP) if any such finds are uncovered. ➢ Regular Archaeological Watching Briefs should be carried out during construction in case any chance findings are made. ➢ If any human remains, graves, archaeological and historical residues are discovered, the KwaZulu-Natal Amafa and Research Institute Act (5/2018) and the National Heritage Resources Act, No 25 of 1999. requires that operations should cease immediately pending an evaluation by the relevant heritage authorities.	
Air pollution, dust and emissions: Dust could be generated during construction as a result of earthworks and stockpiles.	**Medium** **(24)** **SP= (M + D + S) × P** **SP= (5 + 1 + 2) × 3** **SP = 24**	➢ Apply dust suppression to exposed soil and stockpiles. All transported and stored fine product must be covered to prevent spills and been blown by wind. ➢ Excavated material is to be stockpiled along the trench within the working servitude for later backfilling, of not more than 1.5m in height.	**Negligible** **(6)** **SP= (M + D + S) × P** **SP= (3 + 1 + 2) × 1** **SP =6**
Aesthetic / visual Impact: The viewshed area and zone of visual influence for the proposed expansion of piggery p is considered	**Very Low** **(12)**	➢ Concentrate the construction activity and temporary infrastructure in a designated place. In this regard the site camp, must be constructed close enough to the construction	**Negligible** **(4)**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
"low visibility" as it will streamline with existing farm facilities.	**SP= (M + D + S) × P** **SP= (3 + 1 + 2) × 2** **SP = 12**	area to avoid high visibility of construction activities. ➢ The contractor should maintain good housekeeping on-site to minimise waste generation and avoid litter. ➢ Dust suppression is important to reduce the visibility of the development. ➢ Excavated material is to be stockpiled along the trench within the working servitude for later backfilling, of not more than 2m in height. ➢ Avoid the use of floodlight at site camp. Also, the light must not face the neighboring homesteads and oncoming traffic on the rural access roads.	**SP= (M + D + S) × P** **SP= (1+ 1 + 2) × 1** **SP = 4**
Noise pollution: The main sources of noise associated with the proposed construction activities include the following: construction activities and equipment delivery. Construction activities are likely to be confined to daytime and the noise levels will only affect the adjacent areas for a relatively short period of time.	**Medium** **(40)** **SP= (M + D + S) × P** **SP= (5 + 1 + 2) × 5** **SP = 40**	➢ In recognition of the inherently noisy and temporary nature of construction activities, specify standard construction hours during which the usual fixed noise limits do not apply. ➢ Ensure that operating hours as determined by the EA are adhered to. Where not defined, development must be limited to daylight hours.	**Very Low** **(15)** **SP= (M + D + S) × P** **SP= (2+ 1 + 2) × 3** **SP = 15**

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Construction Phase			
Waste emanating from construction activities: Uncontrolled waste generated from construction activities such as: general, health care and hazardous wastes are more likely inherited from construction activities.	**Medium-High (50)** **SP= (M + D + S) × P** **SP= (5 + 2 + 3) × 5** **SP = 50**	➢ Educate of workers on pollution prevention practices. Training programmes must provide information on material handling and spill prevention and response. ➢ Have sufficient and separate bins for general, medical and hazardous waste disposal by implementing the Integrated Waste Management approach: segregation of waste into separate bins and clearly marked for each waste type. ➢ Refuse must be removed regularly to licensed landfill sites. ➢ Hazardous waste must be stored in a secured waste receptacle and disposed of at a registered waste disposal site. ➢ Adequate sanitary facilities and ablutions on the project site must be provided for all personnel throughout the project area. ➢ All waste manifest and disposal certificates must be kept on record	**Negligible (8)** **SP= (M + D + S) × P** **SP= (2 + 1 + 1) × 2** **SP = 8**

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
Operation Phase			
Solid waste emanating from piggery operation: Uncontrolled piggery operation would result in accumulation of solid waste, such as: General waste from various feed packaging, feed spills, feed spoilages and domestic waste.	**High** **(60)** **SP= (M + D + S) × P** **SP= (5 + 5 + 2) × 5** **SP = 60**	➢ Implement the integrated waste management plan (Separate waste containers to promote recycling and re-use) ➢ All feeds packaging such hessian sacks, nylon sacks, polypropylene bags must be re-used to store the supplies feed and feed spills. ➢ All packaging such as thick paper must be recycled. ➢ The feed must be stored on top of pallets in well ventilated shed to prevent crusting and spoilage	**Negligible** **(10)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 2** **SP =10**
Effluent waste emanating from piggery operation: Uncontrolled piggery operation would result in accumulation of effluent, such as slurry within the piggery facilities and farm vicinity.	**High** **(60)** **SP= (M + D + S) × P** **SP= (5 + 5 + 2) × 5** **SP = 60**	➢ Engineering design and good construction practice to mitigate the impact slurry accumulation within the piggery facilities and farm vicinity. ➢ To ensure that no slurry is accumulated within the piggery facilities, the flooring of piggery facilities must comprise the: PVC flooring and fibre support beams for weaner units; PVC, Cast iron slats and support beams for farrowing units; and concrete slat for boars, dry sows and grower units (as per design).	**Very-Low** **(15)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 3** **SP = 15**

		➢ Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump. ➢ Flush the drainage system every two weeks interval. ➢ Always avoid the overflowing of slurry sump by regular removing slurry for use as manure. ➢ Slurry must be temporary stored into a slurry sump, and later be sucked and directly delivered to other farms as wet manure for crop productions.	
Animal carcasses waste: For every livestock farming, there will be sometimes mortality.	**Medium-High (55)** **SP= (M + D + S) × P** **SP= (5 + 5 + 1) × 5** **SP = 55**	➢ Closely manage the pre-weaning facilities to ensure the facility is warn and not damp to mitigate the pre-weaning mortality, and to have a stockperson present during farrowing ➢ Investigate the morbidity and mortality using the local registered veterinarian ➢ Disposed carcases by digging and burying them to safely decompose naturally.	**Very-Low (15)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 3** **SP = 15**
Nuisance, environmental health, and ambient odour emanating from piggery operation: Piggery farming is largely associated with nuisance and ambient odour issues. Uncontrolled piggery operation would result in nuisance and poor ambient air quality.	**High (60)** **SP= (M + D + S) × P** **SP= (5 + 5 + 2) × 5** **SP = 60**	➢ Must use latest piggery facility designs and technological developments (e.g., in regard to housing (holding) facilities, manure storage and treatment systems) and management practices (e.g. altering feed composition and manure spreading practices) to help ease the	**Very-Low (15)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 3** **SP = 15**

However, the Facility for Amandla Power Agri Piggery is within remote farming environment, whereby there are sparsely distributed residential units in farm dwellings.		environmental health aspects associated with pig production. ➢ Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump. ➢ Flush the drainage system every two weeks interval ➢ The slurry drainage system must be maintained and serviced regularly to prevent clogging and spillages. ➢ Disinfect the piggery facilities using an environmentally friendly livestock disinfectant such as Virogon disinfectant. ➢ Wash the piggery facility with bacterial disinfectant detergent at every production cycle and disinfect before new production cycle.	
Ground water pollution as a result of piggery operations: Uncontrolled piggery operation would result in ground water pollution as a result of seepage of slurry as an effluent waste within the farm vicinity.	**Medium (40)** **SP= (M + D + S) × P** **SP= (5 + 3 + 2) × 4** **SP = 40**	➢ Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump. ➢ The slurry sump must be concrete lined ➢ Always avoid the overflowing of slurry sump by regular removing slurry for use as manure.	**Negligible (5)** **SP= (M + D + S) × P** **SP= (3 + 1 + 1) × 1** **SP = 5**
Transmission of diseases These may be between the livestock, or between livestock and the farm workers.	**= M+D+SxP** **SP = 4+5+2x4** **SP = 44** **Medium High**	Ensure that pests and other potential vectors are unable to enter areas where they might encounter production animals, carcasses, or excrement, by thoroughly sealing these using effective, & environmentally friendly means.	**SP = M+D+SxP** **SP = 2+1+1x2** **SP = 4** **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 = 3+5+2x4** **SP = 40** **Medium**	All remaining construction infrastructure, and waste must be removed from the farm site.	**SP = M+D+SxP** **SP = 2+5+2x2** **SP = 18** **Very Low**
Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to approximately 15 new jobs.	**Medium**	➢ Enhance the use of local labour and local skills as far as reasonably possible. ➢ Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. ➢ Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small-to-medium enterprises and training specifications in the Contractors contract. Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	**Very High**
Overall Mean significance: Nature of a project without mitigation	**Medium-High** **(50)**	Nature of a project post mitigation	**Very-Low** **(13)**

17. CUMULATIVE IMPACT ASSESSMENT AND MITIGATION MEASURES

In terms of the EIA Regulations, the cumulative impact is considered from the 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 9: Cumulative Impacts

Impact	Description	Mitigation
Nuisance, environmental health, and ambient odour emanating from piggery operation:	Expansion of piggery farming is largely associated with nuisance and ambient air quality issues. Uncontrolled piggery operation would result in nuisance and poor ambient air quality.	Must use latest piggery facility designs and technological developments (e.g., regarding housing (holding) facilities, manure storage and treatment systems, and) and management practices (e.g., altering feed composition and manure spreading practices) to help ease the environmental health aspects associated with pig production. Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump. Flush the drainage system every two weeks interval. The slurry drainage system must be maintained and serviced regularly to prevent clogging and spillages. Disinfect the piggery facilities using an environmentally friendly livestock disinfectant such as Virogon disinfectant.

Impact	Description	Mitigation
		Wash the piggery facility with bacterial disinfectant detergent at every production cycle and disinfect before new production cycle.
Effluent waste emanating from piggery operation:	Piggery operation would result in accumulation of effluent, such as slurry within the piggery facilities and farm vicinity	Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump. Flush the drainage system every two weeks interval. Always avoid the overflowing of slurry sump by regular removing slurry for use as manure. Slurry must be temporary stored into a slurry sump, and later sucked by a tractor honey sucker and directly delivered to local farms as wet manure for crop productions.

18. RECOMMENDATIONS FROM THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

The planned activities will sustain Sizanani MaZulu Piggery to meet the market demand, also the local community will benefit through employment opportunities. This will ensure that the Sustainable Development Goal 6 and the NDP objectives are realised through this project, the National Web-Based Environmental Screening Tool (NWBEST) was used to generate the environmental sensitivity report of the proposed development site. Additionally, an Initial Site Sensitivity Verification study was undertaken to confirm or dispute the environmental sensitivity as identified by the NWBEST was conducted.

The EAP is of the view that the Environmental Authorization should 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.

a. Construction phase

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.

i. Erosion and run-off control

Uncontrolled clearance and excavation during construction likely cause erosion and run-off.

a) No clearance and excavation must be done outside site boundary servitude. The site clearance and excavation carried within the farm boundary must be limited to development area (construction facilities) as approved by project layout plans. Also, make use of natural erosion suppressors such as progressive rehabilitation using good grassland cover. Do not wait for construction to finish in order to start rehabilitation.

b) Where necessary during construction construct storm water system and make provision for erosion protection.

c) Excavations must not be left open for a long duration and must not be undertaken until such time that all required materials are available on-site.

ii. Preventing the ground water pollution

The improper handling of hydrocarbons and other hazardous chemical for purpose of construction activities might have impact in ground and surface water quality.

a) Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using suitable licensed solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed, and the affected area rehabilitated immediately. A spill response plan must be drafted and communicated to all onsite staff in this regard;

b) Fuel must be stored in a bunded structure with a roof. The bund must be able to contain at least 110% of the volumes of fuel;

c) Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface;

d) Drip trays should be utilised at all dispensing areas;

e) A chemical spill kit must be present onsite at all times and once used it must be disposed of at a registered hazardous landfill site;

iii. Other recommendations for considerations during construction phase

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

a) Construction boundary must be demarcated and vegetation clearing and topsoil removal limited to these areas;

b) The development area must be surveyed prior to construction for identification of plant SCC and relocate them.

c) The development area must again be surveyed prior to construction to locate and capture any animal SCC and relocate them.

d) Excavations must not be left open for an extended period, and must not be undertaken until such time that all required materials are available on-

e) site, to facilitate immediate laying of the construction of subsurface infrastructure;

f) Excavated material (not more than 1.5m in height) is to be stockpiled along the trench within the working servitude for later backfilling,

g) All stockpiles must be kept free of weeds and invasive alien plants;

h) Educate of workers on pollution prevention practices. Training programmes must provide information on material handling and spill prevention and response.

i) Have sufficient and separate bins for general, medical and hazardous waste disposal by implementing the Integrated Waste Management approach: segregation of waste into separate bins and clearly marked for each waste type.

j) Refuse must be removed regularly to licensed landfill sites.

k) Hazardous waste must be stored in a secured waste receptacle and disposed of at a registered waste disposal site.

l) Monitoring must take place during site clearance for possible infant and still-born burials and implement the Chance Finds Procedure (CFP) if any such finds are uncovered.

m) If any human remains, graves, archaeological and historical residues are discovered, the KwaZulu-Natal Amafa and Research Institute Act (5/2018) and the National Heritage Resources Act, No 25 of 1999. requires that operations should cease immediately pending an evaluation by the relevant heritage authorities.

n) Regular Archaeological Watching Briefs should be carried out during construction in case any chance findings are made.

o) The local community must take priority when it comes to employment and all skills that can be sourced from the local communities. Additionally, locals must be given the opportunity to participate in the development and only specialized skills must be sourced from outside of the surrounding communities;

p) All reasonable precautions must be taken to minimize noise generated on-site.

q) Construction vehicles and machinery must be kept in good working order so as not to generate excessive noise levels;

r) Storage areas must be managed properly by applying the suggested mitigation measures recommended in this document;

iv. Site Rehabilitation

The following conditions and mitigation measures are recommended for site rehabilitation, namely:

a) Only indigenous plants which are able to establish easily and will need less maintenance because they have already adapted to the local conditions should be considered for re-vegetation should be used during rehabilitation, and rehabilitation success should be monitored;

b) Progressively removal alien plant species;

c) Fully rehabilitate all disturbed areas and protect them from erosion

d) Mechanical control methods such as digging, hoeing, pulling out of weeds and invasive plants are recommended.

b. Operation and maintenance

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

i. Solid waste management

The piggery operation would result in accumulation of solid waste, such as: General waste from various feed packaging, feed spills, feed spoilages and domestic waste. The following conditions and mitigation measures are recommended for site rehabilitation, namely:

a) Implement the integrated waste management plan (Separate waste containers to promote recycling and re-use)

b) All feeds packaging such hessian sacks, nylon sacks, polypropylene bags must be re-used to store the supplies feed and feed spills.

c) All packaging such as thick paper must be recycled.

d) The feed must be stored on top of pallets in well ventilated shed to prevent crusting and spoilage.

e) Disposed carcases by digging and burying them in order to safely decompose naturally.

ii. Effluent waste management

The piggery operation would result in accumulation of effluent, such as slurry within the piggery facilities and farm vicinity. The following conditions and mitigation measures are recommended for site rehabilitation, namely:

a) Always ensure that no slurry is accumulated within the piggery facilities.

b) Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump.

c) Flush the drainage system every two weeks interval.

d) Always avoid the overflowing of slurry sump by regular removing slurry for use as manure.

e) Slurry must be temporary stored into a slurry sump, later sucked by a tractor honey sucker and delivered to other farms as wet manure for crop productions.

iii. Mitigating nuisance, environmental health and ambient odour

The piggery operation is largely associated with nuisance and ambient air quality issues. The following conditions and mitigation measures are recommended for site rehabilitation, namely:

a) Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump.

b) Flush the drainage system every two weeks interval

c) The slurry drainage system must be maintained and serviced regularly to prevent clogging and spillages.

d) Disinfect the piggery facilities using an environmentally friendly livestock disinfectant, such as Virogon disinfectant.

e) Wash the piggery facility with bacterial disinfectant detergent at every production cycle, and disinfect before new production cycle.

iv. Mitigating the ground water pollution

The piggery operation would result in ground water pollution as a result of seepage of slurry as an effluent waste within the farm vicinity. The following conditions and mitigation measures are recommended for site rehabilitation, namely:

a) Adequate slurry drainage system and collection chambers to flush the slurry away from the piggery facilities into the slurry sump.

b) The slurry sump must be concrete lined to prevent leachate and seepage of effluent.

c) Always avoid the overflowing of slurry sump by regular removing slurry for use as manure.

19. 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, 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 preferred “Site Layout and Design Alternatives” for the proposed expansion of Sizanani MaZulu Piggery 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, from the **12th of October 2021 to the 9th of November 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

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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.

	12th October 2021
Signature	Date
Principal EAP	**Emvelo Quality and Environmental Consultant (PTY) Ltd**
Position	Company

APPENDIX B. ENVIRONMENTAL MANAGEMENT PLAN(EMPR)

APPENDIX C. SITE PHOTOGRAPHS AND LOCALITY MAPS

C-1: Case Images

C-2: Locality Map

APPENDIX D. SITE LAYOUT AND DESIGNS

APPENDIX E. PUBLIC PARTICIPATION PROCESS

E-1: Onsite notices

E-2: Newspaper advert

E-3: PP Plan and Register of I&APs

E-4: Background Information Document (BID)

E-5: Minutes of the Pre-Application meeting

APPENDIX F. EAP'S CV(S)

APPENDIX G: SPECIALIST STUDIES

G-1: Motivation for Exclusion of Specialist Studies

APPENDIX H: WEB-BASED ENVIRONMENTAL SCREENING REPORT