



**SERVICES (PTY) LTD**

t/a ROCK ENVIRONMENTAL CONSULTING

2<sup>nd</sup> Floor, Rubenstein Office Park

566 Rubenstein Drive

Moreleta Park, 0181

PO Box 40541

Moreleta Park, 0044

[www.rockeco.co.za](http://www.rockeco.co.za) †

**PROPOSED 4800 SOW UNIT PIGGERY TO BE ESTABLISHED ON  
SEVERAL FARM PORTIONS IN THE IDA AREA, EASTERN CAPE  
PROVINCE.**

**DRAFT BASIC ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

Prepared for: Sello Mokhanya  
Eastern Cape Heritage Resources Authority  
Corner Scholl and Amalinda Drive  
East London  
5247

On behalf of: No. 2 Piggeries (Pty) Ltd.  
Mr David Osborne  
PO Box 2725  
Komani  
Queenstown, 5320

Prepared by: REC Services (Pty) Ltd  
E-mail: [rock.rowan@lantic.net](mailto:rock.rowan@lantic.net)

Contact Person: Pieter van der Merwe / Rowan van Tonder

**22 August 2018**

Tel: 012 997 4742

Fax: 086 619 0994

Email: [rockec@lantic.net](mailto:rockec@lantic.net)

VAT Reg No: 4870275718

Co. Reg No: 2016/310652/07

Director: PN van der Merwe

BSc (Hons) Environmental Management



## BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:

--

Application Number:

--

Date Received:

--

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

---

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner (EAP).
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.



## SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

NO

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D. - **NOTED**

### 1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

The project description and pig production for No. 2 Piggeries (Pty) Ltd. will be as follow:

The proposed piggery will have 3 types of production units:

1. Breeding Unit;
2. Weaner Unit; and
3. Grower-Finishing/fattening Unit.

Breeding unit consists of five sub-units, namely:

- i. Farrowing: this unit will house 1026 sows (4 buildings);
- ii. Early gestation: this unit will house 1080 sows (1 building);
- iii. Late gestation: this unit will house 2530 sows (3 buildings);
- iv. Heat detection & Training: this unit will house sows and boars (2 buildings); and
- v. Gilt developer: this unit houses a range of weaners, growers and finishers (varying ages and sizes). In total 1050 sows and boars are kept in the gilt developer.

Fattening/Finishing units:

This unit houses growers from 11 weeks. The number of pigs held depends on the size of the animals. The fattening can hold an average of 1350 pigs per building. 28 Buildings = 37 800 pigs.

Weaner unit:



This unit is normally separate from the breeder and grower units to improve bio-security conditions approximately 2740 weaners are placed in each unit. 7 Buildings = 19 180 in total.

Water:

Less water will be used as a result of:

- a. New modernized “zero water” flushing system (plug pulling).
- b. Consumption per livestock unit remains precise, therefore no wastage. Current state of the art drinking nipples, pipes, underground pipes will have almost no leaking problems.

Effluent:

There will be far less effluent discharge as a result of:

- a. No flushing water required = less effluent
- b. Far less leakages from old piggery techniques and technology = less effluent
- c. As a result of modern slatted floorings less bedding material is required.
- d. Effluent discharge can be managed as there will be storage pits below the slats.
- e. Reduction in ammonia levels and certain omissions to be reduced with modern buildings and specially formulated rations.
- f. As there will have less material. It will be professionally composted and become a saleable commodity.
- g. The quality of effluent will be greatly improved through a modern separation process.



There are 3 proposed sites for Breeders, Weaners and Growers – fattening Units. The following farms are affected:



- Breeder Unit (Site 1): Portion 0 of the farm Botha's Rust 824 Elliot RD – GPS Coordinates: -31.427008°, 27.534601°
- Grower & finisher Unit (Site 2): Portion 0 of the Farm Toddles 834 Elliot RD – GPS Coordinates: -31.423177°, 27.551947°
  - On the Remainder of the farm IDA 835 Elliot RD – Main reservoir for Site 2. GPS Coordinates: -31.420682°, 27.556380°
- Weaner Unit (Site 3): On the farm Palmietfontein 879 Elliot RD – GPS Coordinates: -31.435301°, 27.556578°

These sections can be accessed from the R56 around the IDA Police Station. The GPS coordinates of the centre of the affected farms are:

- Access is 2.4 km from the R56 at the IDA signage turn-off.
- At the IDA signage turn-off, after 780 m turn left and the access is 1.92 km from here.
- Access is from the R56 at: -31.410270°, 27.554232°.

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

*“alternatives”*, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;

There is **NO** alternative property. The current position of all the proposed piggery units have been determined beforehand by specialist studies conducted. The studies were done to determine all the sensitive environmental elements on the properties in question. Topography was also taken into account to help minimise any extra earthworks needed to lay the building foundations.

- (b) the type of activity to be undertaken;

The activity alternative, i.e. chicken broiler/egg laying facility, will have to be in line with similar opportunities for creating jobs for the local community and needs of the local area. This Chicken Broiler/Egg Laying Facility should accommodate the same developmental aspects that the available land can provide. Just a reminder that the applicant is a very prominent and front runner in the pig industry and will not do anything else but pig related developments.

- (c) the design or layout of the activity;



Due to the limited area available (this is due to environmental sensitivities) to fit this proposed pig units in, the layout must be precisely determined. Topography also is a determining factor. The layout of this proposed piggery will only then fit in a certain way to best accommodate any operational procedures associated with the other proposed pig units and get to the desired capacity of 4800 sows.

The design/layout alternative will **NOT** be assessed.

(d) the technology to be used in the activity;

The technology to be used and especially in commercial farming with pigs to this extent and scale i.e. different pig units (climate controlled), manure removal, feeding and watering systems, etc. is of the latest used standards. As a rule this high standards in pig farming technology must be implemented when farming with a 4800 sow unit, and in order to maintain a sustainable market share.

The current electrical power provision is through the normal Eskom network. As an alternative to this part of the technological layout of the facility, the provision of electricity through solar energy generation can be considered as an alternative. This can imply the installation of visible solar panels for partial or self-sustaining electricity provision to the facility.

The technology alternative **WILL BE** assessed.

(e) the operational aspects of the activity; and

At this stage the operational aspects are and will be of a high level, in terms of production turn-over, established off-set markets with a well and carefully planned input and output volumes and operations. Any changes in the operation levels and technology may, according to the applicant, lower the level of efficiency and standards in this profession and field. Therefore operational aspects of a lower key or standard will jeopardize the long term sustainability of this pig farming enterprise.

The operational alternative will therefore **NOT** be assessed.

(f) the option of not implementing the activity.

A "DO NOTHING" alternative would be not to use the current property and let it stay as grazing for livestock and cropland. This setting is not orientated for residential use; therefore no adequate services are in place to accommodate large volumes of sewage and domestic waste. On the other hand, no additional job opportunities will be created and no contribution will be made to the upliftment of the community and infrastructure development. Thus, if not developed this positive impact will not be seen.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.



The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

**NOTED. NO SITE ALTERNATIVE EXISTS. ACTIVITY ALTERNATIVE WILL BE ON THE SAME AREAS AS CURRENTLY INDICATED, IF EVER CONSIDERED.**

### 3. ACTIVITY POSITION

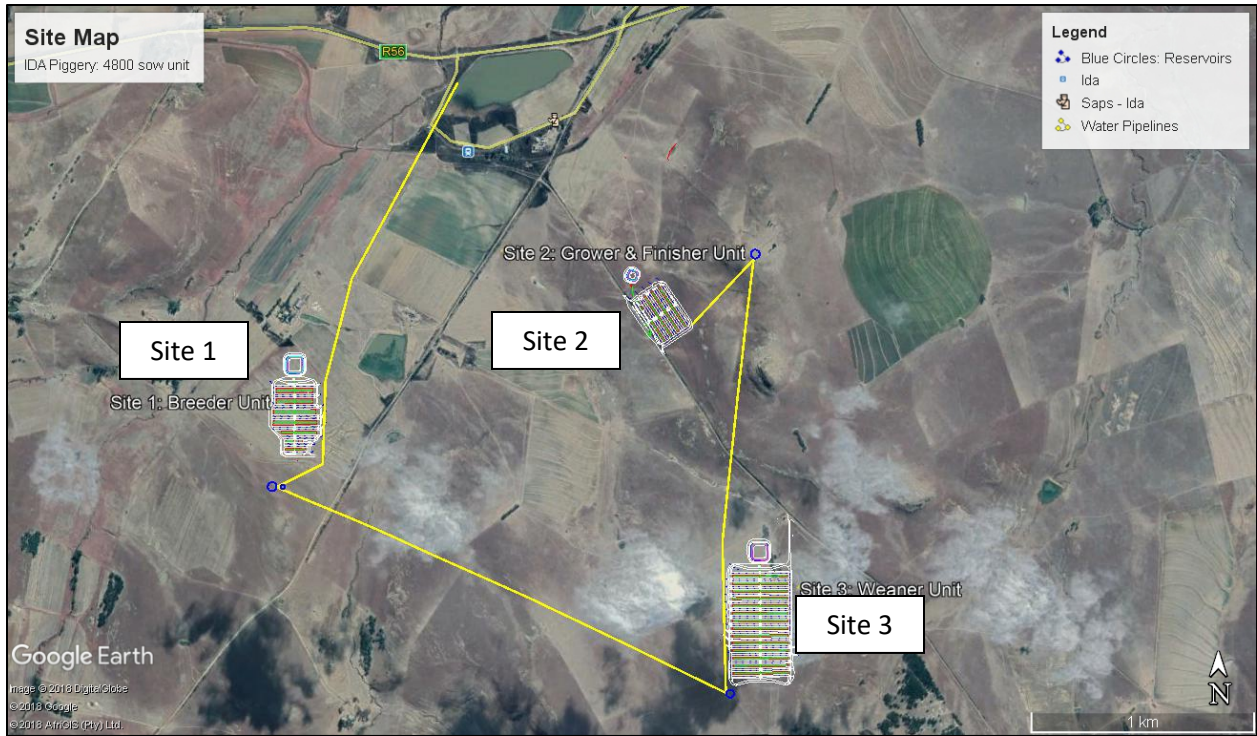
Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.

	Latitude (S):		Longitude (E):	
<b>Alternative:</b>				
Alternative S1 <sup>1</sup> (preferred & only site alternatives):				
<b>Breeder Site 1</b>	31°	25.626'	27°	32.078
<b>Grower and finisher Site 2</b>	31°	25.387'	27°	33.111'
<b>Weaner Site 3</b>	31°	26.143'	27°	33.400'
Alternative S2 (if any)	0	'	0	'
Alternative S3 (if any)	0	'	0	'

<sup>1</sup> "Alternative S.." refer to site alternatives.





In the case of linear activities: **N/A**

Alternative:

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):                      Longitude (E):

0	'	0	'
0	'	0	'
0	'	0	'

Alternative S2 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

0	'	0	'
0	'	0	'
0	'	0	'

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

0	'	0	'
0	'	0	'
0	'	0	'

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.





**4. PHYSICAL SIZE OF THE ACTIVITY**

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Alternative:**

Alternative A1<sup>2</sup> (preferred activity alternatives)

**Breeder Site 1**

**Grower and finisher Site 2**

**Weaner Site 3**

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

68 300m <sup>2</sup>
33 033m <sup>2</sup>
134 500m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

or, for linear activities: **N/A**

**Alternative:**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Length of the activity:**

m
m
m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

**Alternative:**

Alternative A1 (preferred activity alternative)

**Breeder Site 1: Botha's Rust**

**Grower and finisher Site 2: Toddles**

**Weaner Site 3: Fairfield & Palmietfontein**

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the site/servitude:**

877 667m <sup>2</sup>
456 600m <sup>2</sup>
3 824 200m <sup>2</sup>
m <sup>2</sup>
m <sup>2</sup>

**5. SITE ACCESS**

Does ready access to the site exist?

YES

If NO, what is the distance over which a new access road will be built

m

Describe the type of access road planned:

N/A

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

<sup>2</sup> "Alternative A.." refer to activity, process, technology or other alternatives.



## 6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document. **NOTED. NO SITE ALTERNATIVE EXISTS. ACTIVITY ALTERNATIVE WILL BE ON THE SAME AREAS AS CURRENTLY INDICATED.**

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):  
**Please see specialist reports attached, in the regard.**
  - rivers;
  - the 1:100 year flood line (where available or where it is required by DWA);
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.10 the positions from where photographs of the site were taken.

## 7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable. **NOTED – Done.**



8. FACILITY ILLUSTRATION **NOTED – Done.**

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	±R300 million	
What is the expected yearly income that will be generated by or as a result of the activity?	R235 million	
Will the activity contribute to service infrastructure?	YES	
Is the activity a public amenity?		NO
How many new employment opportunities will be created in the development phase of the activity?	120	
What is the expected value of the employment opportunities during the development phase?	R4.8 million	
What percentage of this will accrue to previously disadvantaged individuals?	70%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	55	
What is the expected current value of the employment opportunities during the first 10 years?	±R72 million	
What percentage of this will accrue to previously disadvantaged individuals?	65%	

9(b) Need and desirability of the activity: Provided by the applicant

Motivate and explain the need and desirability of the activity (including demand for the activity):

To fulfill a market demand in the Eastern Cape.

Indicate any benefits that the activity will have for society in general:



Major employment and upliftment for and of the community.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

- Employment. Upliftment of schools and infrastructure.
- 4800 x 28 = 134 400 x 70kg = 9 408 000kg = R300 million.
- Yes = upgrade roads. Contribute to the community.
- Builders = 80; Steelworkers = 20; Contractors = 20.
- 4 to 8 million = R 200 000 / month for 2 years.

### 10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	Provincial	27 November 1998
R. 326 National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2017	Provincial	7 April 2017
National Water Act, 1998 (Act 36 of 1998)	Provincial	26 August 1998
National Water Act 36 of 1998 - Regulations and Notices - Government Notice R 810	Provincial	10 September 2010

### 11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

#### 11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	<input checked="" type="checkbox"/>
-----	-------------------------------------

If yes, what estimated quantity will be produced per month?

10m <sup>3</sup>
------------------

How will the construction solid waste be disposed of (describe)?

The solid construction waste such as overburden material will be used as backfilling in areas where necessary and some will be disposed of at the nearest waste disposal site or quarry.

Where will the construction solid waste be disposed of (describe)?

---



At the closest appropriate registered municipal waste disposal site (Maclear (Elundini Municipality), Cala or Elliot WWWTW) by the licensed waste disposal contractor to be appointed by the site contractor.

Will the activity produce solid waste during its operational phase?

YES	<input checked="" type="checkbox"/>
-----	-------------------------------------

If yes, what estimated quantity will be produced per month?

2m <sup>3</sup>
-----------------

How will the solid waste be disposed of (describe)?

Solid waste will be collected by municipal services or by a registered solid waste contractor.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

All operational solid waste will always be disposed of at a registered landfill site.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

<input checked="" type="checkbox"/>	NO
-------------------------------------	----

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

<input checked="" type="checkbox"/>	NO
-------------------------------------	----

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

### 11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

<input checked="" type="checkbox"/>	NO
-------------------------------------	----

If yes, what estimated quantity will be produced per month?

m <sup>3</sup>
----------------

Will the activity produce any effluent that will be treated and/or disposed of on-site?

Yes	<input checked="" type="checkbox"/>
-----	-------------------------------------

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

<input checked="" type="checkbox"/>	NO
-------------------------------------	----

If yes, provide the particulars of the facility: N/A

---



Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

---





Briefly, these entail anaerobic and aerobic phases, the removal of solids from wastewater, a separator stage with the solids fraction composted and either applied to agricultural land or removed off-site, whilst the liquid fraction will be applied to agricultural land.

All practices will be in accordance with the recommendations in the relevant reference material of Section 21 (e) subsections 1.7 (c) and 1.10 (3). These ensure that the application of any wastewater, or products therefrom, to agricultural land, is within the nutrient loading restrictions per hectare per year as prescribed by the quality parameter guidelines.

Topics addressed relate to application restrictions that include buffer zones to ensure water resource protection, treatment phases and application stipulations for mitigating odour and vector concerns.

The waste handling system, from collection to treatment and application stages, will include safety factors in the design. The estimated daily wastewater generated will consist predominantly of liquid manure (faecal and urine products) and wash water, with an estimated daily volume of 70 m<sup>3</sup>. The wastewater will be pumped through a screw press separator with a capacity of 45 – 65 m<sup>3</sup>/hour, representing a significant safety margin.

The volume reduction predicted is in the order of 25%, with the solid fraction subjected to further heat treatment, stacking and bagging for off-site sale as fertiliser and for nutrient supplementation of agricultural land as required and permitted.

The liquid fraction will be contained in a holding lagoon for application to agricultural land both on site and in the surrounding suitable agricultural areas, with an estimated total N application rate of the DWS Median guideline of 385 kg N/ha/y. This represents approximately 85% of the allowable application rate according to the DWS Guideline for Sludge Application Rates.

The values used in the required calculations for the allowable application of agricultural wastewater to land are based on conservative estimates representing a precautionary approach.

Motivation for the agricultural use of the wastewater relate primarily to the DWS recognition thereof as a valuable resource when used as a fertiliser and soil conditioner, including the supply of macro and micronutrients and improved soil physical properties, i.e. better soil structure, increased water retention capacity and improved soil water transmission.

Additional benefits to this form of treatment are recognized as:

- A stackable Dry Product from Solids Fraction
- Liquid pumpable Liquid Fraction
- Decreased Liquid Fraction for application to agricultural land
- Exportable Dry Solids Fraction as compost or fertiliser
- Decreased odour emissions (lowered volatile acid production)
- Lowered pathogen survival time and thus decreased vector risk for health.

It should also be note that the implementation of a Biogas Facility will be investigated and may serve the additional purposes of providing a site for the beneficial reuse of additional co-digestion of suitable feedstock (organic waste material) in the surrounding vicinity.



Lastly, it should be noted that the proposed introduction of a Screw-press Separator Stage will allow for improvements to the wastewater quality and subsequent classification of the liquid and solids fractions to comply with unrestricted use conditions and thus represent an additional environmental benefit to the area as per the Precautionary Practices stipulated in section 1.10 of the GN 665 of 06 September 2013 (Classification set forth in the Guidelines for the Utilisation and Disposal of Wastewater Sludge, Volume 2 of 5: Requirements for the Agricultural Use of Wastewater Sludge – WRC TT 262/06).

**11(c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

YES	
	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Vehicles coming into the farm for collection and delivery will release the normal carbon monoxide gasses and there will be dust generated due to existence of gravel roads.

**11(d) Generation of noise**

Will the activity generate noise?

YES	
	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

This piggery is situated in a rural/agricultural setting and noise emanating from this proposed piggery will be the occasional squealing of pigs and farm vehicles on and around the site. Noise levels from this piggery will have no significant impact on the surrounding populace.

**12. WATER USE**

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

municipal	water board	groundwater	river, stream, dam or lake <b>X</b>	other	the activity will not use water
-----------	-------------	-------------	--	-------	------------------------------------



If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:

±16 million litres
--------------------

Does the activity require a water use permit from the Department of Water Affairs?

YES	
-----	--

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted. **NOTED – It is in process**

Water for the proposed piggery will be sourced from Surface Water resources. It is estimated that approximately 282 875 m<sup>3</sup> of water will be required for the piggery at full operation, including water for domestic use. This volume constitutes a Water Use License in terms of Section 21(a) of the National Water Act, 1998 (Act No. 36 of 1998) as it exceeds the allowable volume under the General Authorisation (Government Gazette Notice 538 of 2 September 2016) for the catchment.

The applicants bought over various farms in the IDA area, one of these farms, Portion 0 of the farm Kippersol 860 EL, has existing water rights, these rights must still be verified as the previous owner did not verify the water use amount. This farm portion is situated 7 km from the piggery operations, the applicants will apply for water abstraction out of the Mbokotwe river closer to the specific project sites. The applicants will require 282 875 m<sup>3</sup> of water for the entire piggery operation. The water will be abstracted from the Mbokotwe river to the storage dam (the dam's capacity is approximately 243 800 m<sup>3</sup>) just in front of the IDA Police Station, from there it will be pumped out with a pipeline to each specific reservoir at each site. The water pumped from the river will be pumped into the storage dam to maintain the maximum volume in the dam. The abstraction out of the river will most likely be less as this amount was calculated without the annual participation to fall within the area.

The water abstracted out of the river will also be sourced for domestic purposes, the water will be treated separately to comply with drinking standards.

### 13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Energy efficient light bulbs (florescent) will be used for all lighting purposes. No other measures are known at this stage.

#### **AS AN TECHNOLOGY ALTERNATIVE:**

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

---



Solar powered roof panels on the roof of pig houses will be investigated in terms of its feasibility. This method is employed in Europe where the whole roof area is under solar panels. This could help the piggery to be self-sustaining in terms of electricity in the long-term. But various technical constraints in terms of possible feeding electricity into the national network are still a challenge.

## SECTION B: SITE/AREA/PROPERTY DESCRIPTION

**Important notes:**

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. 0):

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section? NO

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

### 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

**Alternative S1:**

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

**Alternative S2 (if any): N/A**

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

**Alternative S3 (if any): N/A**



Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
------	-------------	-------------	-------------	--------------	-------------	------------------

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain
- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:	Alternative S2 (if any): N/A		Alternative S3 (if any): N/A	
Shallow water table (less than 1.5m deep)	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	NO	YES	NO	YES	NO



Soils with high clay content (clay fraction more than 40%)		NO	YES	NO	YES	NO
Any other unstable soil or geological feature		NO	YES	NO	YES	NO
An area sensitive to erosion	YES		YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

#### 4. GROUNDCOVER

Indicate the types of groundcover present on the site:

- 4.1 Natural veld – good condition<sup>E</sup>
- 4.2 Natural veld – scattered aliens<sup>E</sup>
- 4.3 Natural veld with heavy alien infestation<sup>E</sup>
- 4.4 Veld dominated by alien species<sup>E</sup>
- 4.5 Gardens
- 4.6 Sport field
- 4.7 Cultivated land
- 4.8 Paved surface
- 4.9 Building or other structure
- 4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s). **Noted it will be done.**

Natural veld - good condition <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil





If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

## 5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

### 5.1 Natural area

Natural grassland will be impacted upon by the pig units proposed, but will not have an impact on further afield natural areas.

### 5.2 Low density residential

There is a police station northwest from of the proposed Breeder Unit 2 it will not be impacted upon physically, but could experience odours from time to time.

### 5.15 Dam or reservoir

Small farm dams do occur around this proposed piggery. It should not be impacted upon at all due to proper storm water management systems in place for this proposed piggery.

### 5.23 Railway line<sup>N</sup>

A railway line is situated north of the proposed piggery, but will not be influenced or impacted upon by this proposed piggery.

### 5.33 Agriculture

Some of the pig units will be placed on existing cropland that is owned by the applicant. Pig farming is in fact a form of agriculture. In this case it is called an Agro-Industrial entity due to its large commercial size and the irrigation of treated slurry.

### 5.34 River, stream or wetland

Streams and wetlands are found all around the proposed piggery. Specialist studies was conducted to determine any impacts and to position the units on areas that will not impact upon any sensitive areas.

### 5.36 Mountain, koppie or ridge

There are low hills in this area but this proposed piggery should not have an impact on them.

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity.

### It will not be impacted upon.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.



If YES, specify and explain:

If YES, specify:

|

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

|

|



6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?

	NO
Uncertain	

If YES, explain:

--

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.



Briefly explain the findings of the specialist:

A first phase HIA was conducted as part of this application. The findings of the HIA specialist is as follow:

*Historical value:*

No historical value associated with the site could be found in primary and secondary sources.

*Social value:*

Social value is attributed to sites that are used by the community for recreation and formal and informal meetings regarding matters that are important to the community. These sites include parks, community halls, sport fields etc. None of the said is evident in the immediate study area.

*Does the site/s contain a wide range of archaeological sites?*

The proposed site does not contain any surface archaeological deposits; a possible reason is previous infra-structure development and farming activities in the greater study area. The possibility of sub-surface findings always exists and should be taken into consideration in the Environmental Management Plan. If sub-surface archaeological material is discovered work must stop and a heritage practitioner preferably an archaeologist contacted to assess the find and make recommendations.

*Does the site/s contain any marked graves and burial grounds?*

The site does not contain any marked graves or burial grounds. The possibility of graves not visible to the human eye always exists and this should be taken into consideration in the Environmental Management Plan. It is important to note that all graves and cemeteries are of high significance and are protected by various laws. Legislation with regard to graves includes the National Heritage Resources Act (Act 25 of 1999) whenever graves are 60 years and older. Other legislation with regard to graves includes those when graves are exhumed and relocated, namely the Ordinance on Exhumations (no 12 of 1980) and the Human Tissues Act (Act 65 of 1983 as amended). If sub-surface graves are discovered work should stop and a professional preferably an archaeologist contacted to assess the age of the grave/graves and to advice on the way forward.

**RECOMMENDATIONS**

- There are no visible restrictions or negative impacts in terms of heritage associated with the site. In terms of heritage this project can proceed.
- The discovery of subsurface archaeological and/or historical material as well as graves must be taken into account.

Will any building or structure older than 60 years be affected in any way?

NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO



If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
  - (i) one local newspaper; or
  - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  - (i) illiteracy;
  - (ii) disability; or
  - (iii) any other disadvantage.



## 2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
  - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
  - (iii) the nature and location of the activity to which the application relates;
  - (iv) where further information on the application or activity can be obtained; and
  - (iv) the manner in which and the person to whom representations in respect of the application may be made.

## 3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

## 4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

## 5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response





report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

## 6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

- Emalahleni Local Municipality
- Ward Councillor of Ward 15
- Eastern Cape Provincial Heritage Resources Agency
- Dept. Of Water and Sanitation
- Endangered Wildlife Trust
- Vulpro – Rookwood farm Queenstown district

List of authorities from whom comments have been received:

Not yet. Still in process of circulating the BAR for comments.



## 7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

**Not yet. Still in process of circulating the BAR for comments.**



## SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

### 1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

- A vulture restaurant was proposed by Vulpro.
- Water availability for this development.
- Possible increase in traffic on the R56.
- Positive Socio-Economic impact for the area.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

- A vulture restaurant will be investigated by the applicant.
- Water availability is as follow:  
Water for the proposed piggery will be sourced from Surface Water resources. It is estimated that approximately 282 875 m<sup>3</sup> of water will be required for the piggery at full operation, including water for domestic use. This volume constitutes a Water Use License in terms of Section 21(a) of the National Water Act, 1998 (Act No. 36 of 1998) as it exceeds the allowable volume under the General Authorisation (Government Gazette Notice 538 of 2 September 2016) for the catchment.

The applicants bought over various farms in the IDA area, one of these farms, Portion 0 of the farm Kippersol 860 EL, has existing water rights, these rights must still be verified as the previous owner did not verify the water use amount. This farm portion is situated 7 km from the piggery operations, the applicants will apply for water abstraction out of the Mbokotwe river closer to the specific project sites. The applicants will require 282 875 m<sup>3</sup> of water for the entire piggery operation. The water will be abstracted from the Mbokotwe river to the storage dam (the dam's capacity is approximately 243 800 m<sup>3</sup>) just in front of the IDA Police Station, from there it will be pumped out with a pipeline to each specific reservoir at each site. The water pumped from the river will be pumped into the storage dam to maintain the maximum volume in the dam. The abstraction out of the river will most likely be less as this amount was calculated without the annual participation to fall within the area.

The water abstracted out of the river will also be sourced for domestic purposes; the water will be treated separately to comply with drinking standards. The only additional traffic will be a truck or 2 for the transport of pigs.



- Noted.

## **2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES**

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

### **2.1 Introduction and Methodology**

This section of the BAR provides a list of the biophysical and social issues that can be expected as a result of the proposed development. Some of the issues are localised in their effects, whilst others could influence a more extensive area. A major aim of the BAR is to identify issues and impacts, with inputs from all the specialists on this project, and to assess the impacts identified.

The identification and descriptions of the relevant physical, biological, socio-economic and heritage issues were conducted under the following headings in the Table below:

- Environmental aspects: defined as those actions on site that may potentially have an environmental impact;
- Environmental component to be impacted upon;
- Locality / applicable zone of the impact; and
- Nature and description of the impact/issue before mitigation
- Nature of the impact/issue after mitigation

An impact significance rating and evaluation, for the listed aspects, forms part of the EIA process/report. Significant environmental issues have also been identified by means of the relevant environmental legislation, the opinions of specialist consultants and the views of interested and affected parties.

Most of the identified and anticipated negative impacts listed below will only take effect once the construction of the proposed development commences; the main period of positive impact occurrence is during the long term “operational” phase of the development when it is felt that the broader community will benefit from the project in terms of job creation. The long term negative operational impacts however will also be experienced by the close-by landowners in terms of noise, odour, possible water related issues and other traffic issues such as access to and from the area.

There are numerous assessment methodologies and approaches within the international sphere of assessing the potential impact of development activities on the environment.



When a particular method for environmental impact analysis is selected or used certain general principles must be kept in mind to avoid the mystique and pseudo-science, which cloud many planning procedures. In general terms an environmental assessment evaluation comprises four main tasks:

1. Collection of data;
2. Analysis and interpretation of this data;
3. Identification of significant environmental impacts;
4. Communication of the findings.

Further to the above the proposed mitigation and management options for the identified impacts must be provided. The selected impact evaluation method must enable these four tasks. Impact methodologies provide an organised approach for predicting and assessing these impacts. Any one methodology and approach will have opportunities and constraints, as well as resource and skill demands, and no one method is appropriate for all South African circumstances. The selected methodologies proposed by this document are appropriate for most South African situations, taking the above criteria into account. Methods whose approach to considering environmental factors is systematic are desirable in an EIA.

### Impact Significance Methodology

The **Significance** of Environmental Impacts is to be assessed by means of the following method:  
**Significance is the product of probability and severity. Probability** describes the likelihood of the impact actually occurring, and is rated as follows:

•	Improbable	-	Low possibility of impact to occur either because of design or historic experience. <b>Rating = 2</b>
•	Probable	-	Prominent possibility that impact will occur. <b>Rating = 3</b>
•	Highly probable	-	Most likely that impact will occur. <b>Rating = 4</b>
•	Definite	-	<b>Impact will occur regardless of any prevention measures</b> <b>Rating = 5</b>



The severity rating is calculated from the factors given to intensity and duration. Intensity and duration factors are awarded to each impact, as described below.

The **Intensity** factor is awarded to each impact according to the following method:

•	Low intensity	-	Nature and/or man-made functions not affected and a minor impact may occur. <b>Factor 1</b>
•	Moderate intensity	-	Environment affected but natural functions and processes can continue though often in a slightly altered manner. <b>Factor 2</b>
•	High intensity	-	Environment affected to the extent that natural functions are altered to the extent that it will temporarily or permanently cease. <b>Factor 3</b>

Duration is assessed and a *factor* awarded in accordance with the following:

•	Short term	-	≤ 1 to 5 years <b>Factor 2</b>
•	Moderate term	-	5 – 15 years <b>Factor 3</b>
•	Long term	-	Impact will only cease after the operational life of the activity, either because of natural process or by human intervention. <b>Factor 4</b>
•	Permanent	-	Mitigation, either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient. <b>Factor 5</b>

The **severity rating** is obtained from calculating a severity factor, and comparing the severity factor to the rating in the table below, for example:

The Severity factor	Intensity factor X Duration factor 2 X 3 = 6
---------------------	---





A Severity factor of 6 (six) equals a Severity Rating of Moderate severity (Rating 3) as per table below:  
Severity Ratings

	FACTOR
Low Severity (Rating 2)	Calculated values 2 to 4
Moderate Severity (Rating 3)	Calculated values 5 to 8
High Severity (Rating 4)	Calculated values 9 to 12
Very High Severity (Rating 5)	Calculated values 13 to 16 and more
Severity factors below 3 indicate no impact	

A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating:  
The significance rating should influence the development project as described below:

•	<b>Low significance (calculated Significance Rating 4 to 6)</b>	
	-	Positive impact and negative impacts of low significance should have no influence on the proposed development project
•	<b>Moderate significance (calculated Significance Rating <math>\geq 7</math> to 12)</b>	
	-	Positive impact <b>Should indicate that the proposed project should be approved</b>
	-	Negative impact: Should be mitigated or mitigation measures should be formulated before the proposed project can be approved
•	<b>High significance (calculated Significance Rating <math>\geq 13</math> to 18)</b>	
	-	Positive impact: Should points towards a decision for the project to be approved and should be enhanced in final design
	-	Negative impact: Should weigh towards a decision to terminate proposal, or mitigation should be formulated and performed to reduce significance to at least low significance rating.
•	<b>Very High significance (calculated Significance Rating <math>\geq 19</math> to 25 and more)</b>	



## 2.2 Activities and Impacts Identified, with Impact Assessment

The description and identification of anticipated impacts is based on the listing of environmental aspects. Environmental aspects, for the purposes of this document, is the term used to describe the actions that may have an impact on one or more of the environmental components listed. It is important to note that aspects that are clearly definable have been used in preference to those that are duplicative, redundant, difficult to measure, and/or obscure.

An impact is defined as any change in the physical, chemical, biological, cultural, and/or socio-economic environmental system that can be attributed to human activities relative to alternatives under study for meeting a project need. Therefore, the identified environmental aspects are said to have an impact on the components listed above if they result in change.

One of the most important objectives of conducting an Environmental Impact Assessment is to identify and evaluate these aspects and impacts. Consequently, the EMPr will consist of the preferred mitigation and management options for the identified impacts assessed as being significant. These will be described within the BAR (and EMPr to follow).

The environmental aspect and the resultant impact can become manifest during the construction phase (C) and/or the operational phase (O), which is the stage when the proposed development is complete and fully functional.

The following table provides a list of activities (environmental aspects), for the proposed development, that will occur on site and it provides an outline of the potential impacts that these actions will have on the environment, the anticipated effects on the biophysical and social aspects. The identification of the aspects and impacts may be expanded as more information becomes available when the specialist studies are completed. At this stage, the table below provides a list of impacts and issues. Below is an impact assessment of the impacts identified in the Table below.

The identified impacts are rated in terms of their significance during the construction phase and the operational phase of the proposed development. The identified impacts on the physical, ecological and social components of the site are discussed in terms of:

- Vegetation component of the site;
- Faunal component of the site;
- Possible impact on Red Data Fauna and Flora;
- Soil surface (stability);
- Topsoil layer (disturbance and compaction);
- Subsurface soil quality;
- Topography;
- Geology;
- Surface drainage and existing water bodies (wetland within the study area);
- Surface water run-off (quality);
- Groundwater resources (quality);
- Air quality (due to dust generation);
- Ambient noise levels;



- Cultural historical elements;
- Social environment (of adjacent landowners);
- Traffic safety aspects (safety of the community);
- Land use options and agricultural potential of the site;
- Visual and aesthetic quality;
- Local economy (due to job creation); and
- Impact on the community (due to provision of affordable electricity).

It should be noted that the impact significance rating is given presuming that no mitigation measures are to be implemented during the construction or operational phase of the project (this would imply a worst case scenario).

*Table: List of activities (environmental aspects), for the proposed development, that will occur on site, the potential impacts that these activities may have on the environment and a description of the nature of the impact (C: construction stage; O: operational phase). The impacts rated, at this stage of high importance, are marked with a red triangle  $\Delta$ ; leaning towards high significance impact.*

ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
Vegetation clearance for the footprint of the proposed pig houses (C). Clearance of vegetation in the establishment of infrastructure (C)	Soil layers, soil surface, indigenous vegetation cover (very little to none of it).	On-site.	<p>The removal of vegetation cover, such that the soil surface is exposed, may lead to increased soil erosion in certain areas. The existing vegetation will be permanently removed to accommodate the footprint of the development. Where the removal of surface vegetation is of a temporary nature only, the establishment of weeds is a threat. The topsoil layer is required to rehabilitate the area (i.e. for landscaping the area). <math>\Delta</math></p> <p>Probability = 4 (highly probable) Intensity = 3 (high intensity) Duration = 4 (long term) Severity = 3x4=12 (rating 4) Significance= 4x4=16 This impact is of negative <b>high significance</b> before mitigation.</p>	<p>It is advisable that only vegetation be removed where and when it is necessary. After removal of vegetation, landscaping needs to be incorporated by re-establishing natural grassland/vegetation where appropriate. No red data plant species were recorded during the site visits conducted.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative <b>low significance</b></p>
Stockpiling of excavated material (C)	Soil and vegetation cover.	Precise location still to be determined; the impacts on soil and vegetation will occur wherever stockpiles are established. Wherever possible, the stockpiles should be placed in non-	Stockpiles cause compaction of the soil, which promotes the establishment of weed species. The establishment of weeds greatly reduces any quality of the natural vegetation on site. Stockpiles should not be situated within 100 m from any water bodies or water courses, as sedimentation transport	Stockpiles must not exceed 2 metres in height. Stockpiles must be used for filling material as the re use of stockpiles cannot be done on the road. By using the stockpiles as filling material for the sides, vegetation growth can be promoted by the seeds still contained in the topsoil layer.



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
		sensitive areas.	into such systems is undesirable.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative <b>moderate significance</b>	Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6  This impact is of negative <b>low significance</b>
Stockpiling building materials (C)	Soil and vegetation cover.	The impact is of a localized nature.	Stockpiles will need to be established for the storage of aggregate, bricks and cement. As mentioned, stockpiles cause compaction of the soil surface, which leads to the growth of unwanted weed species.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative <b>moderate significance</b>	Building material stockpiles must not be stockpiles within any of the riparian areas. Any alien vegetation that established itself because of disturbance need to be eradicated.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative <b>low significance</b>
Water use for construction purposes of the development.	Use of surface water resources is a fac. A WULA is being conducted in this regard. WULA will concentrate on this proposed development due to: Section 21(a): taking water from a water resource; Section 21(b): storing water; Section 21(c): impeding or diverting the flow of water in a watercourse; Section 21(e): engaging in a controlled activity (irrigation); Section 21(g): disposing of waste in a manner which may detrimentally impact	On-site.	The use of water as an important resource must be assessed carefully and a statement should be made on the impact once it has been established what the source of the water for construction purposes will be. The WULA is also necessary as mentioned. $\Delta$  Probability = 4 (highly probable) Intensity = 4 (high intensity) Duration = 4 (long term) Severity = 4x4=16 (rating 4) Significance= 4x4=16 This impact is of negative <b>high significance</b> before mitigation.	Water will be sourced from the Mbokotwe River. Possible significance assessment on surface water resources would be of moderate significance, because it will most likely come from surface resources.  Probability = 4 (highly probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 4x3=12 This impact is of negative <b>moderate significance</b>



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
	on a water resource; and Section 21(j): altering the bed, banks course or characteristics of a watercourse			
Installation and operation of <u>temporary sewerage systems</u> for construction workers.	Soil layers, vegetation cover and groundwater.	Very localised and of a temporary nature.	<p>The placement of chemical toilet systems and the servicing thereof will not have an impact on the environment, if operated according to requirements. Temporary toilets left unmanaged can leak raw sewage and effluent into the soil, surface and even ground water sources. <span style="color: red;">▲</span></p> <p><b>Probability = 4 (highly probable)</b>  <b>Intensity = 4 (high intensity)</b>  <b>Duration = 4 (long term)</b>  <b>Severity = 4x4=16 (rating 4)</b>  <b>Significance= 4x4=16</b>  <b>This impact is of negative <span style="background-color: orange;">high significance</span> before mitigation.</b></p>	<p>Temporary toilets need to be managed and serviced on a regular service schedule. This schedule has to be recorded and controlled by the contractor on site. Regular disposal of waste need to be done by a contracted disposal company. No temporary toilets will be allowed within 100 metres from any of the drainage lines.</p> <p><b>Probability = 3 (probable)</b>  <b>Intensity = 2 (moderate intensity)</b>  <b>Duration = 2 (short term)</b>  <b>Severity = 2x2=4 (rating 2)</b>  <b>Significance= 3x2=6</b>  <b>This impact is of negative <span style="background-color: green;">low significance</span></b></p>
Provisions for storm water i.e. storm water drainage (C)	Soil surfaces, vegetation cover and drainage patterns.	Areas where surface water run-off is collected i.e. like from compacted surfaces, gutters and structures, as well as road surfaces.	<p>Poorly implemented storm water system will result in increased surface run-off volume and speed, which could lead to the creation of erosion gullies. Storm water must be allowed to spread out gradually over a large surface area to protect the soil surface against erosion. Inadequate designed storm water outlets can lead to flooding of the road surface, adding unnecessary volume to effluent dams which is dangerous.</p> <p><b>Probability = 3 (probable)</b>  <b>Intensity = 2 (moderate intensity)</b>  <b>Duration = 4 (long term)</b>  <b>Severity = 2x4=8 (rating 3)</b>  <b>Significance= 3x3=9</b>  <b>This impact is of negative <span style="background-color: yellow;">moderate significance</span></b></p>	<p>Storm water outlet designs have to be done and construction undertaken within the correct design documents from the civil engineer. Vegetation cover needs to be established on bare soil areas to prevent erosion due to storm water.</p> <p><b>Probability = 3 (probable)</b>  <b>Intensity = 2 (moderate intensity)</b>  <b>Duration = 2 (short term)</b>  <b>Severity = 2x2=4 (rating 2)</b>  <b>Significance= 3x2=6</b>  <b>This impact is of negative <span style="background-color: green;">low significance</span></b></p>
Maintenance of storm water management systems (O)	Soil surfaces, drainage patterns and surface water.	In all areas where storm water management systems have to be	Storm water management will particularly be important with careful design eminent at the crossing of any natural drainage ways. Storm	Maintenance of storm water outlets is required to ensure that they don't get blocked (i.e. no longer fulfil their function) or result in erosion. The



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
		created.	<p>water outlets can get blocked due to debris and other substances that are washed from the hard surfaces. This includes siltation due to soil erosion.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>custodian of the development has to perform regular checks and maintenance.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Excavations in general	Potential impact on elements of cultural or heritage importance.	Localised if these may occur	<p>No indication of such impacts. But this will be confirmed in the Heritage report. It is possible that historical important items or graves could be uncovered if construction commences.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>If any artefacts, graves or articles of historical importance are found during construction, the construction activities have to be stopped and the area fenced off. A heritage consultant will have to be appointed to take any further related steps such as relocation.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Generation of construction waste (C)	Soil, vegetation, aesthetic quality of the site and surface water run-off, water and ground water resources.	All construction sites and directly adjacent areas within the development.	<p>Waste, such as building rubble and empty cement bags can be a negative visual impact if not collected and disposed of correctly. Further to littering the site and adjacent areas, poor control and illegal dumping of construction waste can pollute surface water run-off, as well as lead to the promotion of weed species. Δ</p> <p>Probability = 4 (highly probable) Intensity = 4 (high intensity) Duration = 4 (long term) Severity = 4x4=16 (rating 4) Significance= 4x4=16 This impact is of negative high significance before mitigation.</p>	<p>Building rubble has to be collected at a centralized area and preferably in skip waste bins. No illegal dumping may be allowed in the construction phase and this will have to be checked and monitored by the appointed Environmental Control Officer.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Site maintenance (O)	Vegetation and soil surface conditions, as well as social well-	The site needs to be maintained.	Poorly maintained storm water drainage structure will cause abnormal soil erosion at outlets.	Site & road maintenance is essential and is the responsibility of the property owner in the operational





ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
	being of the residents of the area.		<p>Therefore, site &amp; road maintenance is essential.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>phase.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Collection and disposal of solid construction waste (C)	Aesthetic quality, surface water run-off, subsurface and groundwater quality, vegetation and fauna.	The site and directly adjacent areas.	<p>Poor waste collection and handling will pollute the environment (affecting fauna, groundwater, surface water and aesthetic environment).</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>No illegal dumping of domestic and construction related waste should be tolerated. Domestic construction waste has to be collected into central waste skip disposal units.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Traffic movement (C)(O)	Noise levels around the development due to the movement of additional traffic.	Noise impact of a local nature along the developments. Closer community.	<p>The movement of traffic (during construction and operation) around the development will have an impact on the ambient or prevailing noise levels.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance.</p>	<p>Noise mitigation measures are required in order to keep the noise generated by construction activities as low as possible. This can be achieved by ensuring that only well-oiled, well maintained machinery is used, as such machinery will produce less noise than poorly serviced machinery. For example, poor maintenance of exhaust systems will produce unnecessary noise pollution. Furthermore, working hours for construction should be limited to between 07h00 and 17h00 on week days, as construction outside of these time frames will be a nuisance to adjacent dwellers. On operational phase the general business day noise will be the same as for the surrounding properties.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3)</p>



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
				Significance= 3x3=9 This impact is of negative moderate significance
Temporary employment created during the construction phases of the proposed development(C)	Social aspects	All sites where construction related activities are to take place.	There will be positive impacts in terms of social upliftment and job creation within the broader region.	None.
Transportation of workers to and from the development site (C)	Air quality, soil surface and social aspects (including traffic and worker safety).	The road safety of the region. A local issue.	Vehicles used to transport workers can be overloaded; worker safety is of utmost importance. Vehicles used to transport workers which exceed the speed limit are dangerous.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance	Traffic safety measures have to be implemented by the contractor. Correct signage and safety clothing needs to be in place. Construction workers need to be transported to and from the site on a safe manner.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance
Construction camp establishment (C)	Aesthetic impacts, social aspects, subsurface and groundwater quality, generation of domestic waste, vegetation removal, soil surface compaction and faunal impacts.	Location still to be determined.	The generation of domestic waste, as well as the provision of sewage facilities, within the construction camp could potential impact on the aesthetics of the site as well as the quality of subsurface and groundwater if not properly managed and implemented. The removal of sections of natural vegetation would most likely be needed for the establishment of the camp, and soil surfaces would become compacted as a result of activities within the camp.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance	Proper management of any temporary toilets needs to be undertaken on a strict schedule. The construction camp must be more than 100 meters away from any water bodies. Construction camps.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance
Housing of workers during construction (C)	Aesthetic character, soil and vegetation, surface water quality and social aspects.	The possibility of housing construction workers on site.	The establishment of housing for workers will have a localised impact on the soil and vegetation cover of the chosen site, as well as	Housing of workers on site, at the construction camp, is a possibility. Preferably only security should look after equipment at night time hours.





ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
			<p>potentially having a negative impact on the quality of surface water – as a result of domestic waste, and sanitation facilities for example, if these are not properly addressed. Safety is also a concern to residence and stay of workers on site should not be encouraged.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>If workers are housed near residential areas it could create a safety concern.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Sanitation provision to workers during the working day (C)	Subsurface soil, surface water and subsurface water quality.	Insufficient chemical toilets will have a health impact locally.	<p>Insufficient chemical toilets will have a health impact. Subsurface soil contamination and contamination of surface / subsurface water quality could occur if the ablution facilities provided are not according to standard. A temporary impact is possible; however, it can easily be prevented.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance</p>	<p>Sufficient chemical toilets should be provided for workers, in the range of 1 per every 8 workers, within walking distance of all construction activities. These toilets must be well maintained and inspected on a daily basis to ensure that they are clean and functioning properly. No washing of people and/or goods should take place on cleared surfaces, as this water should not be allowed to drain into any adjacent storm water canals or drainage lines.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance</p>
Movement of construction vehicles on site (C)	Air quality, soil and vegetation cover.	Potential impacts may be eminent over a wide area if not carefully managed and restricted.	<p>Movement will cause limited or localised disturbances and temporary soil compaction, which promotes the establishment of weed species. Dust will be generated by vehicular movements on site.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3)</p>	<p>Alien plant species need to be controlled and it must be ensured that weeds are removed. Dust depression measures such as watering the bare surfaces need to be implemented.</p> <p>Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2)</p>



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
			Significance= 3x3=9 This impact is of negative moderate significance	Significance= 3x2=6 This impact is of negative low significance
Maintenance of construction vehicles (C)	Soil, vegetation and surface water.	Within the construction camp(s).	In the event of on-site repairs and servicing, soil surfaces, vegetation, and run-off may be locally contaminated. Spillage of fuel through faulty bowser is a possibility, if not controlled. It is anticipated that fuel storage facilities will occur on the site. If poorly installed or managed it will cause pollution.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance	The construction camp has to be identified and communicated to the ECO as soon as its position is available. Any fuel depot areas have to be bunded and where fuel hoses will operate, absorbing gravel needs to be provided. This area can also be lined with a small piece of plastic below the gravel. As soon as any spillages occur, the gravel has to be collected and disposed of as hazardous waste.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative low significance
Traffic safety on the main roads (C and O)	Social aspects.	At all places where there will be interaction with the local traffic along existing routes as well as traffic moving through the area.	Motorists using the main roads and alternative roads may be negatively impacted on by slow moving construction vehicles.Δ  Probability = 4 (highly probable) Intensity = 4 (high intensity) Duration = 4 (long term) Severity = 4x4=16 (rating 4) Significance= 4x4=16 This impact is of negative high significance before mitigation.	Traffic safety measures have to be implemented to ensure that the general public is safe. Adequate traffic signage has to be implemented where any heavy vehicles will cross the main roads. Adequate clothing that is visible should be provided to the workers.  Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative moderate significance
Noise generation by operating air compressors, excavators and other heavy machinery. Noise is also generated by the construction workers (C)	Impacts on faunal surrounding land owners.	Areas on and surrounding site at which construction activities take place.	Excessive noise levels on site may negatively impact upon the behaviour and movements of site fauna. Surrounding land owners may also potentially be negatively impacted upon by excessive noise levels on site during construction.  Probability = 3 (probable) Intensity = 2 (moderate intensity)	Noise mitigation measures are required in order to keep the noise generated by construction activities as low as possible. This can be achieved by ensuring that only well-oiled, well maintained machinery is used, as such machinery will produce less noise than poorly serviced machinery. For example, poor maintenance of exhaust



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
			<p>Duration = 4 (long term)                      Severity = 2x4=8 (rating 3)                      Significance= 3x3=9                      This impact is of negative moderate significance.</p>	<p>systems will produce unnecessary noise pollution. Furthermore, working hours for construction should be limited to between 07h00 and 17h00 on week days, as construction outside of these time frames will be a nuisance to adjacent dwellers.</p> <p>Probability = 3 (probable)                      Intensity = 2 (moderate intensity)                      Duration = 2 (short term)                      Severity = 2x2=4 (rating 2)                      Significance= 3x2=6                      This impact is of negative low significance</p>
Heritage (C)	Heritage or historical components	No historical features are present on site.	<p>The proposed development could reveal possible cultural historical elements when installing foundations.</p> <p>Probability = 3 (probable)                      Intensity = 2 (moderate intensity)                      Duration = 2 (short term)                      Severity = 2x2=4 (rating 2)                      Significance= 3x2=6                      This impact is of negative low significance.</p>	<p>If any areas of historical significance are discovered during construction, work should be stopped and a cultural specialist should investigate the site. The first contact can be made with the EAP on site.</p> <p>Probability = 3 (probable)                      Intensity = 2 (moderate intensity)                      Duration = 2 (short term)                      Severity = 2x2=4 (rating 2)                      Significance= 3x2=6                      This impact is of negative low significance</p>
Impact on wetlands (C) (O)	Water quality, and soil	Wetlands within 500m from the proposed sites.	<p>Impacts on wetlands, further afield, could be caused by the construction activities and possible siltation into the wetland.</p> <p>Probability = 3 (probable)                      Intensity = 2 (moderate intensity)                      Duration = 4 (long term)                      Severity = 2x4=8 (rating 3)                      Significance= 3x3=9                      This impact is of negative moderate significance</p>	<p>Impacts in wetland areas will be determined by the WULA process.</p> <p>Probability = 3 (probable)                      Intensity = 2 (moderate intensity)                      Duration = 2 (short term)                      Severity = 2x2=4 (rating 2)                      Significance= 3x2=6                      This impact is of negative low significance</p>
Movement and survival of Animal species (red data)	Fauna of the site	Within the site	<p>The construction will have an effect on the animals present within the site. These impacts will include habitat destruction. It will also limit movement of species through the site.</p>	<p>No red data fauna were detected on-site. The site is degraded. Any fauna on-site will migrate to areas adjacent to this property or just to other areas on the property.</p> <p>Probability = 3 (probable)</p>



ENVIRONMENTAL ASPECT AND PROJECT STAGE	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	LOCALITY / APPLICABLE ZONE OF THE IMPACT	NATURE AND DESCRIPTION OF THE IMPACT/ISSUE (in relation to surrounding land uses) BEFORE MITIGATION	NATURE OF THE IMPACT/ISSUE (in relation to surrounding land uses) AFTER MITIGATION
			Probability = 3 (probable) Intensity = 2 (moderate intensity) Duration = 4 (long term) Severity = 2x4=8 (rating 3) Significance= 3x3=9 This impact is of negative <b>moderate significance</b>	Intensity = 2 (moderate intensity) Duration = 2 (short term) Severity = 2x2=4 (rating 2) Significance= 3x2=6 This impact is of negative <b>low significance</b>

### Summary of the Significance Rating of the Anticipated Impacts

ENVIRONMENTAL AND OTHER COMPONENTS TO BE AFFECTED BM = before mitigation AM = after mitigation	Probability value	Intensity value	Duration value	Severity value	Significance rating
Impact on the vegetation component of the site	BM: 5 AM: 3	2 2	4 2	3 2	15: High (negative) 6: Low (negative)
Impact on the faunal component of the site	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on Red Data Fauna and Flora	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on soil (surface stability)	BM: 3 AM: 2	2 1	2 4	2 2	6: Low (negative) 4: Low (negative)
Impact on soil (topsoil layer - disturbance and compaction)	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on subsurface soil quality	BM: 2 AM: 2	2 2	2 4	2 3	4: Low (negative) 6: Low (negative)
Impact on topography	BM: 2 AM: 0	2 0	2 0	2 0	4: Low (negative) 0
Impact on geology	BM: 2 AM: 0	2 0	2 0	2 0	4: Low (negative) 0
Impact on surface drainage and existing water bodies	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on surface water run-off quality	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on groundwater resources	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on air quality	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on ambient noise levels	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on cultural historical & archaeological elements	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on the social environment of the adjacent landowners	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (negative) 4: Low (negative)
Impact on traffic safety aspects	BM: 4	2	2	2	8: Moderate (negative)



ENVIRONMENTAL AND OTHER COMPONENTS TO BE AFFECTED BM = before mitigation AM = after mitigation	Probability value	Intensity value	Duration value	Severity value	Significance rating
	AM: 2	2	2	2	4: Low (negative)
Impact on land use & agricultural potential	BM: 2 AM: 2	2 2	2 2	2 2	4: Low (negative) 4: Low (negative)
Impact on visual and aesthetic quality	BM: 2 AM: 2	2 2	2 2	2 2	4: Low (negative) 4: Low (negative)
Impact on local economy (due to job creation)	BM: 4 AM: 2	2 2	2 2	2 2	8: Moderate (positive) 4: low (positive)
Impact on community (due to job creation)	BM: 2 AM: 2	2 2	2 2	2 2	8: Moderate (positive) 8: Moderate (positive)

### 2.3 Cumulative Impacts

According to the definition in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Cumulative impact on other physical components such as natural vegetation and animal life, air quality and visual impact is regarded at this stage as of moderate significance, due to the out stretched and spacious nature of the landscape and the proposed development will tie in to the current infrastructure and natural lay of the land of the area; possible secondary waste or pollution is predicted.

The possible cumulative impacts foreseen will be the loss of natural habitat, possible pollution into the natural environment. All impacts from the construction phase of the development should be continually mitigated. Thus potentially no high significant cumulative impacts are predicted.

*The possible cumulative impacts from the similar developments connecting to this development.*

ENVIRONMENTAL ASPECT AND PROJECT STAGE C: construction stage O: operational phase	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	NATURE AND DESCRIPTION OF THE POTENTIAL CUMULATIVE IMPACT IN ASSOCIATION WITH THE SURROUNDING AREA
Vegetation clearance for the footprint of the development (C).	Soil layers, soil surface.	Seen at a wider scale the additional development and secondary developments are physically connected, but the removal of vegetation cover, such that the soil surface is exposed, may lead to increased soil erosion in the area. Where the removal of natural vegetation is small in percentage to the whole activity it may add to a bigger combined loss of natural vegetation in the local area.
Excavations for the foundations of	Soil layers and faunal habitat.	The existing natural vegetation will be permanently



ENVIRONMENTAL ASPECT AND PROJECT STAGE C: construction stage O: operational phase	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	NATURE AND DESCRIPTION OF THE POTENTIAL <u>CUMULATIVE</u> IMPACT IN ASSOCIATION WITH THE SURROUNDING AREA
the development (C).		<p>removed to accommodate the foundations of the necessary structures.</p> <p>Very little faunal habitat will also be affected in combination with the surrounding developments.</p> <p>Soil layers affected will be a localised impact and not cumulative.</p>
Stockpiling of excavated material (C)	Soil and vegetation cover.	Stockpiles cause compaction of the soil, which promotes the establishment of weed species. This impact is of a temporary nature and not cumulative.
Stockpiling building materials (C)	Soil and vegetation cover.	Stockpiles will need to be established for the storage of aggregate, concrete infrastructure and cement, etc. As mentioned, stockpiles cause compaction of the soil surface, which leads to the growth of unwanted weed species. This impact is of a temporary nature and not cumulative.
Provisions for storm water i.e. storm water drainage (C)	Soil surfaces, vegetation cover and drainage patterns.	Correct and efficient storm water drainage systems must be installed. Poorly designed storm water outlets will result in increased surface run-off volume and speed, which could lead to the creation of erosion gullies. All hard surfaces generate storm water, which should be controlled by preventing the storm water from crossing the road. Storm water must be allowed to spread out gradually over a large surface area to protect the soil surface against erosion. The surrounding developments may contribute to more erosion due to more cleared and open surfaces found at these developments.
Generation of construction waste (C)	Soil, vegetation, aesthetic quality of the site and surface water run-off, water and ground water resources.	Waste, such as building rubble and empty cement bags can be a greater negative visual impact, with the additional construction waste of the staff courters, if not collected and disposed of correctly. Further to littering the site and adjacent areas, poor control and illegal dumping of construction waste can pollute surface water run-off, as well as lead to the promulgation of weed species.
General maintenance (O)	Visual quality, also surface water quality and vegetation cover.	The design and nature of the proposed development will determine the impact of the proposed development on the visual quality of the



ENVIRONMENTAL ASPECT AND PROJECT STAGE C: construction stage O: operational phase	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	NATURE AND DESCRIPTION OF THE POTENTIAL <u>CUMULATIVE</u> IMPACT IN ASSOCIATION WITH THE SURROUNDING AREA
		study area. Maintenance as a whole will prevent a further negative impact on the visual quality of the study area. The disposal of general solid waste and construction rubble (both during construction and maintenance of the development and staff courters) causes impacts on the natural environment (including faunal ecology, surface water and vegetation) if disposed of illegally. Compaction of soil surfaces and the propagation of weeds are typical impacts, but temporary.
Collection and disposal of solid domestic waste (O)(C)	Aesthetic quality, surface water run-off, subsurface and groundwater quality, vegetation and fauna.	Poor waste collection and handling on all the developments in and around the proposed development will pollute the environment (affecting fauna, groundwater, surface water and aesthetic environment). No illegal dumping of domestic waste will be tolerated. Untidy collection points and windblown refuse can cause human / animal conflicts, as foul odours from such areas will attract wild animals and cause other problems (pests / diseases), as well as water pollution.
Collection and disposal of construction waste (C)	Aesthetic quality, subsurface and ground water quality, vegetation and fauna.	No construction waste may be illegally dumped into the surrounding areas, as the effects of illegal dumping on the environment are devastating. Poor waste collection and handling on all the developments in and around the proposed development will have a negative impact on several environmental aspects. A waste collection agreement between the applicant and the local authority will be essential.
Long term employment opportunities and wealth to be generated by the proposed development (O)	Social aspects	There will be a positive impact in terms of social upliftment and job creation within the broader region.
Transportation of workers to and from the development site (C)	Air quality, soil surface and social aspects (including traffic and worker safety).	Poorly maintained vehicles will have a negative impact on air quality in terms of dust and emission. The tipper trucks from the nearby quarry will also add to the negative impact on air quality, but only during the construction phase.
Construction camp establishment (c)	Aesthetic impacts, social aspects, subsurface and groundwater quality, generation of domestic	The generation of domestic waste, as well as the provision of sewage facilities, within the construction camp could potential impact on the





ENVIRONMENTAL ASPECT AND PROJECT STAGE C: construction stage O: operational phase	ENVIRONMENTAL COMPONENT THAT MAY BE AFFECTED	NATURE AND DESCRIPTION OF THE POTENTIAL <u>CUMULATIVE</u> IMPACT IN ASSOCIATION WITH THE SURROUNDING AREA
	waste, vegetation removal, soil surface compaction and faunal impacts.	aesthetics of the site as well as the quality of subsurface and groundwater if not properly managed and implemented. Soil surfaces would become compacted as a result of activities within the camp. These impacts will also add to the negative impact other close by developments has on the local area, but only during the construction phase.
Movement of construction vehicles on site (C)	Air quality, soil.	Movement will cause limited or localised disturbances and temporary soil compaction, which promotes the establishment of weed species. Dust will be generated by vehicular movements on site. The tipper trucks from the nearby towns will also add to the negative impact on air quality, but only during the construction phase.
Traffic safety on the main road (C and O)	Social aspects.	The access point to the site; therefore motorists using the main road may be negatively impacted on by slow moving construction vehicles. The tipper trucks from the nearby town will also add to traffic impact, but only during the construction phase.
Noise generation by operating air compressors, excavators and other heavy machinery. Noise is also generated by the construction workers (C)	Impacts on faunal species and surrounding land owners.	Excessive noise levels on site may negatively impact upon the behaviour and movements of site fauna. Surrounding land owners may also potentially be negatively impacted upon by excessive noise levels on site during construction. The tipper trucks and excavators from the nearby towns will also add to the noise impact, but only during the construction phase.

### 7.4 Operational Phase Assessment

Proposed/preferred Activity – Operational Phase (in relation to surrounding land uses) The Technology Alternative is also included here.			
ENVIRONMENTAL / SOCIAL ASPECT	ENVIRONMENTAL / SOCIAL COMPONENT	NATURE AND DESCRIPTION OF IMPACTS / RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED	MITIGATION MEASURES
Emissions from the composting & slurry process	Surrounding Public and land uses	Odours may occur / be generated from the composting process (if used) of pig carcasses, as well as from the dry solid fraction	The method employed for composting the carcasses is described in the EMP, in detail. This process will dramatically reduce any odours. At this stage pig carcasses are taken to lion farms for





		that was pressed / or separated from the pig slurry.	consumption.  The deep-pit system that will be used for this piggery will also eliminate a large fraction of odours. The dry solid fraction generated from the slurry through the screwpress will have almost no odour but only the odour of soil.
Squealing of pigs.	Ambient Noise Levels	Ad hoc squealing of pigs throughout the farming process.	The new upgraded and additional pig houses in designed to curb noise levels emanating from inside.
Farm Security	Health and Safety of personnel	Loss of production due to the theft of pigs and farm implements. Possible loss of life during armed robberies.	Security fencing will be upgraded around the farming operation as well as the employment of guards to patrol boundary and access to the farm.
Surface Water	Health of the environment.	Seepage/leaks of contaminants from the Lagoons might reach surface water drainage areas. Pollution of surface water features as result of contaminated storm water runoff. An increase in traffic as well as the additional logistics (especially the storage of petroleum products) may result in hydrocarbon spillages.	Design waste water containing structures according to applicable standards. Immediate action must be taken to contain spillage and prevent it from entering nearby streams or the surrounding environment. Ensure that the waste treatment dams area suitably lined and that the lining is maintained during operation. The dams must be inspected regularly for early detection of leaks. Contour the irrigation area in such a way as to cause storm water which might originate on the irrigation area to drain towards a waste water containment dam. Storm water management dam must be managed with a freeboard of 0.8 m. Re-use water in dirty storm water containment dam first thus managing it to be empty when possible. Implement appropriate storm water management to direct clean storm water around the irrigation area. Apply waste water to land in accordance with the appropriate guidelines.
Groundwater	Health of the environment.	Contamination of groundwater from leaching of dirty water from the piggery.	The waste water system of the piggery sites must be constantly maintained and monitored preferably by a contracted specialist. A groundwater monitoring borehole must be placed on the downstream side of the Sow unit site not more than 50 m downstream of this site. As and when contamination is detected the groundwater monitoring cycle must be shortened to a two-monthly cycle. Storm water originating on the piggery sites must be treated as dirty water. Clean and dirty water systems must be



			separated. Storm water must be directed away and around the piggery sites. All water retention structures, including storm water dams, retention ponds etc. should be constructed to have adequate freeboard to be able to contain water from the 1:50 year rain events.
--	--	--	--

**7.4.1 Assessment of the Significance of All Impacts (Operational Phase):**

ENVIRONMENTAL AND OTHER COMPONENTS TO BE AFFECTED (during mostly the operational phase)	Probability value	Intensity value	Duration value	Severity value	Significance rating
Emissions from the composting & slurry process	3	4	4	5	15: High (negative)
Squealing of pigs	4	2	2	2	8: Moderate (negative)
Farm Security	4	2	2	2	8: Moderate (negative)
Surface water	3	4	4	5	15: High (negative)
Groundwater	3	4	4	5	15: High (negative)

**7.4.2 Assessment of the Significance of All Impacts After Mitigation (Operational Phase):**

ENVIRONMENTAL AND OTHER COMPONENTS TO BE AFFECTED	Probability value	Intensity value	Duration value	Severity value	Significance rating
Emissions from the composting & slurry process	3	2	2	2	6: Low (negative)
Squealing of pigs	3	2	2	2	6: Low (positive)
Farm Security	3	2	2	2	6: Low (positive)
Surface water	4	2	2	2	8: Moderate (negative)
Groundwater	4	2	2	2	8: Moderate (negative)

**3. ENVIRONMENTAL IMPACT STATEMENT**

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

**Alternative A (preferred alternative and technology alternative)**

The proposed development of pig facilities and associated infrastructure will result in



predominantly low negative environmental impacts if the appropriate mitigation measures are put into place for the duration of the proposed activities on site.

Impacts with the highest negative significance will occur during the construction phase of the proposed project. These impacts are however of a temporary nature.

Provided that the impact mitigation measures in the Environmental Management Programme as summarised in this Basic Assessment Report, are implemented, the mitigation of these and other identified impacts will be adequate and should not pose any environmental flaws that could prevent the authorisation of the proposed development of pig facilities and associated infrastructure.

Specialist information that will assist EC EDEAT in making a decision are as follows:

- Stormwater management plan
- Heritage Impact Assessment (HIA)
- Ecological Studies
- Aquatic Ecology
- Wetland delineation

In terms of feasibility of implementing water and energy efficiency technology:

1. The applicant will use the most efficient technology dictated by the pig farming enterprise of today. Big Dutchman is the company development the houses and effluent treatment system which focus on using the minimum of electricity and water for the project.
2. Solar energy is also a possibility for the future in terms of generating electricity for the farm and in return lightens the load on the Eskom grid for the area.

**No-go alternative (compulsory)**

A "DO NOTHING" alternative would be not to use the current property and let it stay as grazing for livestock and cropland. This setting is not orientated for residential use; therefore no adequate services are in place to accommodate large volumes of sewage and domestic waste. On the other hand, no additional job opportunities will be created and no contribution will be made to the upliftment of the community and infrastructure development. Thus, if not developed this positive impact will not be seen.

#### IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

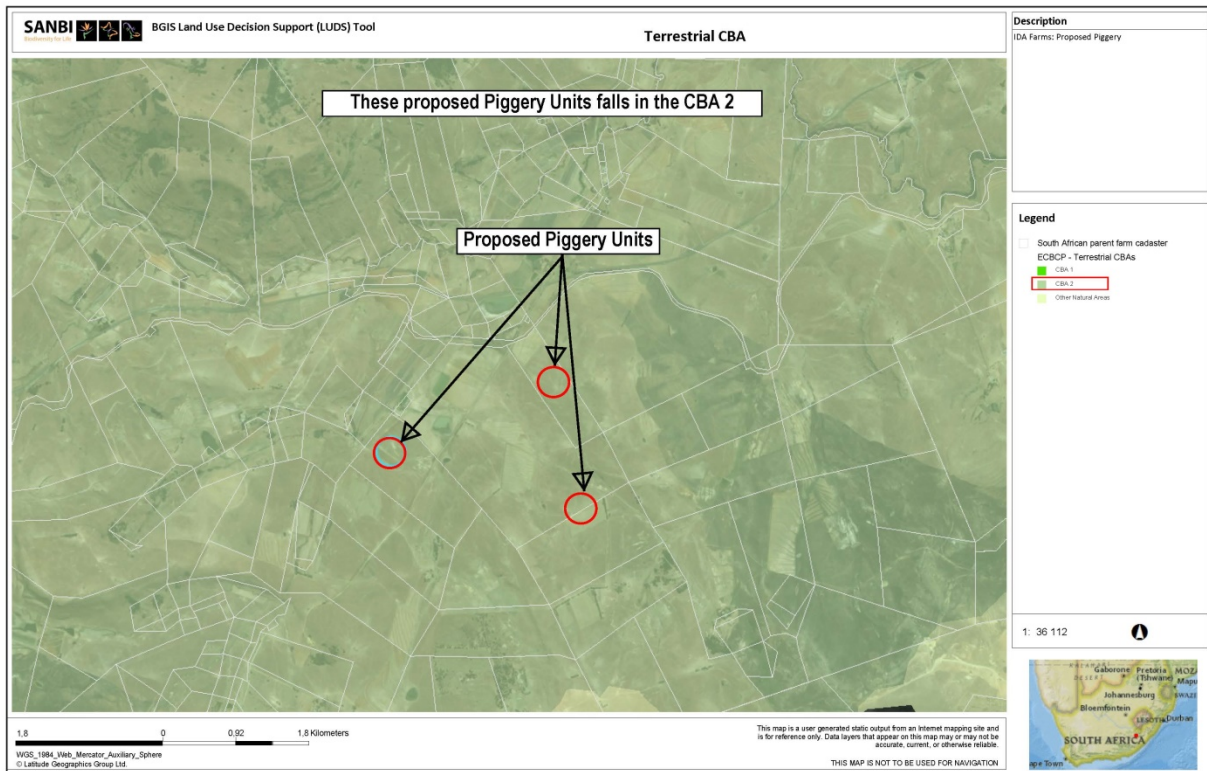
- Impacts on soil (stability and erosion of disturbed surfaces)
- Potential for surface and groundwater pollution
- Waste generation
- Noise pollution
- Air pollution
- Visual pollution
- Traffic safety issues
- Employment opportunities created is more.

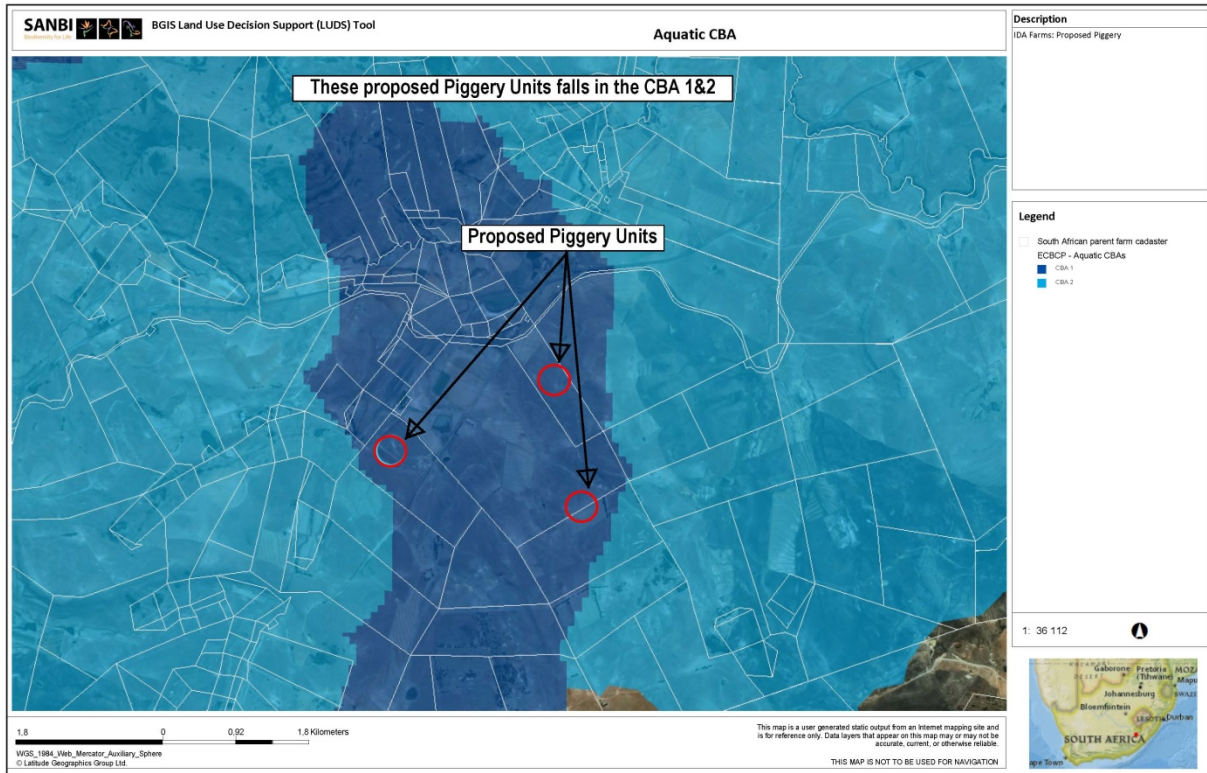


For any alternative the same impact will apply in this rural settlement:

- Impacts on soil (stability and erosion of disturbed surfaces)
- Potential for surface and groundwater pollution
- Waste generation
- Noise pollution
- Air pollution
- Visual pollution
- Traffic safety issues

SANBI'S BGIS WAS USED FOR THE CONSERVATION PLAN OF THE PROVINCE TO DETERMINE THE LAND USE AND ENVIRONMENTAL SENSITIVITIES IN AND AROUND THIS FARM. SPECIALIST STUDIES WAS ALSO USED AND IS ATTACHED TO THIS BAR. THIS AREA, ACCORDING TO THE EMF OF THE SITE, FALLS INSIDE AN AGRICULTURAL LAND USE AREA. THE FOLLOWING GIS MAP INDICATES THE SENSITIVITIES OF THE SITE ACCORDING TO C-PLAN OF THE PROVINCE:





## SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	
YES	

Is an EMPr attached?

The EMPr must be attached as Appendix F.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

**Recommendations:**

It is recommended that the preferred proposal is approved, subject to the following conditions:

General conditions proposed:





- All mitigation measures as described in this report should be adhered to by the developer (these measures will be made part of the EMPr).
- The conditions of the Environmental Authorization from EC EDEAT should be written into the EMPr and be implemented as such.
- The recommendations of the specialist studies, as listed and to be attached in the appropriate appendices of the Final Basic Assessment Report must be implemented.
- The EMPr as attached to this document should be made part of the contractual documents of contractors. The project manager must also account for the cost of this document's implementation before construction takes place.
- The impact mitigation measures recommended in the Basic Assessment Report should be adhered to. Any service provision, if needed, to the proposed development should be granted by the local authority prior to the commencement of any construction activities on site.

In the opinion of the consultant, there are no environmental impacts that have been identified that will be detrimental to the environment to such an extent that the proposed development of pig facilities and associated infrastructure should not be permitted, nor were any sensitive environmental components or fatal environmental flaws identified within the proposed development area. Great care was taken when determining the layout of the proposed development of pig facilities and associated infrastructure to ensure that areas with high environmental sensitivity were avoided.



## SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information