

LEBOKA Agriculture [Pty] Ltd
Farm Blaauwbank 241 JQ Ptn 10 & 15
Brits District

FINAL BASIC ASSESSMENT REPORT
(FBAR)

**Construction and operation of a pig farm for
the production of fresh meat [pork] products
to the market**

NW - DEDECT

Rustenburg

NWP/EIA/95/2024

June 2025



**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2020/1358

Herewith certifies that

RIËL PIETER COLYN

is registered as an

Environmental Assessment Practitioner

**Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).**

Effective: 01 March 2025

Expires: 31 March 2026

Chairperson

Registrar



Project Title

LEBOKA Agriculture [Pty] Ltd – Construction and operation of a pig farm for the production of fresh meat [pork] products to the market.

Project Name and Location

Ptn 10 & 15 of Farm Blaauwbank 241 JQ

Co-ordinates: 25° 29' 43.56"S 27° 46' 05.01"E

25° 29' 27.76"S 27° 46' 47.96"E

25° 29' 56.68"S 27° 47' 01.43"E

25° 30' 12.35"S 27° 46' 18.44"E

LPI Code:

T	0	J	Q	0	0	0	0	0	0	0	0	0	2	4	1	0	0	0	1	0
T	0	J	Q	0	0	0	0	0	0	0	0	0	2	4	1	0	0	0	1	5

Municipality: Madibeng Municipality [Brits]

District: Bojanala Platinum District Municipality

Project Description

The development on Ptn 10 & 15 of Farm Blaauwbank 241 JQ in the Brits District / Bojanala District Municipality of:

- A pig farm with a holding capacity of 800 breeding sows;
- Building / pens / breeding operation of 50 000 sqm consisting of 24 houses for the breeding sows;
- Water supply from borehole supplies;
- Electricity supply from ESKOM connection;
- Feed silos for the storage of bulk feed;
- Animal waste to be utilized as organic fertilizer

Date of Submission

July 2025

Name of Applicant

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[Refer: Annexures– EAPASA & CV of EAP]

Leading Authority

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NW-DEDECT Project Reference

NW-DEDECT Ref: NWP/EIAS/95/2024

Case Officer: Ms T Nkone / Rustenburg Office / 014 597 3597

Comments by the NW-DEDECT

Comments received and incorporated in FBAR Report

- Waste addressed
- EMPr attached
- I&AP Registrations attached
- Mortality take-off agreement attached

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Acronyms and Abbreviations:

EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
FBAR	Final Basic Assessment Report
NW DEDECT	North West Department of Economic Development, Environment, Conservation and Tourism
PPP	Public Participation Process

Executive Summary

It is the intention of **LEBOKA AGRICULTURE [Pty] Ltd** to develop on Ptn 10 & 15 of the Faarm Blaauwbank 241 JQ, Brits District, a pig farm facility for the holding of 800 breeding sows [plus piglets], for the production of meat for the meat industry.

The development will consist of the following infrastructure components:

- Building / pens / breeding operation of 50 000 sqm consisting of 24 houses for the breeding sows and piglets;
- Feed silos for the storage of bulk feed for the pigs;
- Water supply system supplied from borehole supply;
- Electricity supply form the ESKOM connection to the farm;
- An animal waste digester system for the processing of animal waste.

The total holding capacity of the piggery will be for 800 adult sows plus piglets.

The development is on a portion of the farm Blaauwbank [Ptn 10 & 15], land zoned for agricultural farming activities.

The application is made in terms of NEMA **GNR327 Listing 1 Activity 4 and Activity 27**

The process being followed is that of an EIA / Basic Assessment with a full PPP Process and assessment of both POSITIVE and NEGATIVE Impacts as identified.

NOTE:

The land is zoned for agricultural farming activities.

1. Introduction

The farm, known as **Ptn 10 & 15 of Farm Blaauwbank 241 JQ, Brits District**, is around 129 Ha in size and the area to be developed is around 7.25 Ha in size.



Photo 1: The farm and position of the development of infrastructure for the pig farm operation

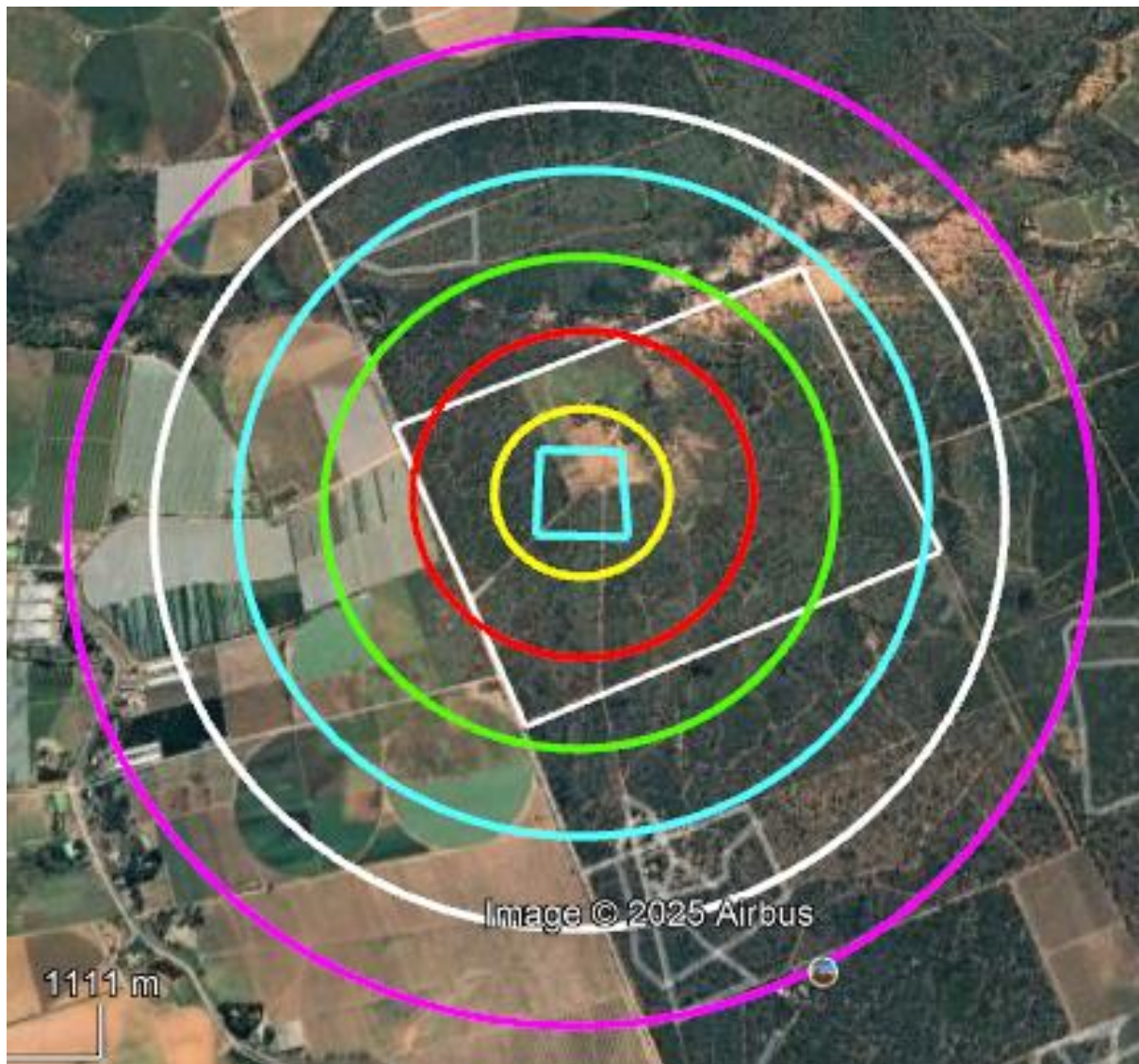


Photo 2: The farm [White tri-angle] with the proposed development area [Blue square] distance circles at:

- **YELLOW 250 m from the centre point of the development**
- **GREEN 500 m**
- **BLUE 750 m**
- **WHITE 1000 m**
- **PURPLE 1250 m**

From the aerial map the development of the area is clear to see:

- South-West; West and North of the farm areas are heavily transformed by agricultural activities ranging from cultivated lands; centre pivot agriculture to hot house / shade net agriculture;
- South-East; East and North-East of the proposed development the farms are still very much natural areas with limited developments undertaken.



Photo 3: The 1250 m radius line and developments / residential properties within or near the 1.25km zone – marked in RED

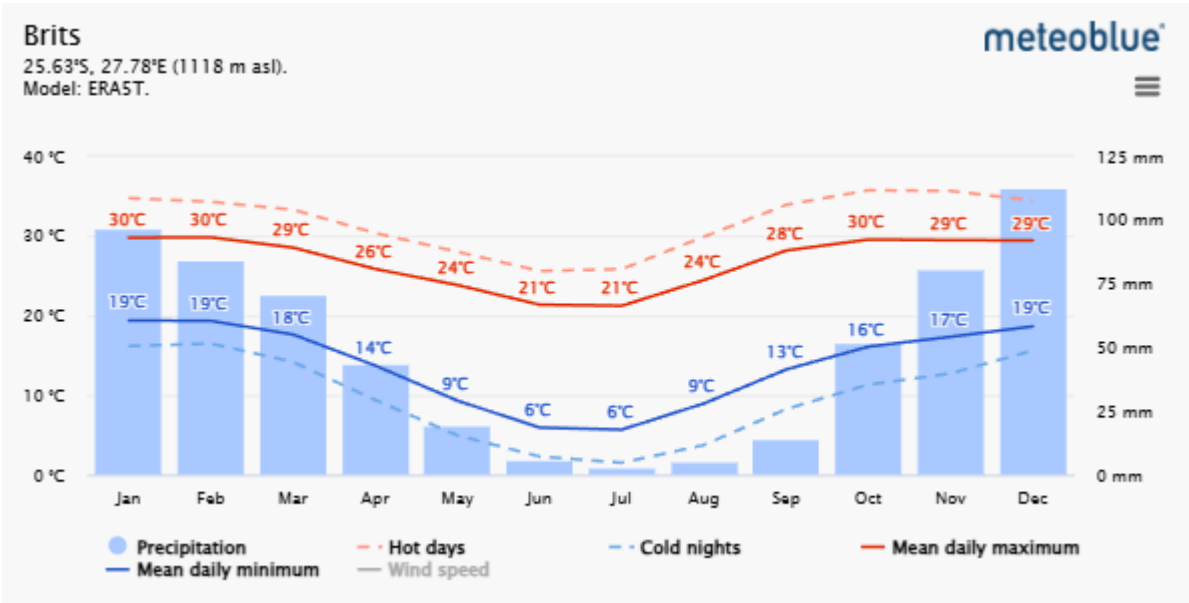
The 1250 m / 1.25 km radius marker

There are two properties located towards the south and south east of the proposed development at the 1250 m perimeter line.

The only house / dwelling within the 1250 m perimeter circle is a dwelling belonging to the applicant / developer.

2. Climate and Weather Data for Brits Area

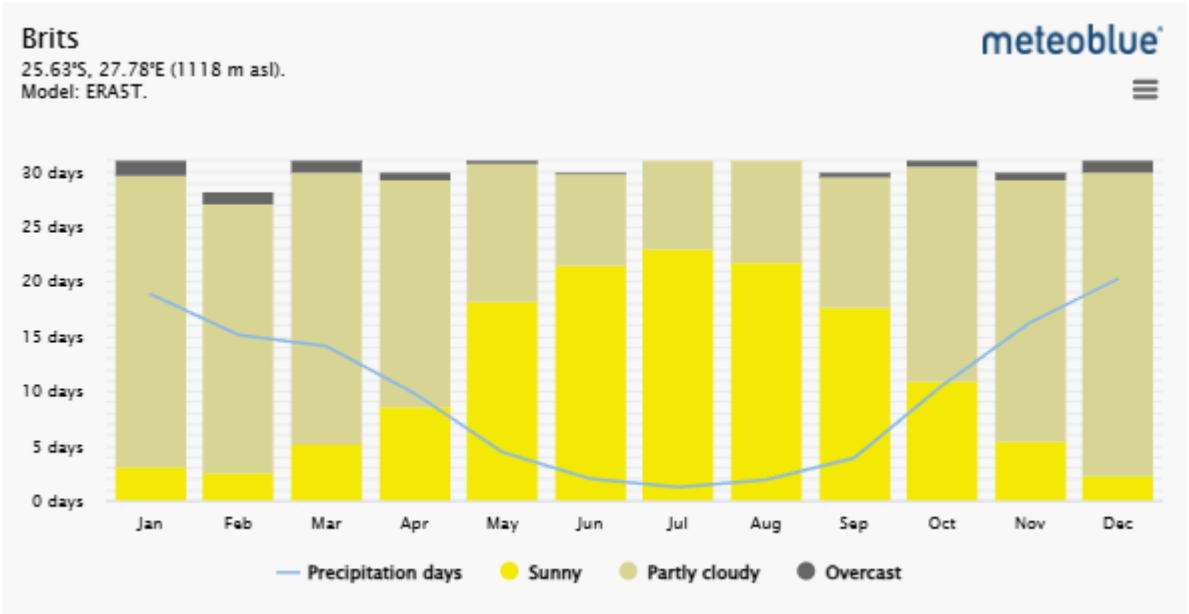
2.1. Average temperature and precipitation



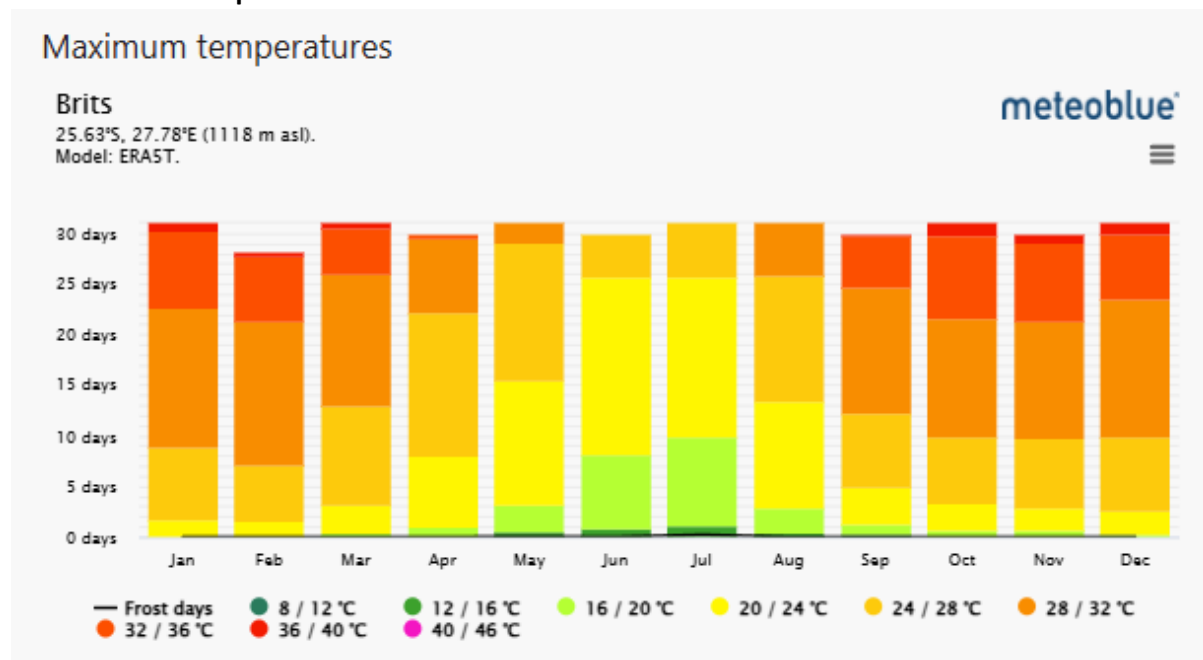
Source:

https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/brits_south-africa_1015621

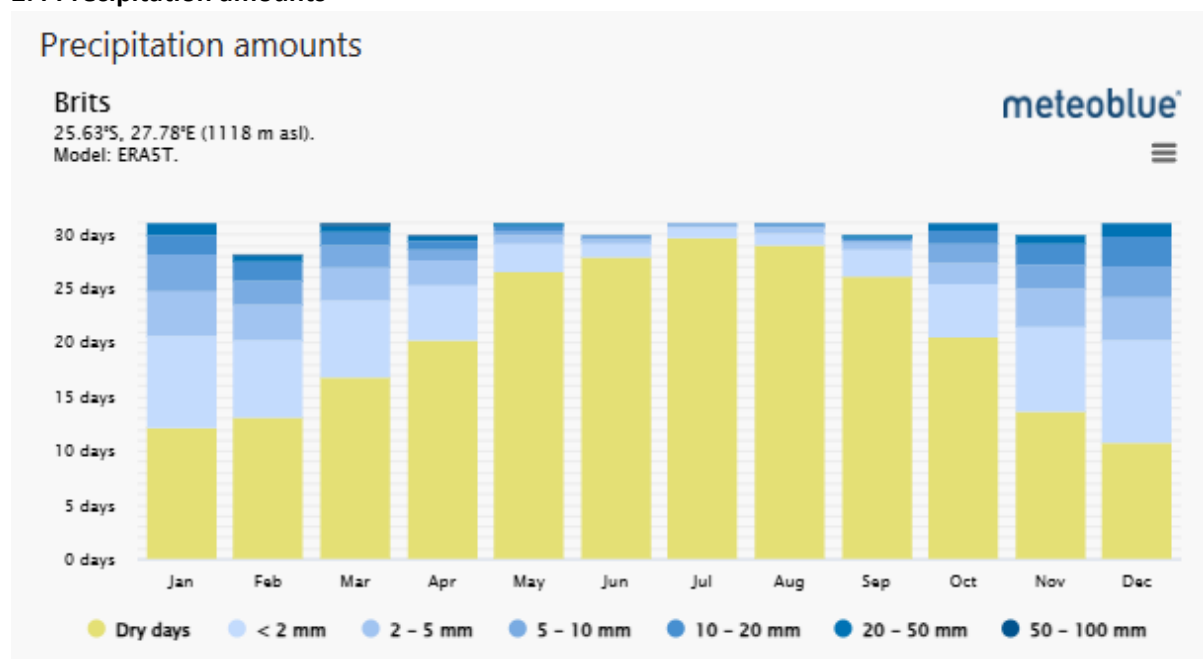
2.2 Cloudy, sunny and precipitation days



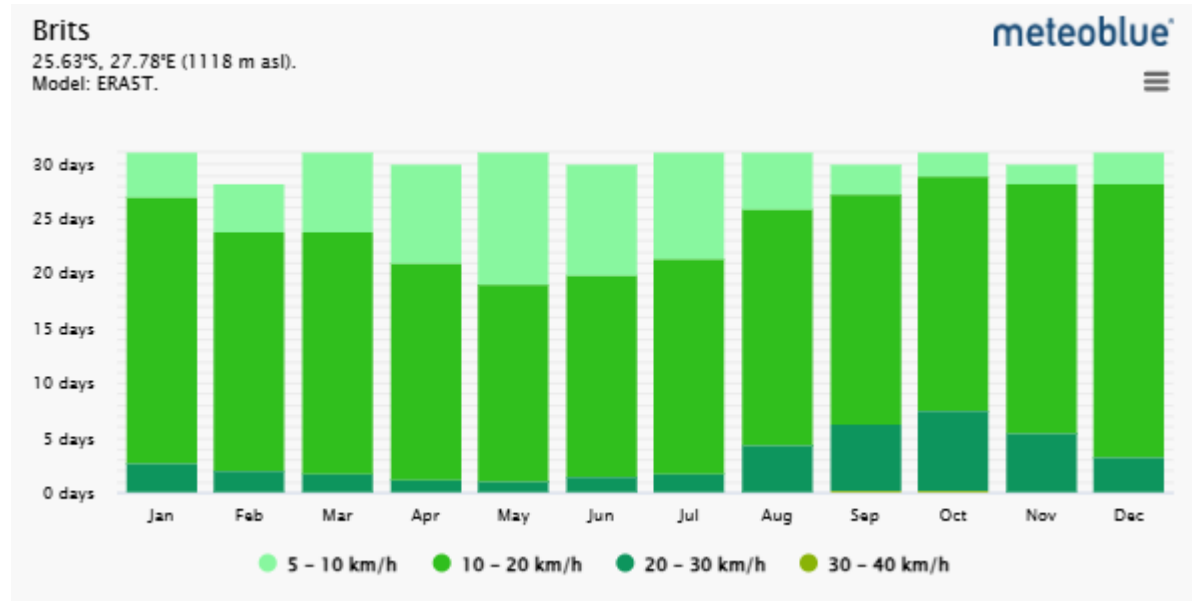
2.3 Maximum temperatures



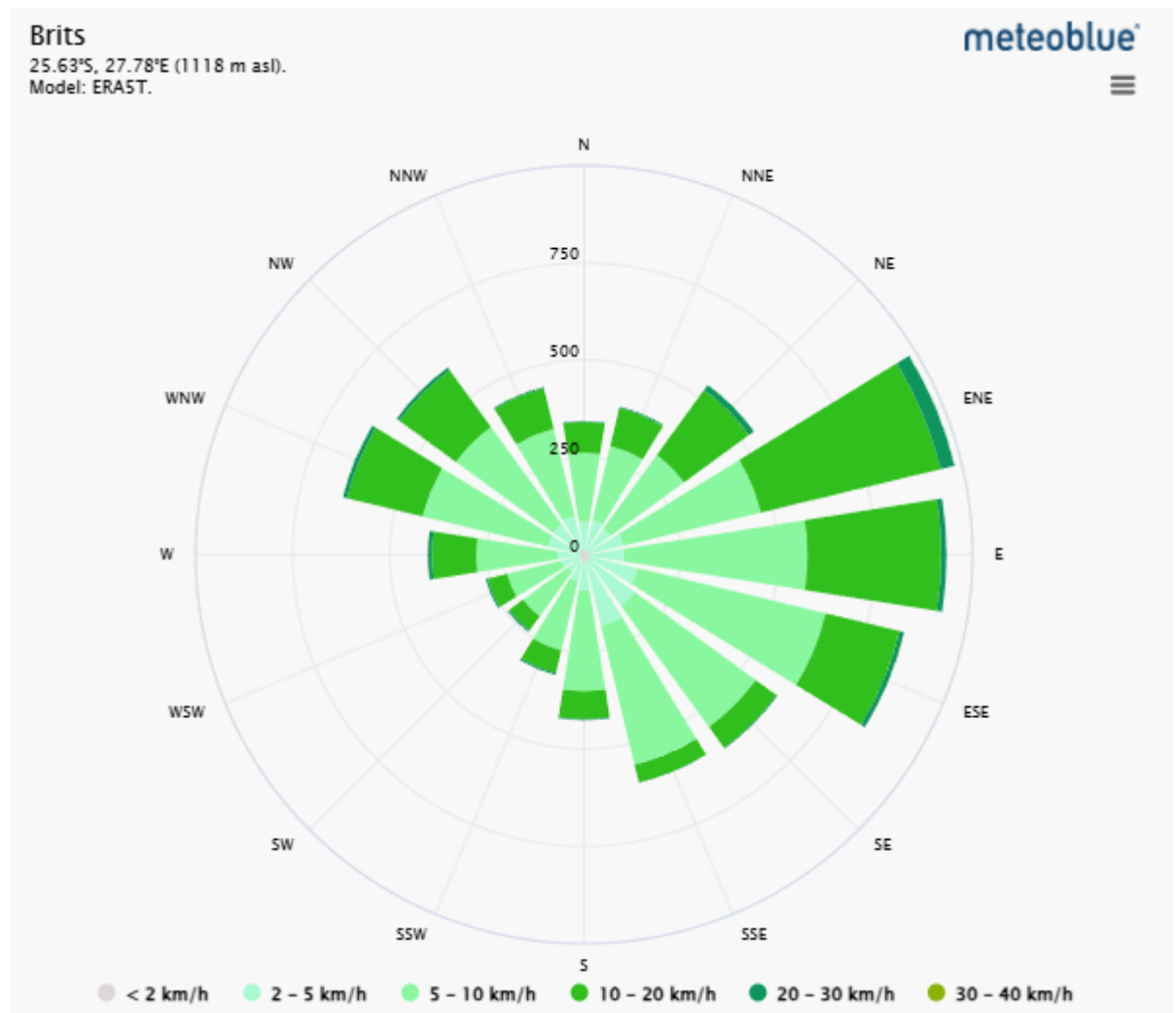
2.4 Precipitation amounts



2.5 Wind speed



2.6 Wind rose



3. Considerations in developing a farm

3.1 Market demand

In view of the ever increasing demand for fresh meat, the owner of the farm, has decided to construct and develop a pig farm operation that will supply meat [pork] to an approved abattoir or the fresh meat market.

3.2 Yield - Pigs

Fourteen pigs total born is becoming commonplace with one benchmarking database reporting the top 5% of over 600 farms with a potential for over 35 pigs born per mated female per year. This calculates to over 14.5 pigs born per female farrowed.

The swine industry is a multi-million dollar industry. Hogs are very prolific; a sow can have two litters of pigs a year. The average litter size is 7.5 pigs, and it is not uncommon for a sow to have 12-14 pigs per litter. The gestation period of a sow (from the time she is bred until she farrows) is 114 days.

3.3 Profitability of Pig Farming in South Africa

Pig farming in South Africa offers significant potential for growth and profitability, especially with the nation's ongoing pork shortage. However, success in this sector requires a strong commitment to planning, market research, and financial management.

3.4 How long does it take to raise a pig for slaughter?

In a farrow-to-finish operation, 22–26 weeks (or about 6 months, starting at birth) are required to grow a pig to slaughter weight. Sows nurse their litters for an average of 3 weeks before they are weaned, or separated from the sow, and are able to digest a solid ration.

3.5 How much meat from a pig?

Most market hogs are raised for optimal meat quality and yield between 5 – 7 months of age. At this age the weight is around 60 kg live weight, and is mainly used as pork meat. A pig reared for bacon is normally slaughtered at 80 – 100kg live weight, at age 8-10 months.

4. Aspects of the intended development to be considered

4.1 Site Lay-out

The pig farm will consist of 24 pens [3 rows of 8 each] plus general building; ablution facilities and a bio-security fence surrounding the entire operation.



Photo 4: Lay-out of the pig pens and bio-security area of the operation

Position co-ordinates [Centre point]: 25° 29' 49.56"S 27° 46' 23.87"E [RED dot]

Property border / fence line: Indicated in **WHITE**



#1 – Dwelling at the 1250 m from the development area;

#2 – Dwelling outside of the 1250 m marker, from the development area;

#3 – Dwelling – belonging to the applicant/developer;

#4 – Animal house infrastructure

WHITE – The Farm Ptn 10 & 15

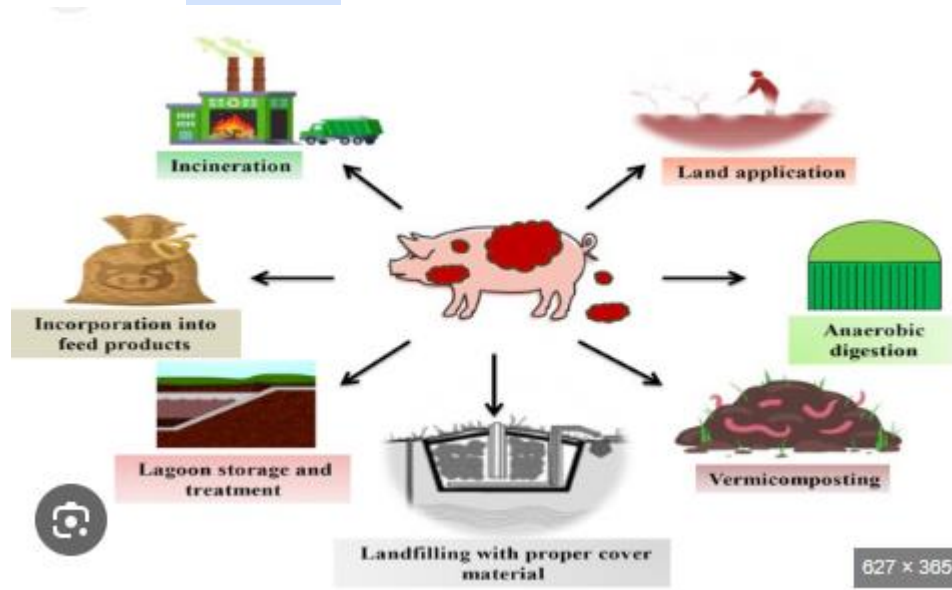
PURPLE – 1250 m marker from the centre point of the development

4.2 Waste Management

○ Different techniques

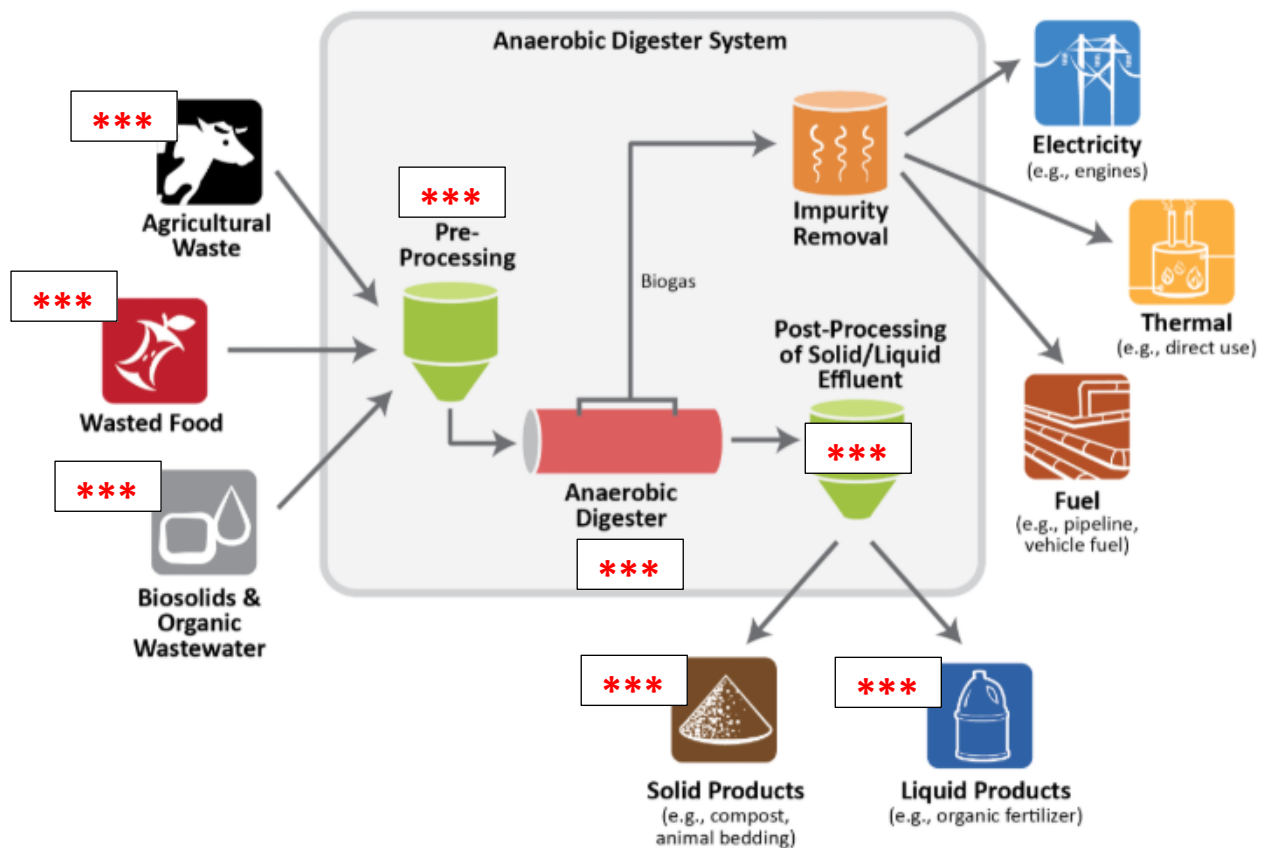
Different techniques involved in the management of pig wastes are

- land application,
- anaerobic digestion,
- composting,
- landfilling with proper cover material,
- lagoon storage,
- treatment incorporation into feed products,
- incineration.



Applicable to this application is:

- **Composting Plant** for the processing of solids to organic fertilizer.
The composting systems offer both options of continuous flow composting (adding material in the compost pit daily) and batch composting (filling the entire pit with material only once, and turning/aerating the material until composted).
The composting plant: A machine controls the temperature, oxygen and water the waste is exposed to. It also automatically rotates the organic matter to ensure it all decomposes at the same time. During the composting process, the matter is exposed to high temperatures that kill off harmful bacteria, pathogens and weed seeds.
- **Anaerobic Digester** for the processing of liquid effluent for irrigation.
A digester **reduces soluble organic matter from manure**. Soluble organic matter is the main source of odours on hog farms.
Digesters can be classified as “wet” or “dry” based on whether the material can be pumped (“wet”) or stacked (“dry”). Materials with high solids content (20-40% solids) can often be processed in either system. Some “dry” systems can handle as much as 50% solids. Materials with low solids content (less than 20% solids) can only be processed in “wet” systems. “Wet” systems are far more common in the US, but several “dry” systems have been installed in recent years to produce energy on materials that have been typically composted. Regardless of design, all AD systems adhere to the same principles.

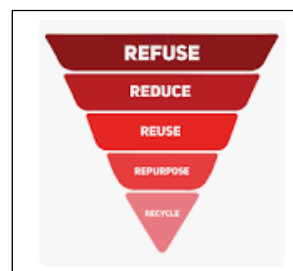


*** The path of processing waste via an Anaerobic Digester for the farm

4.2.1 Waste Management approaches

The 5 “R”s are:

- Refuse
- Reduce
- Reuse
- Repurpose
- Recycle



This is an important methodology for businesses to follow to ensure they can reduce waste and boost their recycling efforts. This ultimately lessens the amount of waste that will end up in landfill and will optimise your recycling programs.

4.3 Air Quality and Odour Control measures

One of the main actions that combat odours and ensure that the pig farm is clean, is the actual removal of animal waste, be it solid waste or effluent. Mere scraping away of effluent [waste] is not enough to ensure a clean and odour free environment. The spraying down and sterilising of floors; walls and ceilings by high pressure hoses is the way to go. Add to that the use of a detergent or sterilising fluid during high pressure spray down and the build-up of odours are further minimised.

Soluble organic matter is the main source of odours on hog farms.

The use of an anaerobic digester for the processing of effluent and liquids will main source of odour i.e. **reduce soluble organic matter from manure** and effluent.

Ventilation in the pens is important as it removes humidity from the barn / pens without causing a drafts over the pigs. Correct inlet settings allow air to move at a desired speed of 600 to 800 FPM [feet per minute] across the ceiling of the facility, allowing a good air mixture, exiting via the exhaust extractor fans. Ventilation also help purify the air, removing, for instance, ammonia and dust particles. Ventilation in a pig house is for application with sows; piglets and “finishers”. With a humidity level in the 60% - 70% range the air quality is optimal, it limits respiratory infections, reduces air borne diseases and removes the effect of ammonia gas on the animals.

4.4 Noise Management

The operation is an agricultural operation, on listed agricultural land and as such one would expect to get the standard noises associated with a farming operation.

Delivery of feed; bringing in of livestock or the removal of livestock occurs under normal circumstances during daylight hours and as such is part of the normal farm noise scenario.

Pigs squeal in order to communicate especially if they are disturbed, alarmed or need to get attention. In fact pigs squeal as loud as 115 decibels, which is 3 decibels higher than a supersonic airliner.



An alarm squeal of a pig is around 115 dB

In the scale it falls within the range of a Rock Concert

← **115 dB**

As sound travels, its intensity decreases by around 6dB for each doubling of the distance. For example, a 130 dB sound at source will be 124 dB at 1 meter; 118 dB at 2 meter, 112 dB at 4 meters.

Taking into account that the pigs will be indoors, then the dampening of walls and roof will reduce the dB of sound significantly. Travelling through the area where one finds other buildings; trees; shrubs; tall grass and the dampening effect will increase for each meter of travel.

The rate of reduction, normally known as ← **[<55 dB at 1024 m]** - attenuation is approximately 6dB as the distance doubles. The source being indoors ; travelling through an area of trees and shrubs will result in a sound intensity far less than 55 dB.

4.5 Groundwater and Surface Water Protection

The water supply to the farm is from borehole supply. The farm does not make use of any abstraction from any river resource as there is no river in close proximity. The closest river system to the farm lies at a distance of around 9km west of the farm. The area has natural drainage lines as part of the topography but no river system bordering onto the farm.

Soil management planning should be a key consideration for pig producers looking to take up a tenancy of new land for pig farming or those moving pigs onto a new site. Rainfall patterns have changed significantly over the past 15 years and producers need to adapt the way they lay out and locate a unit to help deal with high rainfall events.

Avoiding soil erosion and surface water run-off is key to maintaining water quality in both groundwater and surface water.

While ensuring producers reduce the risk of water pollution and comply with important legislation, putting the groundwork into soil management can also help to retain valuable soil nutrients and maintain good soil structure.

All settling ponds or containing dams will be fully lined in order to ensure that no water penetrate the soil and pose a possible pollution threat.

Employing the 10 point assessing and reducing risk to water pollution plan

1. Check whether the site is in or near any **restrictive zones** and choose a suitable site from the outset. Be aware of nitrate vulnerable zones (NVZs), as well as groundwater source protection zones (SPZs), which relate to the risk of borehole pollution in the area.

2. Try to **avoid sites in an SPZ1** from [50m from borehole] altogether if possible and ensure you are applying good land management practice if they are in any of the zones.

Also aim to avoid sites where there could be a potential negative effect on other watercourses, field drains and Sites of Special Scientific Interest (SSSIs).

3. Find out the **previous cropping** and assess soil nutrient content and structure, taking deep samples from across the site.

4. Do a **risk assessment** of the site. Look at how and where water might flow, thinking about “source”, “pathway” and “receptor”.

Sources include fields, manure heaps and yards. Pathways could be roads, tracks, wheelings and field drains. Examples of receptors are rivers, lakes and boreholes, along with SSSIs, ancient woodland or highways.

Take advantage of the risk mapping service that some of the organisations provide free of charge, which take into account the soil type, the degree of slope and rainfall.

5. Make sure you **record** and demonstrate actions taken, including photographs. This doesn't have to be a big document.

Some organisation's soil management plans provides a simple template to help plan and review on a regular basis (at least annually) and this information is also very useful to landlords.

6. Silt traps are one of the practical options to help manage water flow and minimise erosion risk. They collect nutrients, sediment and phosphates that can then be spread back on the land.

7. Buffer strips are another option that can be tied in with Environmental Stewardship. They need to be large enough to deal with any potential run-off and traffic needs to be kept off so as not to create wheelings.

You can put in mixes to benefit biodiversity or leave areas tussocky, which reduces run-off.

8. Where **tracks and gateways** are causing an issue with water flow, you can put in small road humps or cross-drains and bund old gateways.

9. Avoid **manure storage** in an SPZ1. And where muck is spread in a SPZ1, *it should not be spread within 50m of a borehole* and should be incorporated within 24 hours.

Mark the location on a map and don't return to the same area within two years.

10. Get in touch with your **water catchment adviser / DWS** if you are unsure.

[SPZ – Special Protection Zone / 50m from borehole]

Source: Farmers Weekly

Yearly water quality tests and borehole yield testing must be undertaken to ensure that the supply is steady and that water qualities are constantly of a good quality. Such tests and results are lodged with the DWS Regional Offices overseeing water use and abstraction for the region.

4.6 Water Uses – quantities

The supply of water will come from the boreholes on the farm.

Water is often a neglected topic when it comes to pig production, but it is actually one of the most important factors because of its role in the physiological functions of the body. For optimal health, clean cool drinking water should be available to all the pigs at all times, so they can drink as much water as they want, whenever they want it. The water quality, climatic conditions and production stage should all be considered when considering the water requirements of pigs.

Water Quality - Water quality should preferably be tested annually, so corrective measures can be taken if necessary. The source of water often determines the quality and suitability of the water for pigs, be it dam, municipal or borehole water. The following should be analysed:

The bacterial count: Chlorine treatment is recommended if the bacterial count is high. Remember that dirty water lines and drinkers may exacerbate bacterial problems, so it is important to regularly flush and clean drinkers and water lines.

Acidity: Water pH levels should range between 5 and 8. Anything above or below this, may affect water intake and be potentially harmful. Water that is too acidic (below 5), may also cause corrosion and damage pipes and water lines, whereas water that is too saline may leave scaly deposits that obstruct pipelines and drinker, requiring more frequent flushing of lines.

Hardness: Calcium and magnesium are the predominant minerals that can make water “hard”. A water softener may be used to soften the water.

High nitrates, sulphates and other minerals: The pig diet should be adjusted to accommodate high levels of specific chemicals and minerals. Water might also have to be filtered or treated before it can be supplied to the pigs, which under some circumstances may render production unprofitable.

Individual Requirements - Sows feeding young need to drink around 15 to 32 litres from a nipple drinking system, per day in order to produce sufficient milk for the drinking piglets. For gestating sows around 12 to 15 litres of water per day is required.

800 sows feeding young will require in the region of 12 000 to 25 600 litres of water per day.

800 gestating sows will require around 9600 to 12 000 litres of water per day.

Indirect water use: Cleaning and Cooling – Depending on the size of the farm, the location and the prevailing temperatures and rainfall, additional water for cooling and washdown may vary a lot. An additional 10 to 20% usage should be added to the water requirements of the animals especially during the hot summer months when dripper and misters are used to spray the animals and keep them cool.

4.7 Biosecurity in the pork industry

In the realm of pig farming, biosecurity isn't just best practice; it's a necessity. For South African farmers, the risks posed by diseases like African swine fever (**ASF**) and foot-and-mouth disease (**FMD**) demand rigorous biosecurity measures from the very beginning.

There is a saying “if you don't have biosecurity, don't start farming pigs at all”.

One of the most basic, but critical, elements of biosecurity is cleaning and disinfecting areas where animals are housed, and areas of the farm that come into contact with animals (e.g. feeding equipment, high traffic areas, and areas used for different age classes).



- Access Control
- Signage
- Disinfection [Showers]
- NO ENTRY

The primary role of biosecurity is to act as a prevention barrier, stopping disease from entering the farm. Should disease make its way onto the farm, however, biosecurity then acts as a protection barrier, stopping the spread of the disease among all the animals in the herd. Biosecurity involves “physical and procedural barriers between the farm and the biological challenges of the outside world”.

In the case of ASF, for example, the disease can spread rapidly if robust biosecurity measures are not in place. As ASF has a high mortality rate, farmers can expect to lose most, if not all, of their pigs. This is obviously devastating to the farmer’s operation and could lead to the farmer having to exit the industry.

In diseases like FMD, which does not have a high mortality rate, biosecurity measures are equally important. FMD can result in reduced production, compromised feed intake and decreased feed conversion efficiency, causing massive economic losses for farmers.

Other conditions, such as porcine parvovirus, can lead to reproductive issues, resulting in reduced litter sizes and increased rates of stillbirths.

“Biosecurity is an immensely important attribute to any thriving pig farm and forms a foundation if one wants to grow into different markets.”

○ **Compartmentalisation and Compliance**

One vital component of biosecurity for pig farms is compartmentalisation. As defined by government, it requires farms to be certified as bio-secure before they are permitted to engage in certain activities, such as selling or slaughtering pigs.

“All pig farms should be compartmentalised according to government regulations. A state vet should sign off the design of the premises as being bio-secure for [the purpose of] keeping pigs.

By adhering to these stringent standards, farms can protect themselves from disease outbreaks and gain access to a broader market. Certified pig farms, are allowed to sell their pigs to certified abattoirs, a necessary step for meeting national and international export standards.

Biosecurity in the swine industry is the backbone of compartmentalisation and it gives regulatory authorities the confidence to open export markets to the farm due to the low risk of disease

In addition to governmental certification, it is important to note the importance of physical barriers like robust fencing, which should be ***concreted into the ground to prevent wild animals from entering***. This is a serious issue, as diseases can be transmitted by other animals, particularly wild pigs and warthogs.

Fences should be at least 4 feet in height above ground and buried at least 1 foot below ground. Posts should be 3” to 5” in diameter and at least 5 feet in length. Space posts at most 15 to 18 feet apart. Ensure paddocks have good gate access — this facilitates handling and moving pigs.

Furthermore, all personnel entering a pig farm should go through a disinfection process, ideally involving a double-shower facility, to ensure contaminants are washed away, as some pathogens can be transmitted via fomites like clothing, shoes, and vehicles.

[fomites – objects or materials which are likely to carry infection, such as clothes, utensils, and furniture]

This high level of access control extends to monitoring the movement of feed and supplies.

The feed source is also very important. When arriving at the farm and offloading [feed], avoid bringing bags onto the farm because, in the past, ASF has been transferred by the bags rather than the feed itself. Instead, feed should be delivered in bulk to reduce the risk of contamination.

While biosecurity may seem costly, it is far more economical to implement these measures than to treat outbreaks. Comparing the cost of preventing disease with the cost of urgently treating a large number of pigs following a disease outbreak, prevention comes out cheaper than cure.

Biosecurity is not limited to large-scale operations. For new and small-scale farmers, establishing sustainable biosecurity protocols is also crucial. The implementation of biosecurity measures is not a once-off task; it requires continuous planning and adaptation to new challenges.

Biosecurity as a “risk analysis”, where farmers must constantly evaluate and adapt their practices to minimise disease transmission risks.

Regular training, veterinary consultations, and updates to infrastructure are indispensable parts of a dynamic biosecurity strategy.

4.8 Impact on traffic

The access roads to the farm and the upkeep of roads in the area, be they surfaced or gravel are responsibility of the province and the municipality. As tax payers motorists and users of the roads are not burdened with maintenance and regular upkeep.

The use of roads do not provide limits as to what they are being used for in terms of standard vehicles i.e. cars and trucks and therefore the farming activity operates within such limits. The standard is that a large vehicle i.e. 18 wheeler / large scale delivery truck does not exceed 32 000 kg in weight. An example is the ore carriers – they are all loaded to max capacity i.e. 32 000 kg.

A traffic impact study is undertaken when an activity will have the potential to vacate onto a road large numbers of vehicles. The number being 50 vehicles. In the case of the pig farm such numbers will not be using the road. As with any farming activity one can expect to have large scale feed deliveries coming onto the farm with bulk feed supplies. The same can be said for the removal of animals to the abattoir.

How many truckloads of pigs to the abattoir? [Calculation]

800 sows produce 14 piglets per year = 11 200 pigs for slaughter

11 200 pigs = average of 933 per month

A commercial semi-trailer with upper- and lower deck compartments will transport 100 pigs

*** On average per month 9 truckloads of pigs will be transported from the farm to the abattoir – 1 truck load every 3 days [on average] in a 30 days period.

4.9 Why a pig farm

Among the various livestock species, a piggery has the most potential in terms of:

- Excellent potential as a source of meat production [protein];
- Excellent feed converter to final weight product;

- A good source of bristles
- A good source of manure for further use in the agricultural sphere

Economic Consideration

Swine are valuable for their flesh, prepared as ham, bacon, and pork, and for their fat (lard); they also provide many other products, e.g., leather for gloves, footballs, and other articles, and bristles for brushes.

The only meat producer which surpasses pork is the poultry broiler. Monetary wise they generate a higher return.

Social Consideration

The establishing of a pig farm will provide valuable employment opportunities within the local workforce market. This in turn will provide spendable income into the local economy. The impact on the direct community's life and standard of living should also be considered. Being in excess of a kilometre away from any residential housing the possibilities of impacting in terms of noise; odours; lights and traffic is remote.

The development will also not enact any changes in the local culture or sense of community. The area will remain rural and agricultural.

Food Production Consideration

When planning a new pig farm [food production] it is really important to give consideration to:

- Where will the feed come from; [already answered above]
- How will waste be managed; [already answered above]
- Where will water come from; [already answered above]
- Possible impacts due to increased traffic; [already answered above]
- Possible impacts on the local community; [already answered above]
- Will this development serve the greater economy and desire to be self-sufficient in terms of food production?

South Africa requires its food sector to provide enough food so that imports are not required. The country needs to be self-sufficient and in order to get to that point the country needs to see advancement; development and construction. As a country agricultural land is limited and water is a scarce commodity in the arid environment that we live. For that reason any development, in an area zone for agriculture and where water is available, should be supported and promoted with care.

5. The Project

5.1 Purpose of the project

The main purpose of the pig farm is to provide a constant supply of 6 months old pigs to an abattoir for slaughter and processing to the fresh meat market.

5.2 Objectives

The objective of the development is to provide larger numbers of slaughter pigs to the fresh meat market as the demand for meat in South Africa is ever-increasing. At present South Africa imports in excess of 50 000 tons of pork from other countries.

According to the South African Pork Producers' Organisation (SAPPO), South Africa produces about 350 000 tons, and imports about 50 000 tons, of pork annually. The main suppliers of these imports are Brazil, Canada and parts of the European Union that are also PPRS-free [*Porcine Reproductive and Respiratory Syndrome*]

With the ever decreasing value of the SA Rand the imported product is becoming very expensive. International markets are also “dumping” produce on our shores which damages our local industry. As such the local economy must counter the impacts by becoming self-sufficient.

5.3 Project location and context

The farm portion is located around 15 km north of the town of Brits in the NorthWest Province.. The surrounding area sees small scale farming as well as large scale farming in the form of centre pivot irrigation for cultivating crops. The area is very much a rural farming community.

5.4 The need for the EIA process

In terms of the National Environmental Management Act, Act 107 of 1998, [NEMA as amended], the activity of development and operation of facilities or infrastructure for the concentration of pigs, 250 or more is a listed activity:

GNR 327/7 April 2017 Listing 1 Activity 4:-

- [ii][b] more than 250 pigs per facility excluding piglets that are not yet weaned;

The clearance of indigenous vegetation is also a listed activity:

GNR 327/7 April 2017 Listing 1 Activity 27:-

- The clearance of 1Ha or more, but less than 20 ha of indigenous vegetation.

NOTE: The farm will also install bulk water storage reservoirs but the total storage will not exceed the minimum levels in terms of **GNR 327/7 April 2017**

5.5 Sharing in existing infrastructure

Certain of the current infrastructure will not require duplication, and as such will be shared by the new pig farm infrastructure i.e. access road; borehole and Eskom power supply point.

- Water supply** – borehole supply will be used for the water requirements of the pig farm operation.
- Electricity supply** – the current electrical supply to the farm will be the source of electrical power for the new pig farm infrastructure.
- Access Gate & Road** – the current access gate and road will also be used by the new operation for their supplies and removal trucks and as such minimal new internal road and gates will be required.
- Footprint area** – the area being identified for the development is:

±7.25 Ha on Ptn 10 & 15 of the farm Blaauwbank, and will accommodate the new operational area of the pig farm; parking areas for trucks and equipment; a diesel generator for power backup; staff ablutions and shower facilities and a general manager's office.

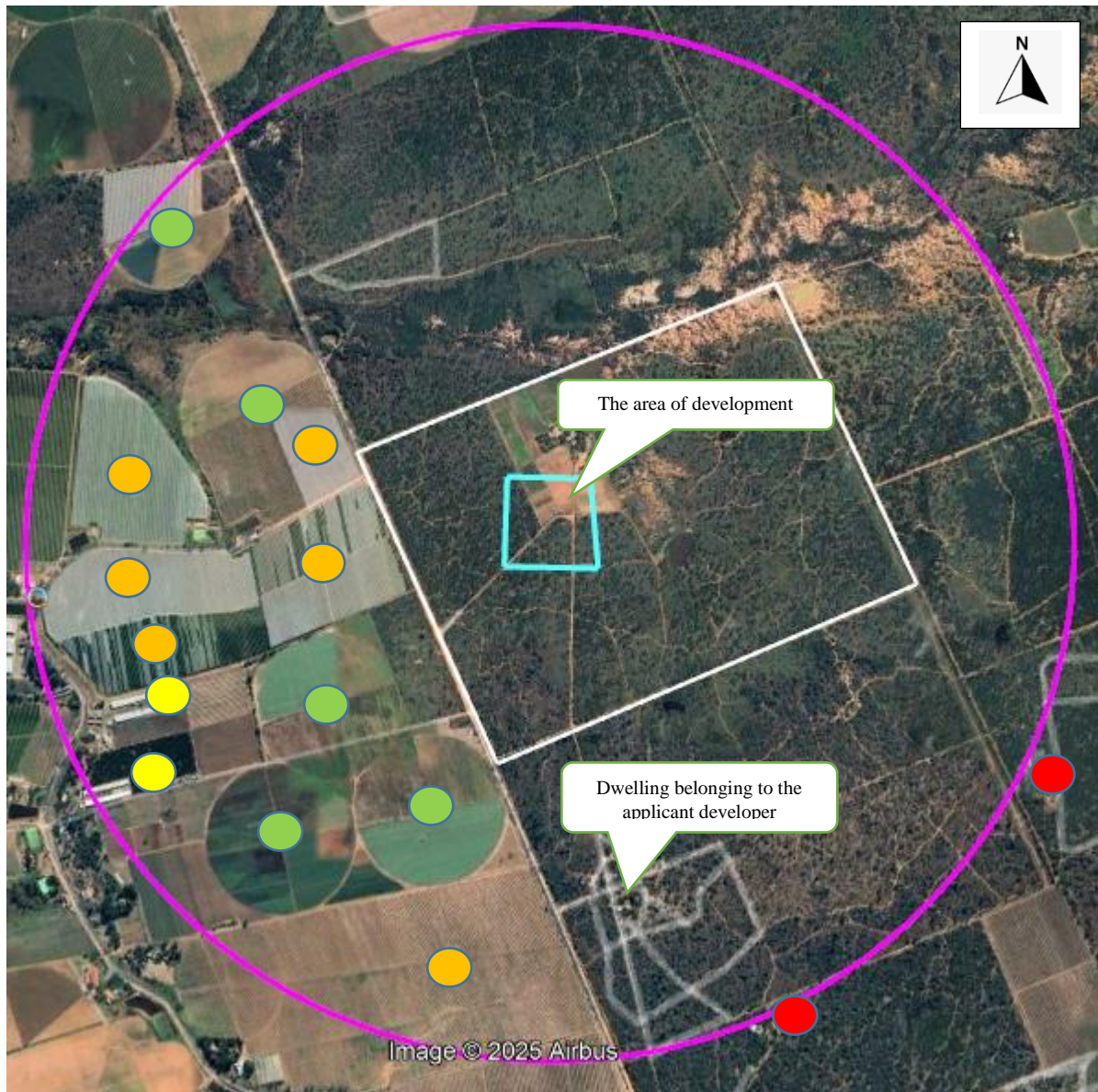


Photo 6: The farm and the surrounding land uses at present

Legend:

- BLUE** The area of development
- WHITE** The farm perimeter
- PURPLE** The 1250 m radius circle line
- RED** Residential dwellings
- GREEN** Centre pivot irrigation areas
- YELLOW** Broiler animal houses
- GREEN** Flat land / shade netting cultivation

5.6 Identification of the appropriate site

In order to consider the site for the new development the following needed to be considered:

- The position of the current infrastructure on site [Eskom and boreholes];
- Current other uses [i.e. crops] of land on the farm;
- Access to the current infrastructure and the available adjacent land;
- Ease of access for large trucks and trailers to the property;
- Use of existing roads so as not to disturb the environment any further.

It would not make financial sense to locate the houses in an area where the entire support infrastructure i.e. water; electricity and access must be duplicated or where existing use must be removed in order to accommodate the new development. The new development must also be in close proximity to where staff are housed and will reside.

5.7 Need and desirability

Food security is of prime importance to South Africa. Any development for a stronger supply of food, especially if it is sustainable and will save the country on expensive imports [make food more readily available to the population] should be supported. South Africa has a very strong need to reduce the import of food from other countries and this additional source of supply will assist in reducing our dependence on imports.

5.8 What about alternatives

Alternatives or considering alternatives, especially in the sphere of technology are always advisable. However, the farm intends to use the most modern of developments for the breeding and rearing of pigs.

Add to that:

- the area to be used is not close to any wetlands; and
- part of the area was formerly transformed cultivated lands.
- then the need to consider any other alternative site on the farm where the receiving environment may be impacted or the current cultivation yield reduced, is uncalled for.

6. Legal and Regulatory Framework

In South Africa, the legal requirements for conducting an Environmental Impact Assessment (EIA) are primarily governed by the National Environmental Management Act, Act 107 of 1998 [NEMA as amended] and its associated Regulations. NEMA sets out the framework for EIA in the country and establishes the key legal requirements for the process. The fundamental legal requirements for conducting an EIA in terms of NEMA are:

a. Mandatory EIA for a Listed Activity

NEMA categorises activities into two main groups: *listed* and *specified* activities. For listed activities, an EIA is mandatory, and they are defined in a list of activities set out in the NEMA EIA Regulations. Should a project fall under any of the listed activities, then an EIA is required.

b. Submission of a Basic Assessment Report

For projects classified as “*basic assessments*” in the NEMA regulations, the project proponent must submit a Basic Assessment Report to the competent authority. Such a report must outline the environmental impacts of the proposed project and also any mitigation measures employed.

c. Public Participation

Public Participation is a fundamental aspect of the EIA process in South Africa. The NEMA EIA regulations require that the public, including affected and interested parties, have the opportunity to comment on the EIA report and that their comments are considered in the decision-making process.

d. Compliance and Monitoring

Projects that receive an Environmental Authorisation (EA) must adhere to the conditions set out in their authorisation as well as the dictates of the Environmental Management Programme (EMPr) for the activity[ies] applied for.

e. Review and Appeals

The NEMA Act provides for a review process, also referred to as the Appeals Process whereby any party may request a review of an environmental authorisation [EA] or decision [RoD]. Appeals on Basic Assessment Authorisations [as in this application] would normally be forwarded to relevant authority and the MEC for Environment in the province.

f. Penalties and Enforcement

Non-compliance with NEMA and the conditions of an environmental authorisation may result in penalties, fines, and/or legal action.

g. Sustainability and Sustainable Development

NEMA emphasises the principles of sustainable development. It requires that the environmental; social and economic aspects of a project be considered in the decision-making process in order to achieve sustainability.

h. Integration with Other Legislation

NEMA requires that the EIA process consider other relevant laws and regulations as well, thus ensuring that it is integrated with other environmental and developmental initiatives.

These legal requirements ensure that the EIA process is robust and comprehensive, with a focus on transparency, public participation, and sustainability. It is essential for a project proponent to understand and comply with the NEMA requirements when planning and conducting EIAs for a project. In addition, these requirements may evolve as environmental regulations and standards are updated, so it is crucial to stay informed about any changes in the legal framework.

Other legislations to be considered are:

- National Heritage Resources Act, 1999 – Act 25 of 1999
- Animal Health Act, 2002 – Act 7 of 2002
- Agricultural Product Standard Act, 1990 – Act 119 of 1990
- Conservation of Agricultural Resources Act, 1983 – Act 43 of 1983
- Occupational Health and Safety Act, 1993 – Act 85 of 1993
- All Provisions of the National Water Act, 1998 – Act 36 of 1998
- National Environmental Management Biodiversity Act, 2008 – Act 10 of 2004
- National Environmental Management Act, 2008 – Act 59 of 2008
- Local Council by-laws pertaining to farming activities
 - Local Council Land Use Scheme
 - Local Council Development Plan
- North West Provincial Government: Veterinary Services
- South African Veterinary Strategy [2016 – 2026]
- North West: Department of Agriculture & Rural Development – Directorate of Veterinary Services

7. Environmental Impact Assessment Methodology

The environmental impact assessment forms the basis for the Environmental Impact Assessment Report [EIAR] as well as directs the structure of the Environmental Management Programme [EMPr] which will ensure that effective management measures are tabled. The process is aimed at either avoiding, successfully managing or mitigating identified impacts so that it does not lead to environmental degradation or contamination.

The significance of identified impacts is determined by using an accepted methodology from the Department of Environmental Affairs & Tourism Guideline document on EIA Regulations [April 1998]. As with all impact methodologies, the impact is defined in a semi-quantitative way and is assessed according to the methodology prescribed in the table below.

Table 1: Scale utilised for the evaluation of the Environmental Ratings

Evaluation Component	Rating	Scale	Description / criteria
MAGNITUDE of negative impact (at the indicated spatial scale)	10	Very high	Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.
	8	High	Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.
	6	Medium	Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.
	4	Low	Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.
	2	Very low	Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.
	0	Zero	Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	10	Very high	Positive: Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.
	8	High	Positive: Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.
	6	Medium	Positive: Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.
	4	Low	Positive: Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.
	2	Very low	Positive: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.
	0	Zero	Positive: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
DURATION	5	Permanent	Impact in perpetuity. –
	4	Long term	Impact ceases after operational phase/life of the activity > 60 years.
	3	Medium term	Impact might occur during the operational phase/life of the activity – 60 years.
	2	Short term	Impact might occur during the construction phase - < 3 years.
	1	Immediate	Instant impact.
EXTENT (or spatial scale/influence of impact)	5	International	Beyond the National boundaries.
	4	National	Beyond provincial boundaries, but within National boundaries.
	3	Regional	Beyond 5 km of the proposed area and within the provincial boundaries.
	2	Local	Within a 5 km radius of the proposed area.
	1	Site-specific	On site or within 100 meters of the site boundaries.
	0	None	Zero extent.
IRREPLACEABLE loss of resources	5	Definite	Definite loss of irreplaceable resources.
	4	High potential	High potential for loss of irreplaceable resources.
	3	Moderate potential	Moderate potential for loss of irreplaceable resources.
	2	Low potential	Low potential for loss of irreplaceable resources.
	1	Very low potential	Very low potential for loss of irreplaceable resources.
REVERSIBILITY of impact	0	None	Zero potential.
	5	Irreversible	Impact cannot be reversed.
	4	Low irreversibility	Low potential that impact might be reversed.
	3	Moderate reversibility	Moderate potential that impact might be reversed.

	2	High reversibility	High potential that impact might be reversed.
	1	Reversible	Impact will be reversible.
	0	No impact	No impact.
PROBABILITY (of occurrence)	5	Definite	>95% chance of the potential impact occurring.
	4	High probability	75% - 95% chance of the potential impact occurring.
	3	Medium probability	25% - 75% chance of the potential impact occurring.
	2	Low probability	5% - 25% chance of the potential impact occurring.
	1	Improbable	<5% chance of the potential impact occurring.
	0	No probability	Zero probability.
Evaluation Component	Rating scale and description / criteria		
CUMULATIVE impacts	<p>High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>		

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per Table 2 below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after the implementation of the recommended mitigation measures.

Table 2: Significance Score utilised for the evaluation of the Environmental Risks Rating

Significance Score	Environmental Significance	Description / criteria
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked at.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.

+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect and is likely to contribute to positive decisions about whether or not to proceed with the project.
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In order to ensure that assessments are correctly calculated [assessed] an interactive XL Spreadsheet is utilised and the final scores coded in colour.

Table 3: The interactive spreadsheet

PHASE	POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE							CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER								
			M	D	S	I	R	P	TOTAL				SS	M	D	S	I	R	P	TOTAL	SS
TOPOGRAPHY																					
									0											0	0
									0	0										0	0

M = Magnitude D = DURATION S = SEVERITY / EXTENT I = IRREPLACEABLE

R = REVERSIBILITY P = PROBABILITY

Table 4: Colour Codes for the final ratings

VH	H	MH	M	L
125-150	100-124	75-99	40-74	<40
L = LOW	M = MEDIUM	MH = MEDIUM HIGH	H = HIGH	VH = VERY HIGH

8. Identification of Potential Environmental Impacts and their Mitigation

It is essential to separate the two types of impacts that may occur i.e. **POSITIVES** and **NEGATIVE**. When assessing the current operation as well as the intended additional phase of the operation, then the following impacts are applicable:

NEGATIVES

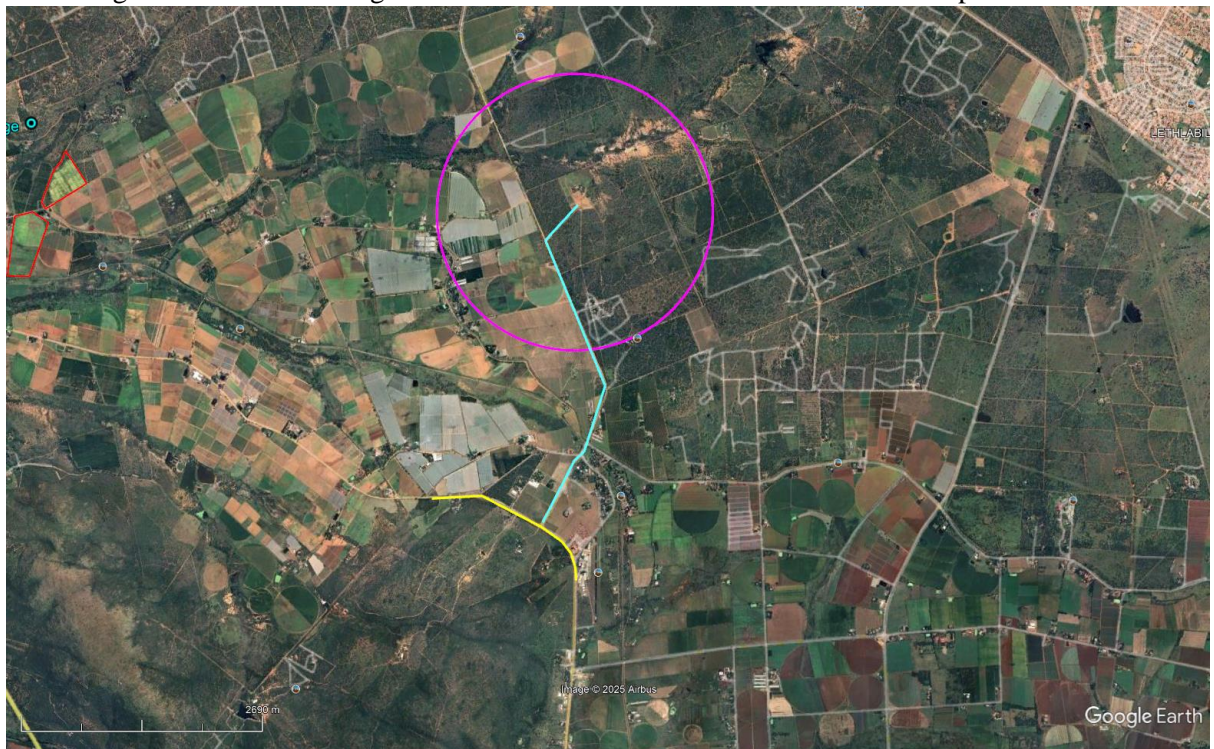
8.1 Dust

The creation of dust can be an irritant not only to the farm but also to properties adjacent to the operation as well as those alongside the road, especially when the access road is a gravel road. Large vehicles travelling at speed can create a fair amount of dust which can settle on crops; animals or even on humans.

The rating for **DUST** is calculated at **90 / MEDIUM HIGH NEGATIVE** impact.

Mitigation: Restricting the speed of trucks and other vehicles can assist in reducing the dust being created. Additional signage indicating a reduced speed can assist. Insisting on the use of tarred roads rather than gravel roads, when available, will go a long way in reducing the dust being created. The majority of the access road is tar [YELLOW] and as such only a short distance is in fact on a dirt [BLUE] road to the pig farm area.

The rating for **DUST** after mitigation is calculated at **36 / LOW NEGATIVE** impact.



8.2 Noise

The expected noise coming from the operation will be during either delivery or removal of stock from the farm by trucks. Such noise permeates the area, especially those living close to the access roads in the area.

The rating for **NOISE** is calculated at **45 / MEDIUM NEGATIVE** impact.

Mitigation: Restricting speed and times of delivery / uplifting of stock will restrict the times of actual noise generation. Consolidating deliveries into single vehicles rather than a multitude of vehicles will go a far way in reducing the occurrence of noise.

The rating for **NOISE** after mitigation is calculated at **36 / LOW NEGATIVE** impact.

8.3 Smells and odours

Smells and odours coming from a pig farm operation can be very unpleasant and a major irritant to people. Smells and odours come from manure and it is therefore essential to ensure that the piggery area remain dry; well ventilated and regularly cleaned and disinfected.

The rating for **SMELLS & ODOURS** is calculated at **90 / MEDIUM HIGH NEGATIVE** impact.

Mitigation: Ensure that there are no water leaks in the houses; Ensure that the area is well ventilated and that extractor fans are fully operational; Ensure that manure and waste is washed down and taken away to the biosystem; Ensure that regular disinfection is done with high pressure warm water [floors; walls and ceilings]. No stock piles of manure and other waste is allowed to accumulate as it poses a health risk.

The rating for **SMELLS & ODOURS** after mitigation is calculated at **11 / LOW NEGATIVE** impact.

8.4 Flies

Flies and the breeding of vast numbers of flies can easily occur on an animal farm when a number of aspects are allowed to deteriorate i.e. water leaks causing the inside of the piggery to become wet and “slushy”; urine and droppings not washed down form a favourable breeding ground for flies; stockpiles of manure being left outside open to rain and wind; mortalities allowed to decay in the sun.

The rating for **FLIES** is calculated at **54 / MEDIUM NEGATIVE** impact.

Mitigation: Ensure good ventilation through the piggery / houses. Do not allow waste heaps / stock piling of manure to occur in the open where rain and flies can get to it. Ensure that the farming practice has a popper fly control programme in place and that regular spraying of the required pesticides takes place.

The rating for **FLIES** after mitigation is calculated at **24 / LOW NEGATIVE** impact.

8.5 Coal

In the event of the operation requiring a coal fired heating system for the winter months, then bulk coal will be delivered on site for the slow combustion heating system for the operation. Such coal must be stored in a coal bunker which has a **cement floor**; is **sloped** to ensure that no water is retained in the bunker and also be provided with a **roof** to stop the ingress of rain water. No stockpiling is allowed on the bare open ground. Ash from the slow combustion units must be stored in an enclosed bunker awaiting removal to a registered landfill.



Example: *Coal deposits in a coal bunker*

The rating for **COAL** is calculated as **80/ MEDIUM HIGH NEGATIVE** impact.

Mitigation: The bulk coal for the farm must be stored in a bunker area which is either covered by a roof to prevent the ingress of water i.e. rain or else the bunker must be covered with a solid tarpaulin sheet to prevent water from entering. Where there is no coal bunker a bunker must be built and be provided with a cement floor with a slope to prevent water from accumulating in the bunker. Where coal has been dumped on the bare soil, such polluted soil must be removed and deposited at an accredited landfill site.

The rating for **COAL** after mitigation is calculated at **22 / LOW NEGATIVE** impact.

8.6 Bottom Ash

Bottom ash, as waste, cannot be dumped in the open where wind and water may disperse such waste. Bottom ash must be containerised and disposed of at an accredited landfill site or used as a road surface infill if so authorised. If bottom ash is taken by a third party then records must be kept of who takes the ash; volumes taken; address where the ash is going to and final use of the ash.

The rating for **BOTTOM ASH** is calculated as **51 / MEDIUM NEGATIVE** impact.

Mitigation: The bottom ash must be contained and either disposed of at an accredited landfill or used as a road infill once authorised to do so by the authorities. Bottom ash may not be discarded into the open for wind and water to disperse.

The rating for **BOTTOM ASH** after mitigation is calculated at **18 / LOW NEGATIVE** impact.

8.7 Road surface damage

Road surfaces, especially gravel roads in the rural areas, are heavily impacted by large heavy vehicles. The same can be said for tarred roads although the impact is less. However where potholes exist heavy vehicles will cause more damage more easily. As regular maintenance of roads in South Africa is problematic the issue of continuous deterioration is problematic.

The rating for **ROAD DAMAGE** is calculated at **54 / MEDIUM NEGATIVE** impact.

Mitigation: By instructing delivery vehicles to follow a specific route i.e. tar roads, the impact on gravel roads in the area will be greatly reduced. The implementing speed restrictions with the appropriate signage the damage to both gravel and tar roads will be reduced. By consolidating deliveries into one larger vehicle the number of trips to and from the farm will be reduced while also saving on operational costs. By determining proper forward planning in ordering bulk feed supplies the number of trips to the farm will be greatly reduced.

The rating for **ROAD DAMAGE** after mitigation is calculated at **28 / LOW NEGATIVE** impact.

8.8 Animal Health

The health of the animals are of prime importance. Utilising inoculated animals eliminates the chances of diseases developing in the piggery. The threat to the animals come from outside via other animals by finding their way into the piggery. The correct bio-security regime for the farm will also help in keeping the animals healthy and protect the business.

The rating for **ANIMAL HEALTH** is calculated at **48 / MEDIUM-NEGATIVE** impact.

Mitigation: Strict bio-security regimes to be implemented from foot baths to staff showering in and out of the operation. No cross using of equipment between the different houses at any time. Staff must work house specific in order to avoid any cross contamination. Regular checks to ensure that the wire mesh protecting have not been breached and thus allow other animals from outside coming inside. Daily checking of the fence perimeter of the houses will ensure immediate detection of any possible problem areas.

The rating for **ANIMAL HEALTH** after mitigation is calculated at **10 / LOW-NEGATIVE** impact.

8.9 Water

The abstraction of water other than for a usage "1" i.e. household and animal watering is protected by Section 21 of NWA. Although the current usage is "USE 1" excessive usage caused by indiscriminate spillage; leaks and wasteful use can impact the underground reserve in a negative way.

Borehole supply will provide the required water for the animal farm operation.

The rating for **WATER** is calculated at **54 / MEDIUM NEGATIVE** impact.

Mitigation: The use of water must at all times be controlled to ensure a dry environment within the piggery / houses. Daily checks for water leaks or faulty watering points will eliminate wet area from occurring and wastage of water. Controlling the flow of water will ensure that no pipes are over-pressurised and cause bursting and subsequent wastage. Indiscriminate use of water and wastage may not be allowed. Monitoring of borehole levels and checking recharge rates will ensure that over abstraction does not take place.

The rating for **WATER** after mitigation is calculated at **22 / LOW NEGATIVE**.

8.10 Employment

Employment opportunities in South Africa is in short supply, especially in the rural areas of the country. The operation will be staffed by taking from the local employment pool rather than “importing” staff from other areas.

The rating for **EMPLOYMENT** is calculated at **36 / LOW POSITIVE**.

Mitigation: The operation will require staff. It is important to try and protect the employment opportunities for local residents of the area rather than bringing in people from outside of the area.

The rating for **EMPLOYMENT** after mitigation is calculated at **33 / LOW POSITIVE**

8.11 Food & Food Security

Food security for South Africa is a very important aspect and is high on the list of targets by Government. As it is the country imports vast amounts of meat from other countries and with the ever increasing value of the US Dollar against the SA Rand the prices are continuously escalating. The rating for **FOOD** is calculated at **54 / LOW POSITIVE**.

Mitigation: Food security is of prime importance and the new production on the farm will make proper inroads into food security. It will introduce substantial quantities of additional fresh meat to the market and thus decrease the need for costly imports.

The rating for **FOOD** after mitigation is **34 / LOW POSITIVE**

8.12 Unwanted elements in the area

Any development will bring an influx of job seekers and the farm is bound to get walk-in job seekers coming onto the property to try and get employment. With that comes some concern for safety and security in the area.

The rating for **UNWANTED ELEMENTS** is calculated at **26 / LOW NEGATIVE**

It is the intention of the farm to employ only local labour and train only local labour all of whom will form part of the existing workforce of the farm. The development will require minimal additional employment opportunities.

The rating for **UNWANTED ELEMENTS** after mitigation is **10 / LOW NEGATIVE**

8.13 Animal Waste

Animal waste is the main reason for flies being present around the operation. Wet manure is the perfect breeding ground for flies and as such the area should be kept clear of such waste.

The rating for **ANIMAL WASTE** is calculated at **72 / MEDIUM NEGATIVE**

Correct ventilation; regular ventilation; no leaking water pipes in the houses and control of humidity all assist in minimising the effect of breeding grounds for flies. Dried waste also does not cause odours and smells to permeate the surrounding area. No waste dumps and prompt removal of waste from the site will ensure a clean environment.

Waste washed down is passed into the bio-system for processing.

The rating for **ANIMAL WASTE** after mitigation is **24 / LOW NEGATIVE**

8.14 Cumulative IMPACTS

Table 5: There were **12 POSSIBLE NEGATIVE** Impacts identified, rating it cumulatively as follows:

	Very High	High	Medium High	Medium	Low
Score	1500 - 1800	1200 - 1488	900 - 1188	480 - 888	<480
Before MIT				710	
After MIT					276

Conclusion: The possible **NEGATIVE IMPACTS** can be mitigated to an impact rating of **LOW**.

Table 6: There were **2 POSSIBLE POSITIVE** Impacts identified, rating it cumulatively as follows:

	Very High	High	Medium High	Medium	Low
Score	250 - 300	200 - 248	150 - 198	80 - 148	<80
Before MIT					90
After MIT					67

Conclusion: The possible **POSITIVE IMPACTS** has a final rating of **LOW**.

8.15 Environmental Attributes

The environmental attributes associated with the alternatives focussing on the geographical; physical; biological; social; economic; heritage and cultural aspects are as follows:

Geographical: The development will be on an area where the development will impact very little of the current planting regimes of the farm.

Physical: The entire operation is in close proximity of one another, with only one gate, via a single access road for all deliveries and removals.

Biological: Having the entire operation together in a single area will make use of specific bio-security regimes which are easy to enforce.

Social: As long as the business remains healthy and the operations have no infections / diseases, will the business thrive, employment opportunities will continue and salaries paid.

Economic: The South African Government is set on seeing the country being self-sufficient. As long as the business is kept healthy those goals can be achieved.

Heritage & Cultural: Not Applicable

Overall Viewpoint: The placement of the houses in an area where it will not impact current production of the farm will go a long way in producing a better and higher yield for the farm overall.

9. The Public Participation Process

The PPP process, is a crucial aspect of an Environmental Impact Assessment (EIA). The EIA is a systematic process that evaluates the potential environmental impacts of a proposed project or development. Public Participation in this process is important for several reasons:

- **Transparency & Accountability:**

Involving the public in the EIA process ensures transparency and accountability. It allows the affected communities and stakeholders to understand the project's potential impacts and the steps taken to mitigate them.

- **Informed Decision-Making:**

Public participation provides an opportunity for people to voice their concerns, opinions and suggestions. This input can help decision-makers consider a wider range of perspectives and make more informed choices regarding the project.

- **Community Empowerment:**

Engaging the public empowers local communities and stakeholders. It gives them a sense of ownership and control over the development that might affect their environment and well-being.

- **Identification of Issues:**

The public often has intimate knowledge of the local environment and its specific issues. They can identify environmental and social aspects that may not be apparent to the project proponents. This can lead to a more comprehensive assessment.

- **Conflict Resolution:**

Public participation can help identify and address conflicts early in the process. By addressing concerns and grievances in the planning phase, it can prevent costly disputes and legal challenges later on.

- **Improved Project Design:**

Input from the public can lead to project modifications and design improvements that minimise negative environmental impacts. It can also lead to projects that better align with the needs and aspirations of the community.

- **Legal Requirements:**

In many jurisdictions, public participation in the EIA process is a legal requirement. Failure to engage the public adequately can result in legal challenges and project delays.

- **Enhanced Public Awareness:**

The PPP process can help educate the public about the project and its potential impacts. This increased awareness can foster responsible environmental stewardship and support for sustainable development.

In summary, the PPP Process during an EIA is crucial for ensuring that proposed projects are evaluated comprehensively, that concerns, insights and stakeholder inputs are considered, and that the decision-making process is fair and accountable. It ultimately contributes to more sustainable and responsible development.

9.1 What was undertaken in support of the PPP requirements?

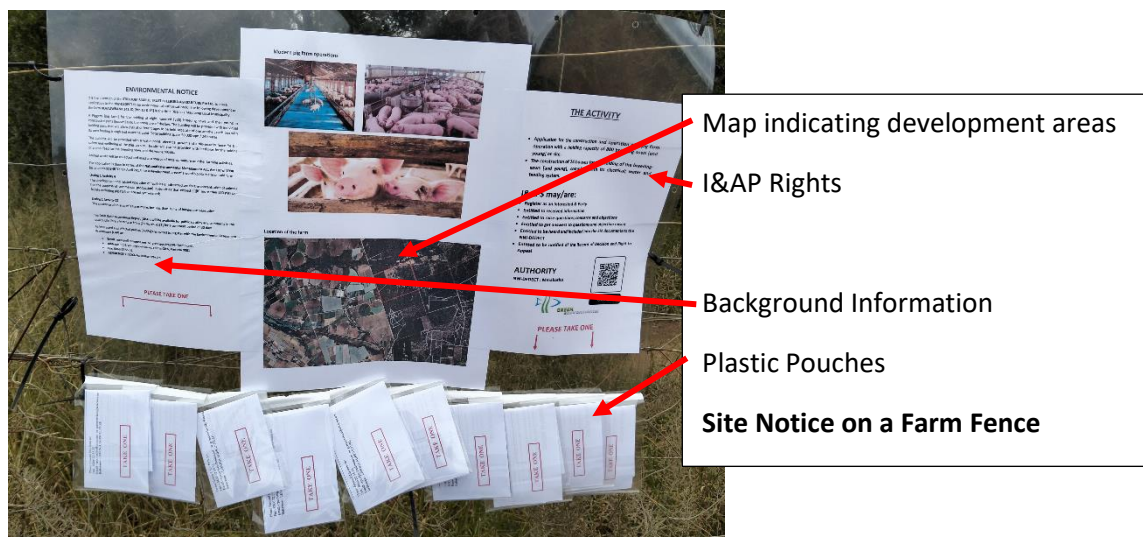
9.1.1 Advertisements in the newspaper

Advertisement in the local newspaper

9.1.2 Site Notice

A Site Notice was placed on the access gate of the farm displaying:-

- the full description of the intended activity;
- a colour picture of the farm and the intended area of development;
- The rights of I&APs;
- Name of the consultant;
- QR Code for easy download of information;
- Individual plastic pouches attached, each containing:
 - Background information
 - I&AP Registration Form
 - Contact details of the EAP
 - QR Code for downloading information to a mobile phone



The Site Notice on a Farm Gate

9.1.3 Background Information & I&AP Registration Forms

These forms were attached to farm gates of adjacent properties in the area to try and entice potential I&APs to register and raise questions and make inputs.

9.1.4 Draft document to the local library

The Draft Basic Assessment Report was placed in the local library in Brits where potential I&APs can view the document and then pose questions to the EAP.

Due to inputs received from an I&AP, the original Draft Document was withdrawn and an updated Draft Document placed in the library, addressing the issues raised by the I&AP in a comprehensive way.

9.1.5 Notifications to the Municipality and others

Written correspondence was forwarded to:

The Local Municipality;

The Speaker of the house;

SAHRA

9.1.6 I&AP Register

Name list attached.

9.1.7 Issues & Response Report [I&R Report]

The Issues & Response Report attached to the FBAR Report.

9.1.8 Release of additional information

Should any additional information become available, then such information will be distributed to all registered I&APs and also included into this the FBAR Report.

10. Environmental Screening Results

The DEA Screening Tool provided the following results:

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Source: DEA Screening Tool Results

10.1 EAP Assessment and Motivation

10.1.1 Agricultural Theme [MEDIUM]



The sensitivity score for the area to be utilised is **MEDIUM**. The current activity on site is that of Agriculture and the additional development will increase the productivity yield of the land to a higher level.

Assessment: The activity supports the Screening Tool findings and is in support of the actual Screening Rating.

10.1.2 Animal Species Theme [MEDIUM]

The sensitivity theme for Animal Species is given as **MEDIUM**. A large portion of the farm is still very much natural area with very little human impact on the land. As such the area still support some forms of fauna and flora. However, the portions of farms are fenced thus restricting the natural movement of animals.

The Screening Tool highlights the following as **MEDIUM** importance:

Mamalia – *Dasymys robertsii*

Roberts Shaggy Rat



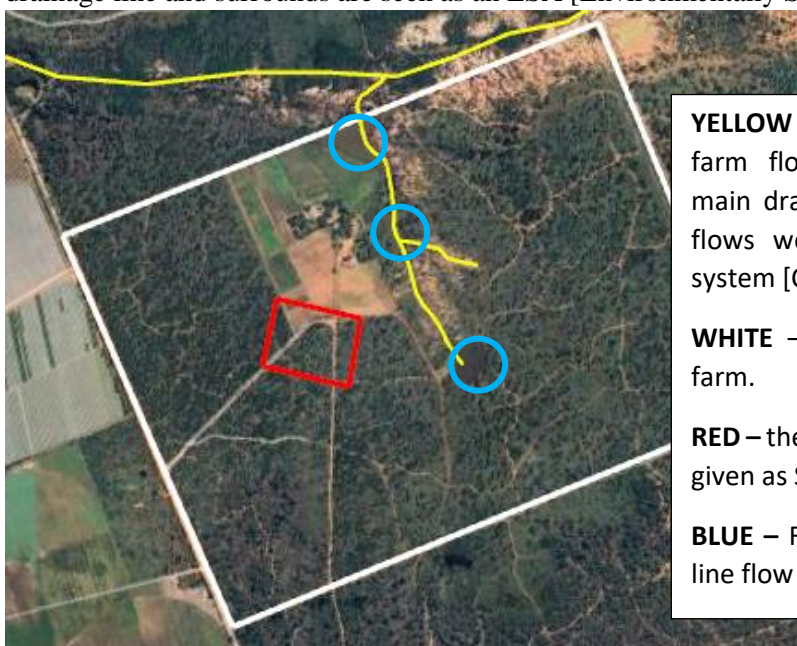
Reptilia – *Kinixys lobatsiana*
Hingeback Tortoise



The possibility exists that both species still exist on the land and that the limited development on the land has had limited impacts on their habitat and their actual numbers.

10.1.3 Aquatic Biodiversity Theme

The Aquatic Biosecurity Theme is given as part LOW and part Very High in that the drainage line and surrounds are seen as an ESA [Environmentally Support Area]



YELLOW – the drainage line on the farm flowing north towards the main drainage line that eventually flows westwards towards a river system [Crocodile River]

WHITE – Portion 10 & 15 of the farm.

RED – the development area on land given as Sensitivity LOW.

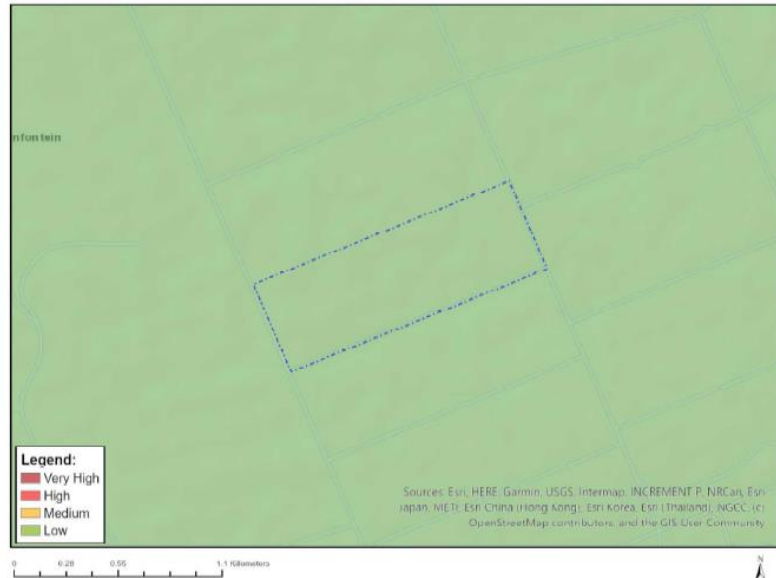
BLUE – Farm dams in the drainage line flow area.

Statement:

Although the development area [LOW Sensitivity] falls outside of the area indicated as VERY HIGH, the close proximity of the development area must still be very cautious as it has the potential to impact the drainage line area [VERY HIGH SENSITIVITY] which ultimately enters a river system around 10km towards the west of the farm.

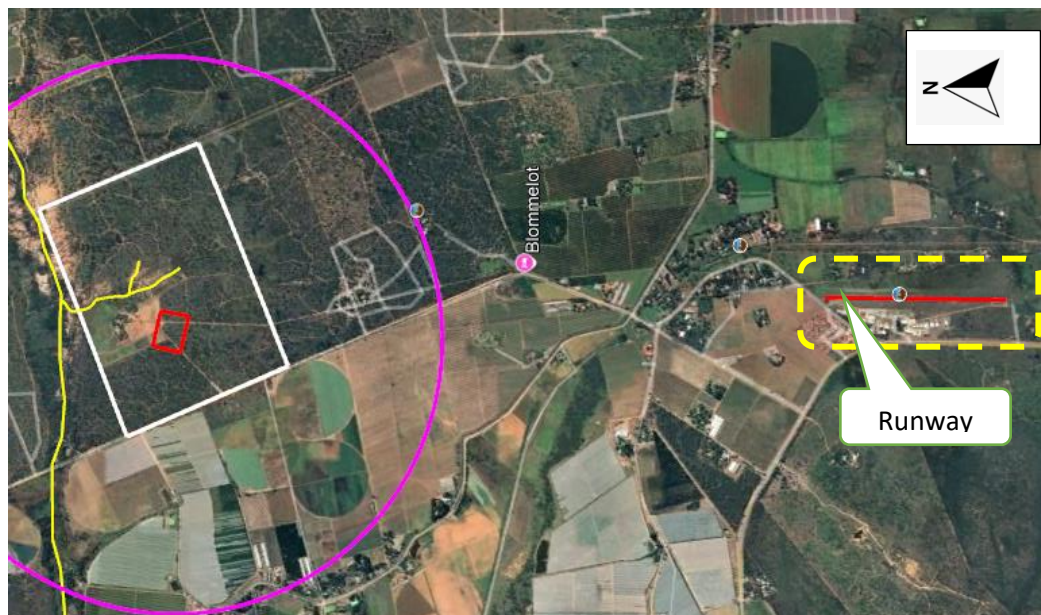
10.1.4 Archaeological and Cultural Heritage Theme

The Archaeological and Cultural Heritage Theme is given as a LOW Sensitivity. The farm does not have any old ruins or structure indicating former occupation by cultural groups of bygone era.



10.1.5 Civil Aviation Theme

The Civil Aviation Theme indicates a sensitivity rating of HIGH which is *“within 8km of another civil aviation aerodrome”*.

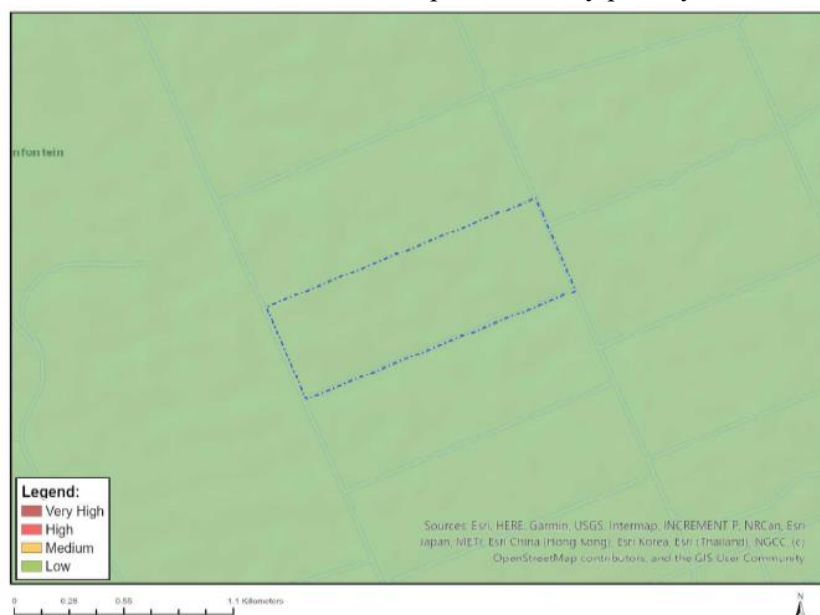


Brits Aerodrome at a distance of around 8km south of the new development

No building structure will exceed 8m in height and thus not pose any obstruction to the aerodrome.

10.1.6 Defence Theme

The Defence Theme is given as LOW. The farm is not land forming a border between South Africa and another state nor is it a “special security priority area”.



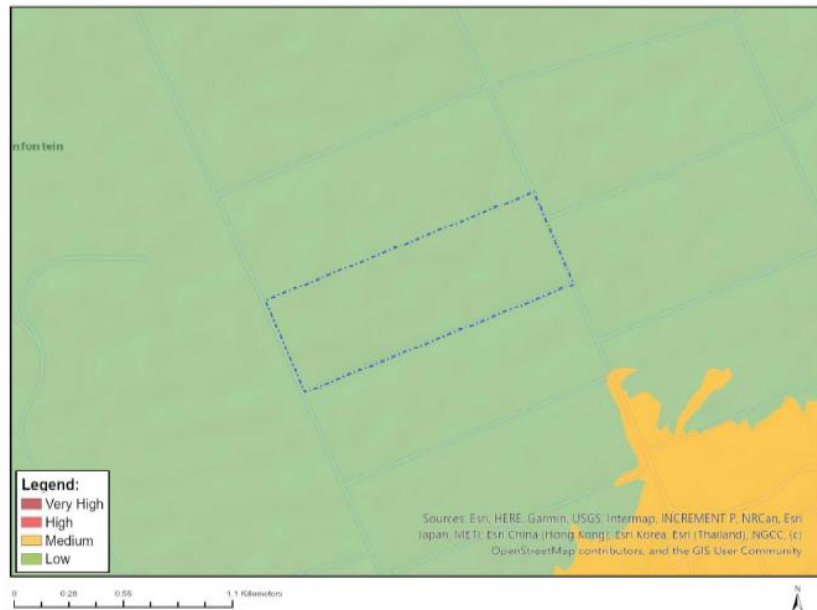
10.1.7 Palaeontology Theme “the scientific study of the history of life in the Earth's geologic past”

The Palaeontology Theme is given as MEDIUM. Developments on the farm to date has not revealed any fossils or fossil finds and as such the chances of uncovering such finds is rare. Should fossils be uncovered then construction will be stopped and the authorities notified to determine what actions would be required.



10.1.8 Plant Species Theme

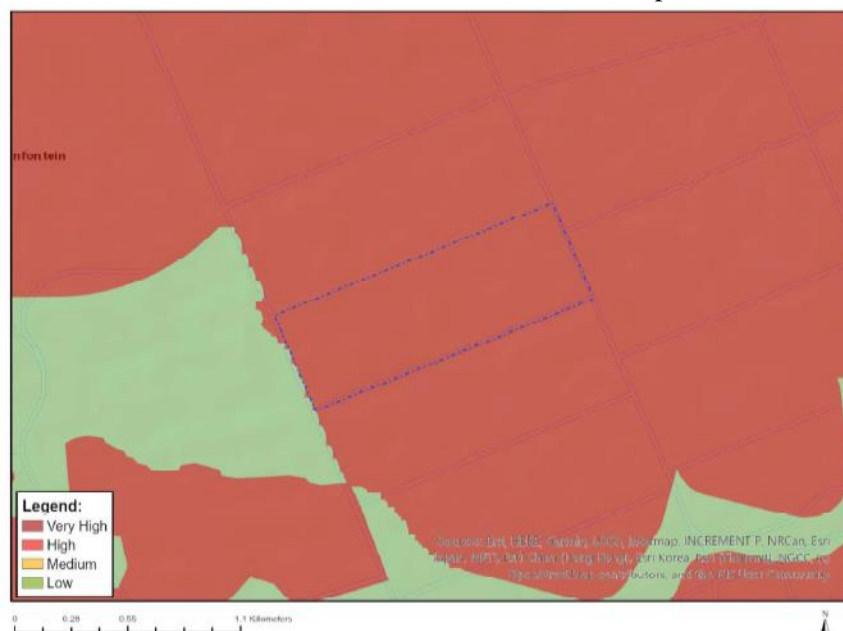
The Plant Species Theme is given as LOW and as such the area is not perceived as having any major species of flora of high importance. This does not negate the need for protection and care as all of the environment is seen as important and worth preservation.



10.1.9 Terrestrial Biodiversity Theme

The Terrestrial Biodiversity Theme is given as **VERY HIGH** and it underscores the importance of protection of the entire environment, even when the Screening Tool does not list any Red Data Species.

As a classified CBA 2 area, the area and its species and ecosystems need to be kept in their natural or near natural state. In order for this to be achieved an Environmental Management Programme [EMPr] is supplied that will govern the day-by-day running of the operation; the actions and checks to be kept in place to ensure that the environment is protected; audits to be undertaken and actions to be taken in the event of problems.



10.2 Storm Water and Management of Storm Water

The area is relatively flat and even.

When taking height readings from the development area onwards towards the main drainage line [YELLOW], one can observe that the land slopes towards the north [BLUE] from a height of around 1153 mamsl to 1127m at the main intersection with the drainage line, before sloping towards the west, a decrease in height of 26m over a distance of around 900m [straight line]. This equates to around 3m drop for every 100m distance.

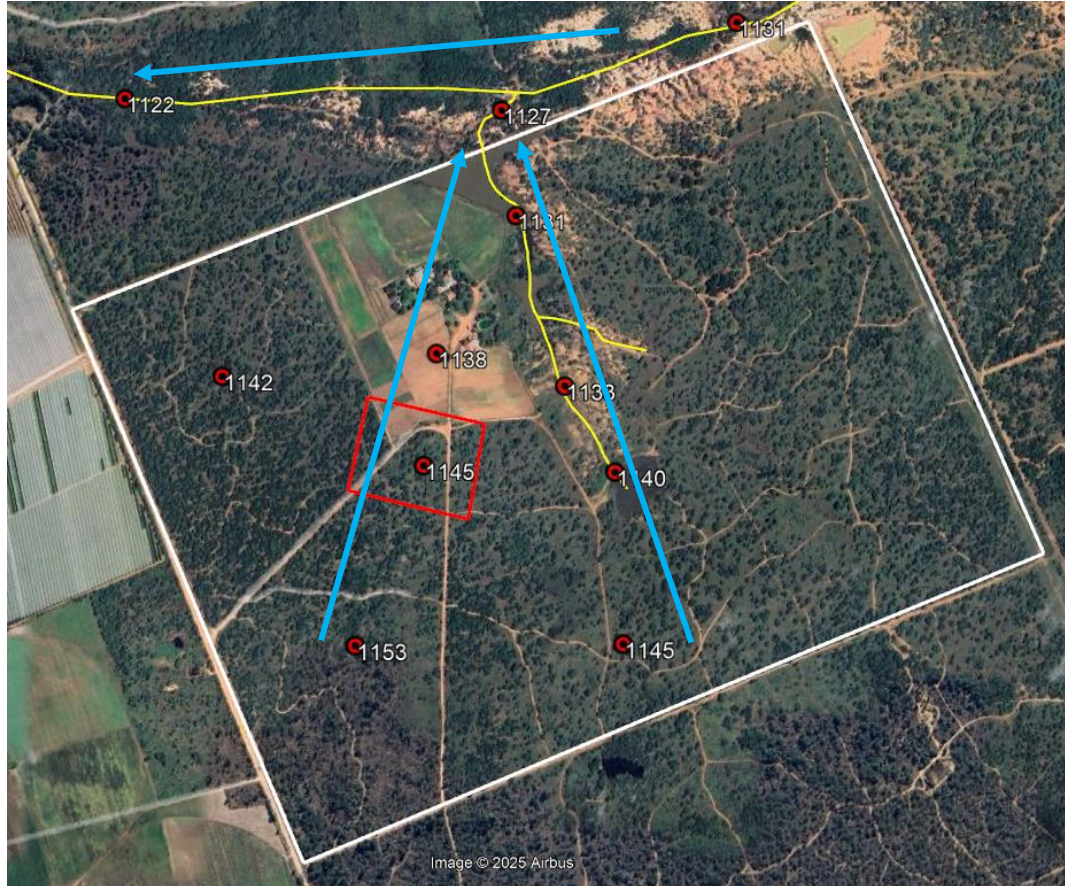


Photo 8: The slope / run-off of the area

During rain events water will flow naturally from the south towards the north before continuing onwards west towards the main river system at a distance of around 10km. The buildings will be raised from their foundations to facilitate the natural run-off of water away from the structures into the adjacent environment to then flow naturally into the drainage line onwards.

11. Conclusions and Recommendations

11.1 Specialist Investigation and recommendations

Reference is made to the Specialist Report – Site Verification Study and Recommendations, stating as follows:

Study Area

The development footprints fall within a largely natural landscape associated with the Central Sandy Bushveld vegetation type, classified as “Least Concern” in terms of national conservation status. Historical imagery from 1959 to 2022 shows that these areas have remained largely untransformed.

Piggery Footprint Results

Two plots (AP01 and AP02) were sampled in the piggery footprint area (portions 10 & 15). Both the flora and vegetation cover reflect a largely undisturbed, intact environment, except for a small section in the northeast that overlaps with cultivated land.

- *Wetland Potential: The SAGA Wetness Index indicated low to very low potential for wetlands. Field verification confirmed no wetland presence, supported by uniform Clovelly soil profiles (800–1000 mm deep, 11% clay), which are not typically associated with wetland conditions.*
- *Flora of Concern: No plant species of conservation concern were flagged in the screening tool. However, one nationally protected species, *Sclerocarya birrea subsp. caffra* (Marula), was noted as potentially present.*
- *Fauna of Concern: Three fauna species were flagged — *Podica senegalensis*, *Dasymys robertsii*, and *Kinixys lobatsiana*. The first two are associated with aquatic habitats, which do not occur in the footprint. While the tortoise (*K. lobatsiana*) could occur in the broader landscape, the footprint’s small size (8 ha, 6% of the property) poses minimal risk in terms of habitat loss or fragmentation.*

Conclusion and Recommendations

*The site verification confirms that both the piggery and chicken farm footprints occur within persistent, natural vegetation with limited environmental sensitivity. The plant communities are representative of a well-drained *Sclerocarya birrea*–*Combretum apiculatum*/*Peltophorum africanum* woodland. No critical habitat fragmentation or significant fauna displacement is expected due to the small scale and localised nature of the proposed developments.*

In line with the precautionary principle of the National Environmental Management Act, it is recommended that the following shifts be made to further reduce environmental risk:

- **Move the piggery footprint 32 m westward.**
Based on the verified findings, no additional ecological studies are deemed necessary, and the sensitivity ratings assigned by the national screening tool should be revised to reflect the low actual sensitivity of the site.

11.2 Summary

The identified impacts, both Negative and Positive have an overall rating score of LOW. The ratings clearly indicate that there are impacts but when weighed up against issues such as employment opportunities; food security; serving the greater South African economy by providing local produce then the LOW impact rating becomes insignificant.

One aspect do however stand out and that is the issue of **bulk coal storage** and **bottom ash** handling. Without fail the use of coal in heating animal shelters i.e. piggeries; animal houses; etc. in South Africa seem to disregard the importance of bunker coal space and the need of getting the coal on a concrete floor where there is no water ingress. The application lends itself to the correct license conditions being included, one of which must be the handling of coal; the handling of bottom ash and the correct storage facilities of coal.

Food and food security is a major goal for the South African Government. The prime objective of effective farming and producing the best possible yield per hectare of farmland is food to the nation.

The proposed development of piggery is supported on this agricultural land as it would greatly increase the potential and yield of the overall farming activity.

11.3 Conclusions & Recommendations

This proposed portion of land is located in excess of 1250m away from other residential properties. The land is zoned for agriculture and agricultural developments. The activity, undertaken in the correct manner will yield valuable produce to the local market while saving expensive imports into South Africa.

The EMPr for this development will be made applicable to the entire operation and will ensure uniformity and a holistic control on aspects requiring monitoring and compliance.

It is recommended that the Environmental Authorisation be provided for the maximum period allowed with the starting date being Date-of-EA.

12. Environmental Management Programme (EMPr)

The required EMPr for the existing operation inclusive of the proposed development is being developed and will form part of the Final Basic Assessment Report to be lodged with the NW-DEDECT.

13. References

The following are documents relevant to FBAR:

- Dep. Environmental Affairs and Tourism Guideline Document on EIA Regulations, April 1998 [Impact Methodology]
- CBA Series #2 – Land Management Guidelines
[<https://award.org.za/wp/wp-content/uploads/2019/04/AWARD-CBA-Series-2-v1.pdf>]

Signed this _____ day of _____ 2025 at Pretoria, Gauteng Province

RP Colyn – EAP/EAPASA 2019/1358

Acronyms and Abbreviations:

EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
FBAR	Final Basic Assessment Report
NW DEDECT	North West Department of Economic Development, Environment, Conservation and Tourism
PPP	Public Participation Process

ANNEXURES in support of the application and its assessment

**SITE VERIFICATION REPORT – Piggery & Chicken Farm
(Blaauwbank) – Flora, Fauna & Terrestrial Biodiversity
Theme**

Commissioned by

Green Environmental (Ltd)

Compiled by

EkolInfo CC & Associates

July 2025

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1995 - 2020

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The report and its content remain the intellectual property of EkolInfo CC and its associates until all accounts had been settled in full, whereby it may only be used in the project for which had been prepared for. Once released within the public domain via the Environmental Impact Assessment (EIA) process, it would be sincerely appreciated that the source is referenced when used to support approaches or results in projects of a similar nature or environment.

Report Status	Version	File Route
FINAL	1	C:\02_Projects\01_EkolInfo\20250618Eko_SiteVerificationPigChickBrits_GreenEnv\Reports\tx\EkolInfo CC Piggery_Chicken Farm Blaauwbank Site Verification Green Env.docx

1 EXECUTIVE SUMMARY

This report presents the findings of a site sensitivity verification survey conducted on portions of the farm Blaauwbank 241, located north of Brits in the North West Province, as part of an environmental assessment for proposed piggery and chicken farm developments. The study was commissioned by Green Environmental (Pty) Ltd and conducted by EkoInfo CC & Associates.

The specialist, Mr Willem de Frey, holds a Master's degree in Wildlife Management from the University of Pretoria and is a registered professional scientist with the South African Council for Natural Scientific Professions (Pr.Sci.Nat. – Botany & Ecology, Reg. No. 400100/02). Mr de Frey has over 25 years of full-time experience in flora, fauna, soil science, wetlands, and GIS-based ecological assessments.

Study Area

The development footprints fall within a largely natural landscape associated with the *Central Sandy Bushveld* vegetation type, classified as “Least Concern” in terms of national conservation status. Historical imagery from 1959 to 2022 shows that these areas have remained largely untransformed.

Piggery Footprint Results

Two plots (AP01 and AP02) were sampled in the piggery footprint area (portions 10 & 15). Both the flora and vegetation cover reflect a largely undisturbed, intact environment, except for a small section in the northeast that overlaps with cultivated land.

- **Wetland Potential:** The SAGA Wetness Index indicated low to very low potential for wetlands. Field verification confirmed no wetland presence, supported by uniform Clovelly soil profiles (800–1000 mm deep, 11% clay), which are not typically associated with wetland conditions.
- **Flora of Concern:** No plant species of conservation concern were flagged in the screening tool. However, one nationally protected species, *Sclerocarya birrea* subsp. *caffra* (Marula), was noted as potentially present.
- **Fauna of Concern:** Three fauna species were flagged — *Podica senegalensis*, *Dasymys robertsii*, and *Kinixys lobatsiana*. The first two are associated with aquatic habitats, which do not occur in the footprint. While the tortoise (*K. lobatsiana*) could occur in the broader landscape, the footprint's small size (8 ha, 6% of the property) poses minimal risk in terms of habitat loss or fragmentation.

Chicken Farm Footprint Results

Six plots (AC01 to AC06) were assessed across the chicken farm infrastructure area (portions 8 & 9), covering a cumulative footprint of 12 ha across seven proposed development sites.

- **Ecological Integrity:** The vegetation was found to be intact and undisturbed, with no evidence of historical cultivation since 1959. One plot showed a transition from dense to more open vegetation but remained natural.
- **Wetland Potential:** While the SAGA model suggested potential wetlands at AC02 and AC03, site verification found no hydromorphic soils. Shallow wetness indicators were present, but not sufficient to confirm wetland status. Vegetation at these plots did not indicate wetland conditions.
- **Flora of Concern:** Three protected tree species were recorded: *Sclerocarya birrea* (Marula), *Boscia albitrunca* (Shepherd's Tree), and *Spirostachys africana* (Tamboti). These species are listed as Least Concern but are legally protected, and permits are required for pruning or removal.
- **Fauna of Concern:** Two fauna species were flagged — *Dasymys robertsii* (wetland-dependent, not present in the footprint) and *Kinixys lobatsiana* (likely in the landscape, but not within the

site). The small footprint (10% of the property) and intact surrounding vegetation limit potential habitat disruption.

Conclusion and Recommendations

The site verification confirms that both the piggery and chicken farm footprints occur within persistent, natural vegetation with limited environmental sensitivity. The plant communities are representative of a well-drained *Sclerocarya birrea*–*Combretum apiculatum*/*Peltophorum africanum* woodland. No critical habitat fragmentation or significant fauna displacement is expected due to the small scale and localised nature of the proposed developments.

In line with the precautionary principle of the National Environmental Management Act, it is recommended that the following shifts be made to further reduce environmental risk:

- Move the **piggery footprint** 32 m westward.
- Relocate the **chicken infrastructure footprints** at AC02 and AC03 at least 32 m to the southwest.

Based on the verified findings, no additional ecological studies are deemed necessary, and the sensitivity ratings assigned by the national screening tool should be revised to reflect the low actual sensitivity of the site.

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2 INTRODUCTION

Green Environmental Services (Pty) Ltd appointed EkolInfo CC to do a site verification survey of the flora, fauna and terrestrial biodiversity components based on the environmental screening tool results for the proposed piggery and chicken farm development on portions of the farm Blaauwbank 241, in the Northwest Province (Figure 1). The verification concerns the flora, fauna and terrestrial biodiversity themes (Figure 2, Figure 3).

2.1 Scope of work/ Terms of reference

The scope of work is based on the protocol for the specialist assessment and minimum report content requirements for environmental impacts with regards to the flora, fauna and terrestrial biodiversity¹.

This document concerns the site verification and minimum report content requirements, which require the following:

- “Prior to commencing with a specialist assessment, the current use of the land and the potential environmental sensitivity of the site under consideration as identified by the screening tool must be confirmed by undertaking a site sensitivity verification.
- 2.1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.
- 2.2. The site sensitivity verification must be undertaken through the use of:
 - (a) a desk top analysis, using satellite imagery;
 - (b) a preliminary on-site inspection; and
 - (c) any other available and relevant information.
- 2.3. The outcome of the site sensitivity verification must be recorded in the form of a report that:
 - (a) confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool;
 - (b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
 - (c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.”

Willem de Frey, a registered scientific professional in the fields of ecological – and botanical science with more than 25 years’ experience facilitated the study. The site visit was done on the 3rd of July 2025.

¹ <https://www.sanbi.org/news/national-protocols-and-guidelines-standardise-requirements-for-specialist-studies-in-eias/>

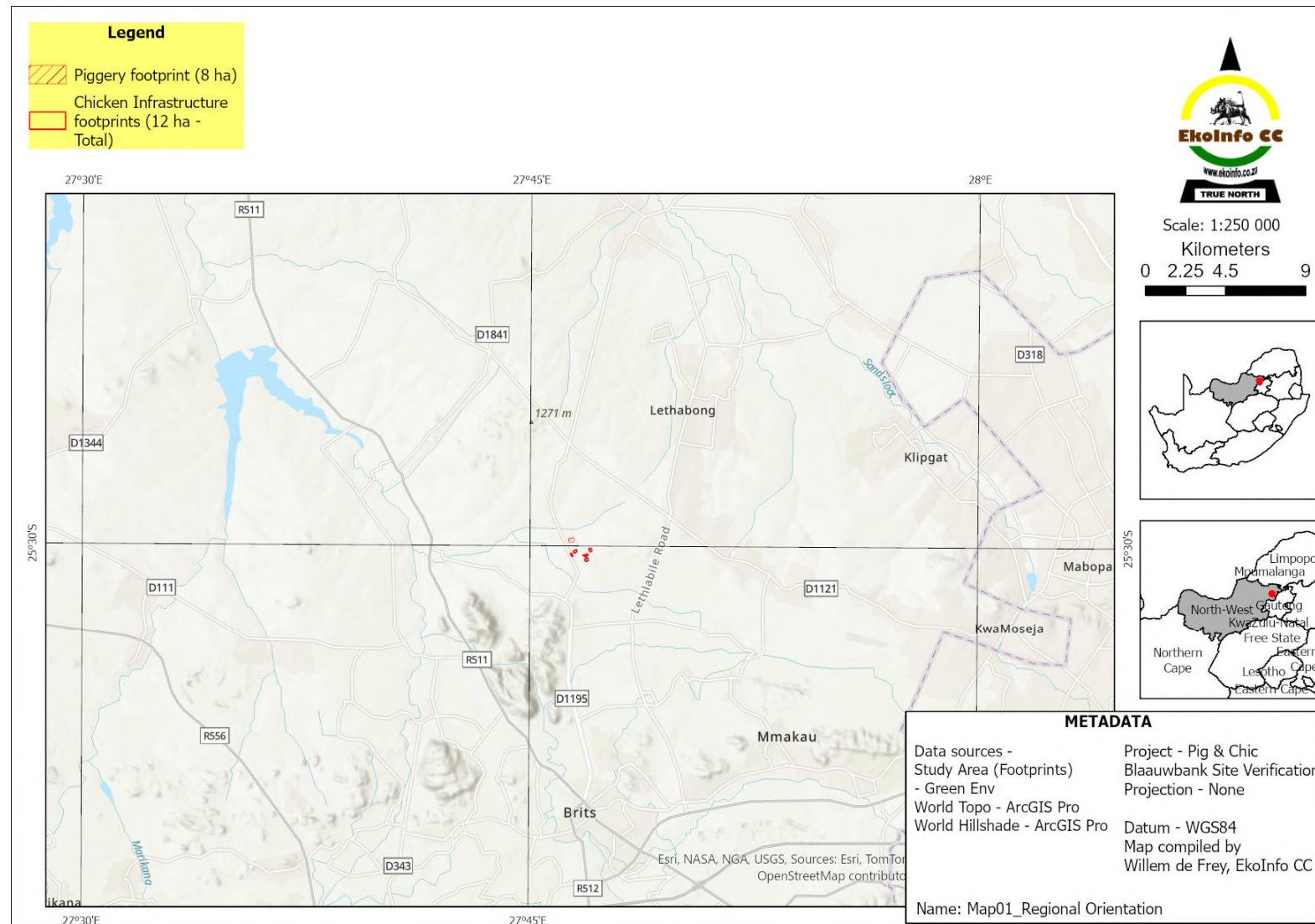


Figure 1: Regional orientation of the proposed piggery and chicken farm, north of Brits – Northwest Province, South Africa

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eladatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			x

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

A – Relative Plant Species Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eladatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

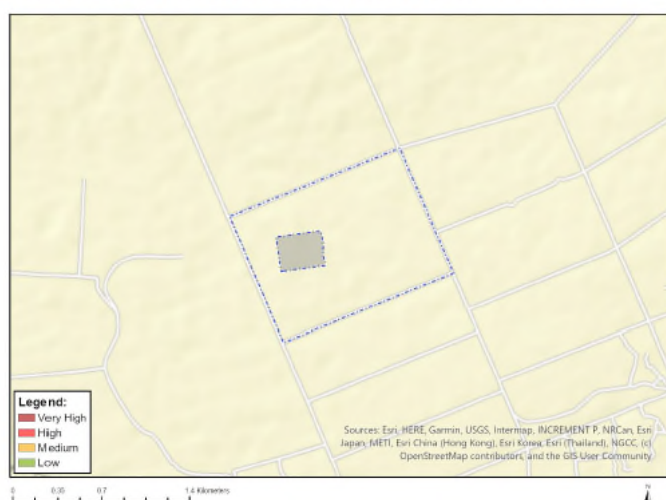
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		x	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Aves-Podica senegalensis
Medium	Mammalia-Dasyatis robertsii
Medium	Reptilia-Kinixys lobatiana

B – Relative Animal Species Theme Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
x			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1

C – Relative Terrestrial Biodiversity Theme Sensitivity

Figure 2: Piggery: National Environmental Screening Tool – Flora, Fauna & Terrestrial Biodiversity Themes

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

A – Relative Plant Species Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

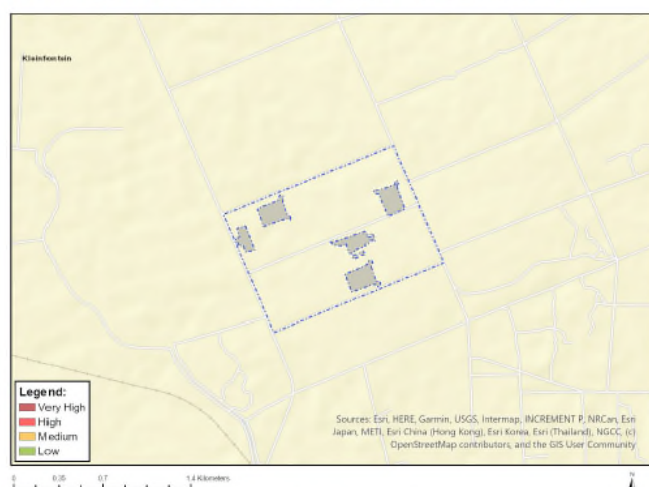
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Dasyatis robertsii
Medium	Reptilia-Kinixys lobatsiana

B – Relative Animal Species Theme Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1

C – Relative Terrestrial Biodiversity Theme Sensitivity

Figure 3: Chicken Farm: National Environmental Screening Tool – Flora, Fauna & Terrestrial Biodiversity Themes

3 STUDY AREA

The proposed agricultural activities (animal production) are located on portions of the farm Blaauwbank 241 (Figure 4). It is evident that the study area is located within an agricultural landscape. On a regional scale it is associated with a single regional vegetation unit, namely Central Sandy Bushveld (Figure 5). The conservation status of this regional vegetation unit on a national scale is Least Concern.

The footprints of the proposed animal production infrastructure are located within Critical Biodiversity Areas (CBA2) and Ecological Support Areas (ESA1) (Figure 5).

According to the 2022 land cover classification, the study area represents a mosaic of Natural Wooded Land and Natural Grassland (Figure 6). Limited change occurred in the footprints since 1990, which imply it mainly represents persistent natural vegetation (**Error! Reference source not found.**).

4 METHOD STATEMENT

Willem de Frey a registered professional scientist in the field of ecological – and botanical science did a site visit on the 3rd of July 2025 Systematic sites were selected within the proposed chicken farm expansion development site using GIS software. At each of the sites the status of the vegetation was documented:

1. Natural or Cultivated
2. If natural a species list was compiled.

In addition, the soil form was documented to provide context to why the area was cultivated or not.

Georeferenced digital images were taken with ground and aerial based remote sensor. The ground-based images were documented using a Garmin Montana 680 GPS receiver. The aerial-based images were taken with a DJI Mavic Air drone. Images were taken in all four major wind directions, as well as video imagery in a 360° panoramic view.

4.1.1 Limitations And Assumptions

1. This study represents a site verification assessment in accordance with the national environmental screening tool guidelines. It does not represent a full EIA assessment that could be used in a BAP or Scoping-EIA process.
2. Only qualitative data was collected
3. It is assumed that information from third parties (engineers, government institutions) are accurate.

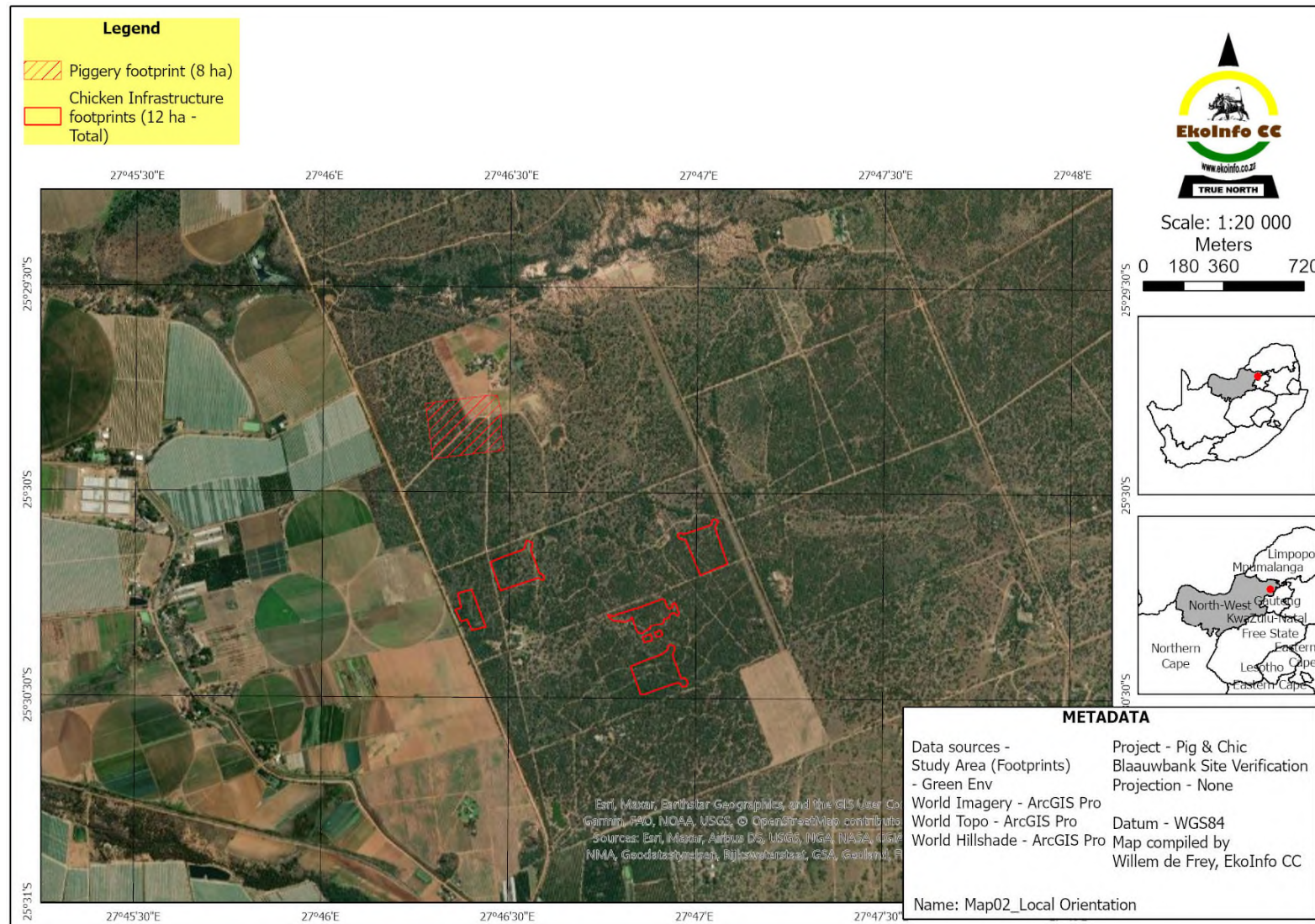


Figure 4: Local orientation of the proposed animal production footprints

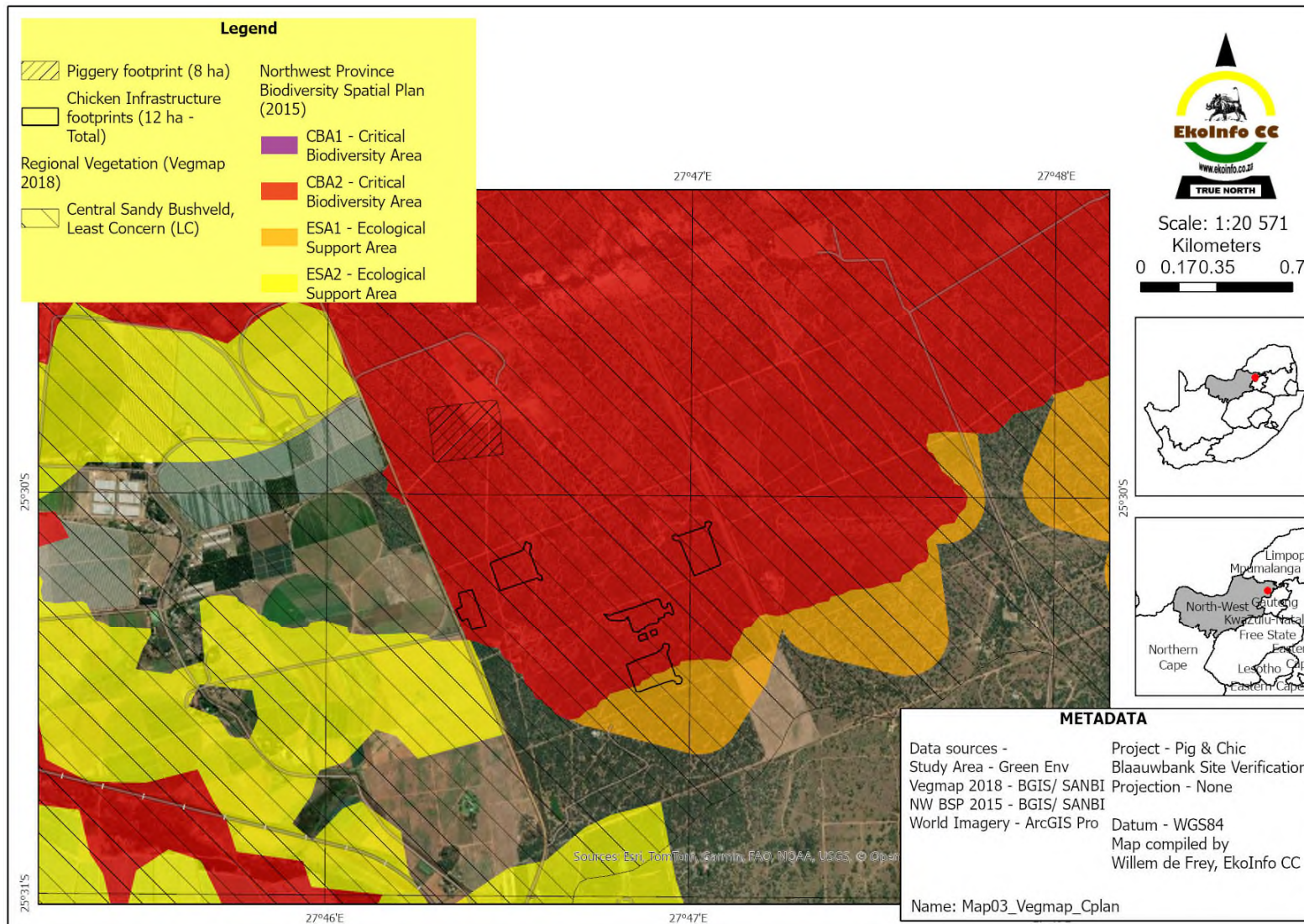


Figure 5: Regional vegetation (2018) and Northwest Biodiversity Sector Plan (2015) associated with the proposed animal production infrastructure

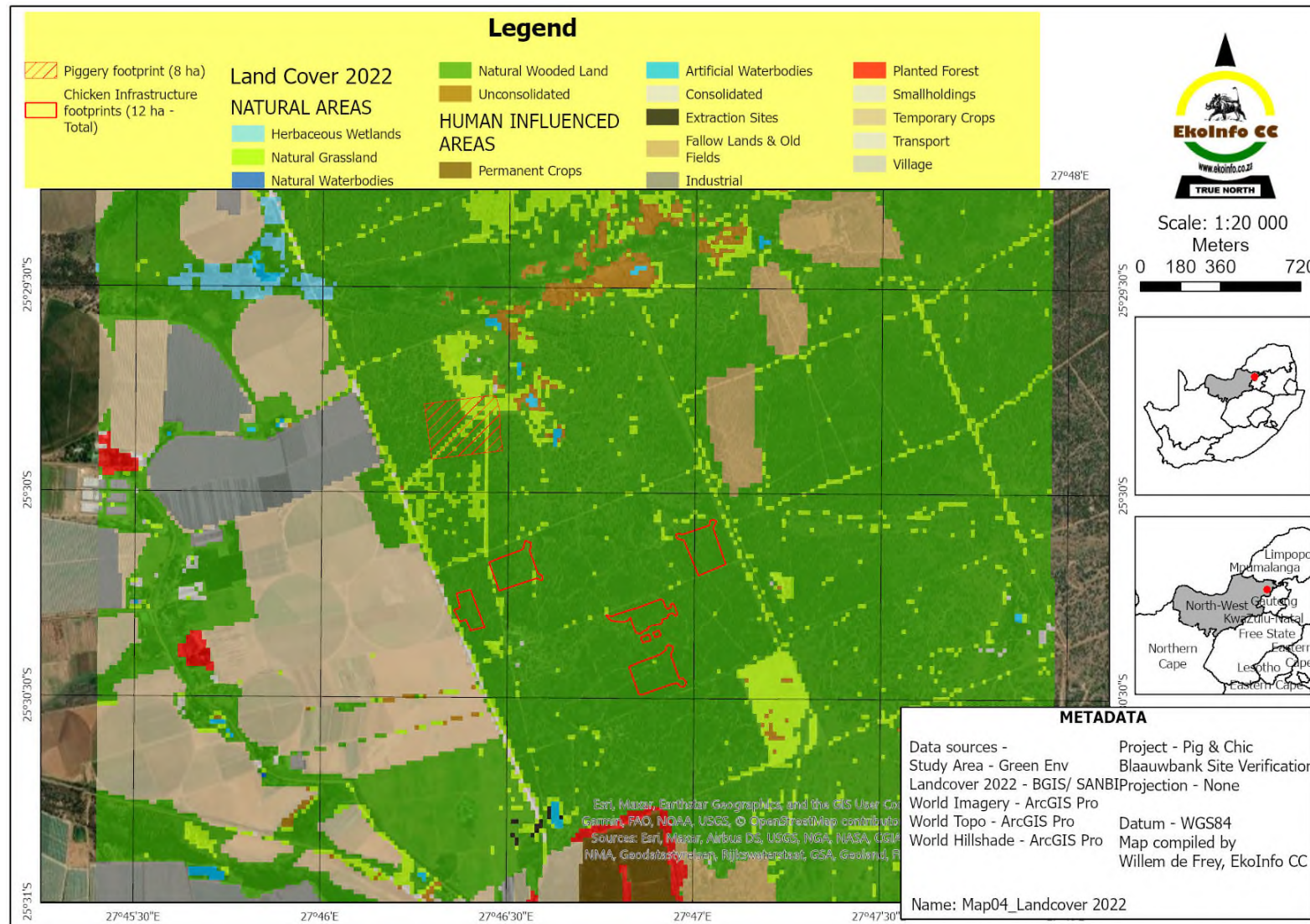


Figure 6: The land cover 2022 classification indicates that the study present natural grassland.

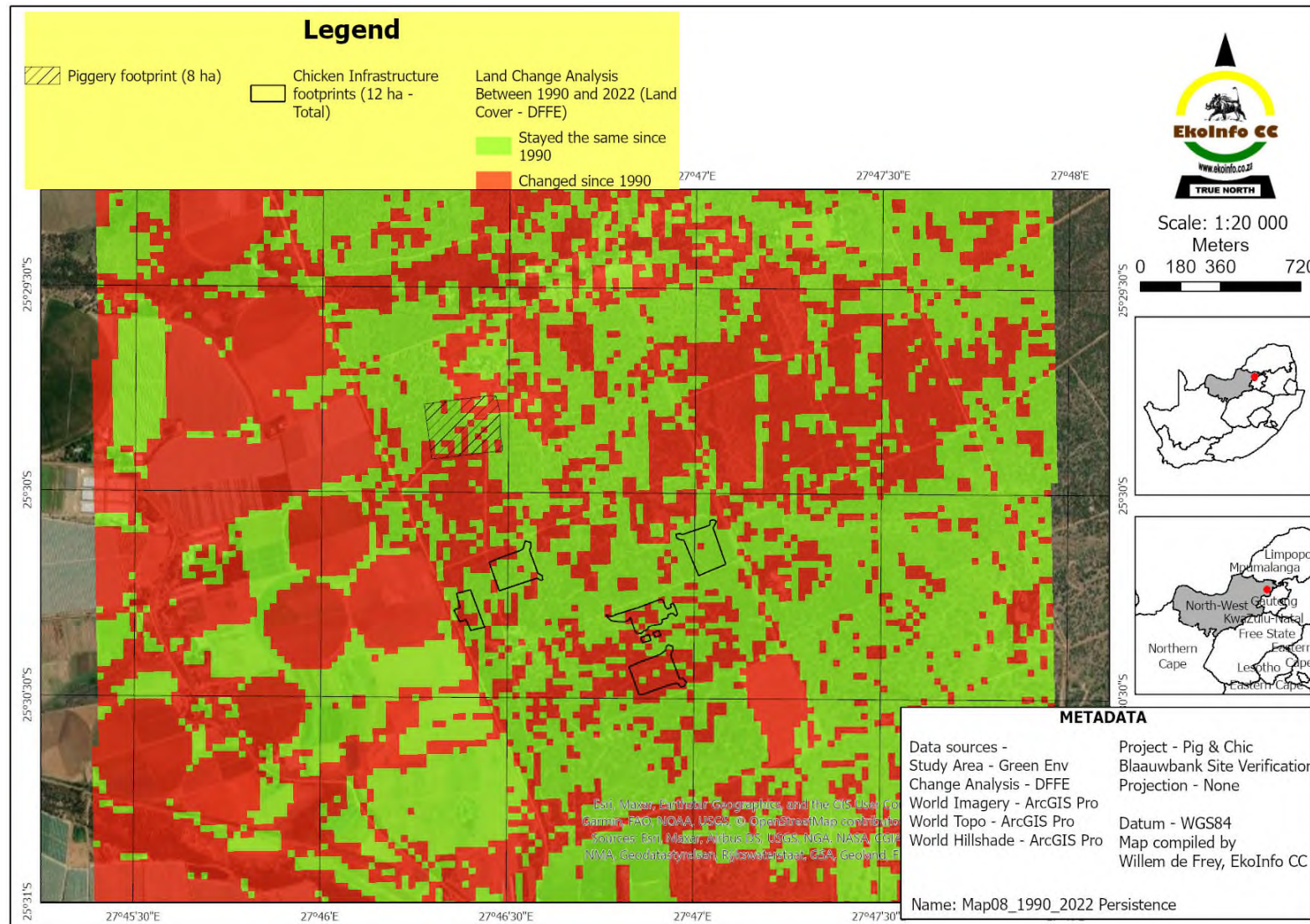


Figure 7: Land change analysis of land cover classes between 1990 and 2022

5 RESULTS

5.1 Piggery Footprint (Portions 10 & 15)

5.1.1 Ecological Condition

Two plots were sampled within the piggery footprint (Figure 8), namely plot AP01 and AP02. Appendix B lists the plant species observed within these two plots, which links the study area to the regional vegetation unit. Appendix C (10.1) shows the georeferenced ground-based observations, while Appendix D (11.1) shows the georeferenced air-based observations. Both datasets confirm the undisturbed/ intact nature of the vegetation within the piggery footprint, except for the northeast corner which cuts into a cultivated field (Figure 4)

5.1.2 Wetland Potential

The SAGA wetness index model (Appendix E) which indicates the potential for wetlands to be present, indicated that there is a very low and low potential for wetlands to be present within the piggery footprint. The site verification confirmed that there are no wetlands within this area, as the soil profile represent the Clovelly soil form with a depth range of 800 mm to 1000 mm, and 11% estimated clay content in the topsoil. The Clovelly soil form is not associated with wetland conditions (DWA 2005).

5.1.3 Flora Species Of Conservation Concern

The screening report does (Figure 2) not list any plant species of concern for the area. However, the important taxa listed in Appendix B, does contain a nationally protected tree, namely *Sclerocarya birrea* subsp. *caffra* (Marula). No individuals were recorded within the plots surveyed, but it is possible that they could be present within the broader footprint.

A permit is required for the removal/ destruction/ pruning of this species and any other national protected trees that might be present.

5.1.4 Fauna Species Of Conservation Concern

The screening report rates the animal species theme sensitivity as medium, based on the potential presence of three fauna species (Table 1): *Podica senegalensis* (Aves), *Dasymys robertsii* (Mammalia) and *Kinixys lobatsiana* (Reptilia).

Two of the species are associated with aquatic ecosystems (rivers and wetlands), namely the bird *Podica senegalensis* and the mammal *Dasymys robertsii*, for which no habitat occurs within the piggery footprint. *Podica senegalensis* requires open water as found within rivers and waterbodies (Table 1), no open waterbodies are present within the piggery footprint or within the immediate landscape (Figure 4). *Dasymys robertsii* requires wetlands which does occur within the immediate landscape but not in the footprint of the piggery (Figure 4, Figure 8).

The third species, the reptile *Kinixys lobatsiana*, has the highest probability to occur within the landscape, but requires outcrops (ridges) (Figure 9). This species main threat is habitat loss, but other land use practices can also have a negative influence on its populations (Appendix F).

However, the small footprint (8 ha) of the piggery within the properties (portion 10 and 15) (Table 2) and in the broader landscape towards the east of the study area will have a very low risk to any of the fauna, with specific reference to the tortoise in terms of habitat loss or habitat fragmentation (Appendix G). The piggery footprint will contribute less than 10% of the properties in which it is located, and clearly even less on a landscape level, with specific reference to the tortoise (reptile) where fragmentation becomes an issue at 30% and more (Appendix G).

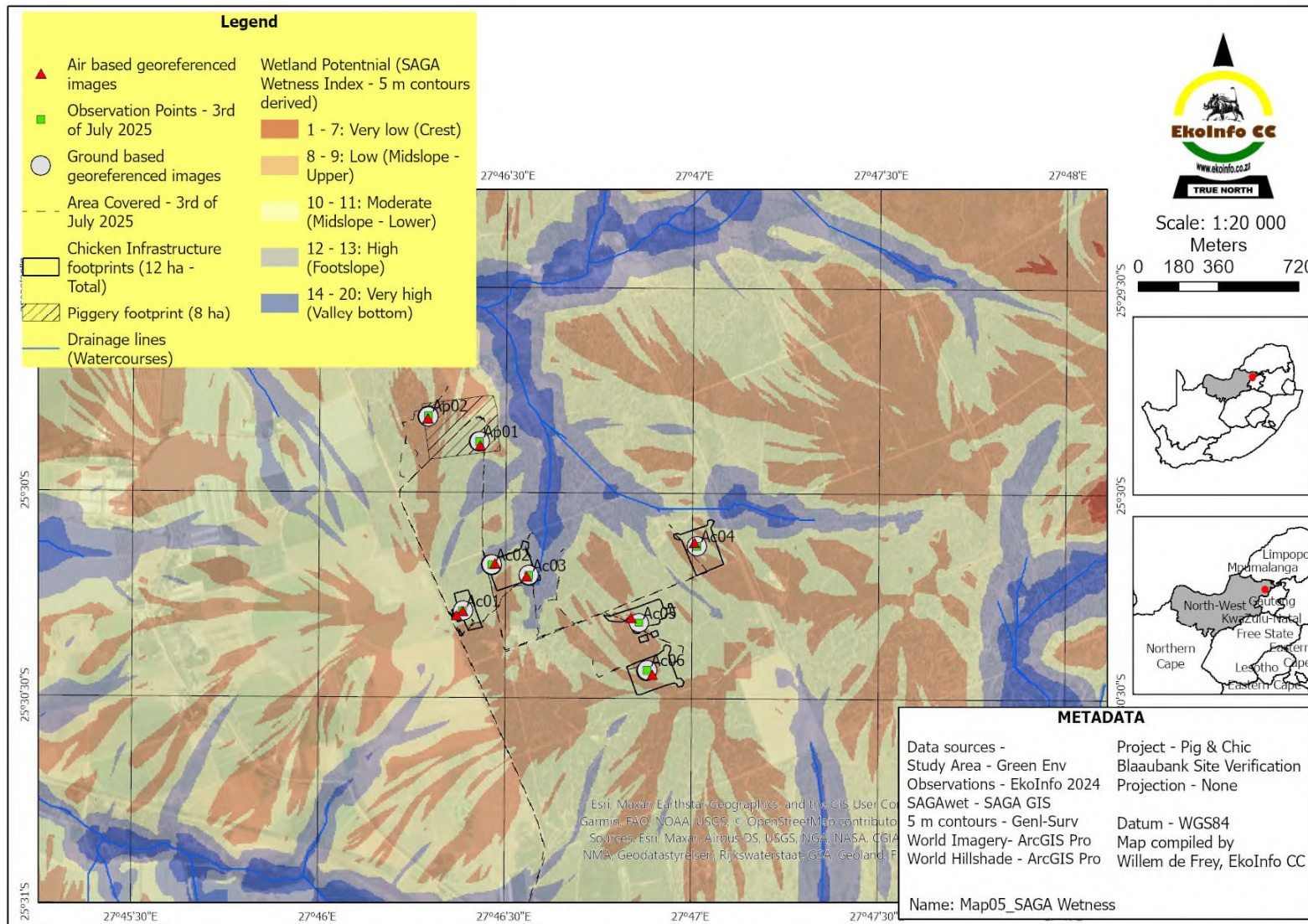


Figure 8: Distribution of the randomly placed observation points across the study area with the SAGA wetness index in the background

Table 1: Overview of the three fauna species of conservation concern flagged for the piggery footprint

Species	Class	Common Name	Habitat Preference	Associated with Central Sandy Bushveld in Northwest Province?
<i>Podica senegalensis</i>	Aves	African Finfoot	Gently flowing streams with overhanging vegetation. Found along rivers and streams, particularly in low-lying parts of northern and eastern South Africa.	Yes, recorded on rivers in the Northwest Province.
<i>Dasymys robertsii</i>	Mammalia	Robert's Marsh Rat	Intact wetland ecosystems, specifically in reed beds and among semi-aquatic grasses in wetlands, swampy areas, or along rivers and streams, as well as in grassy areas close to water. Does not occur in artificial or degraded wetlands.	Yes, approximately 40% of its associated habitat in one study was Central Sandy Bushveld. Also recorded as a new species for the Northwest Province.
<i>Kinixys lobatsiana</i>	Reptilia	Lobatse Hinged Tortoise	Savanna species inhabiting rocky hillsides in habitats of mixed Acacia and Combretum woodland, tropical Bushveld, and Thornveld, where vegetation ranges from dense, short shrubland to open tree savanna. Also found in open savanna habitats with low shrubs.	Yes, the species' distribution includes Central Sandy Bushveld in the Northwest Province.

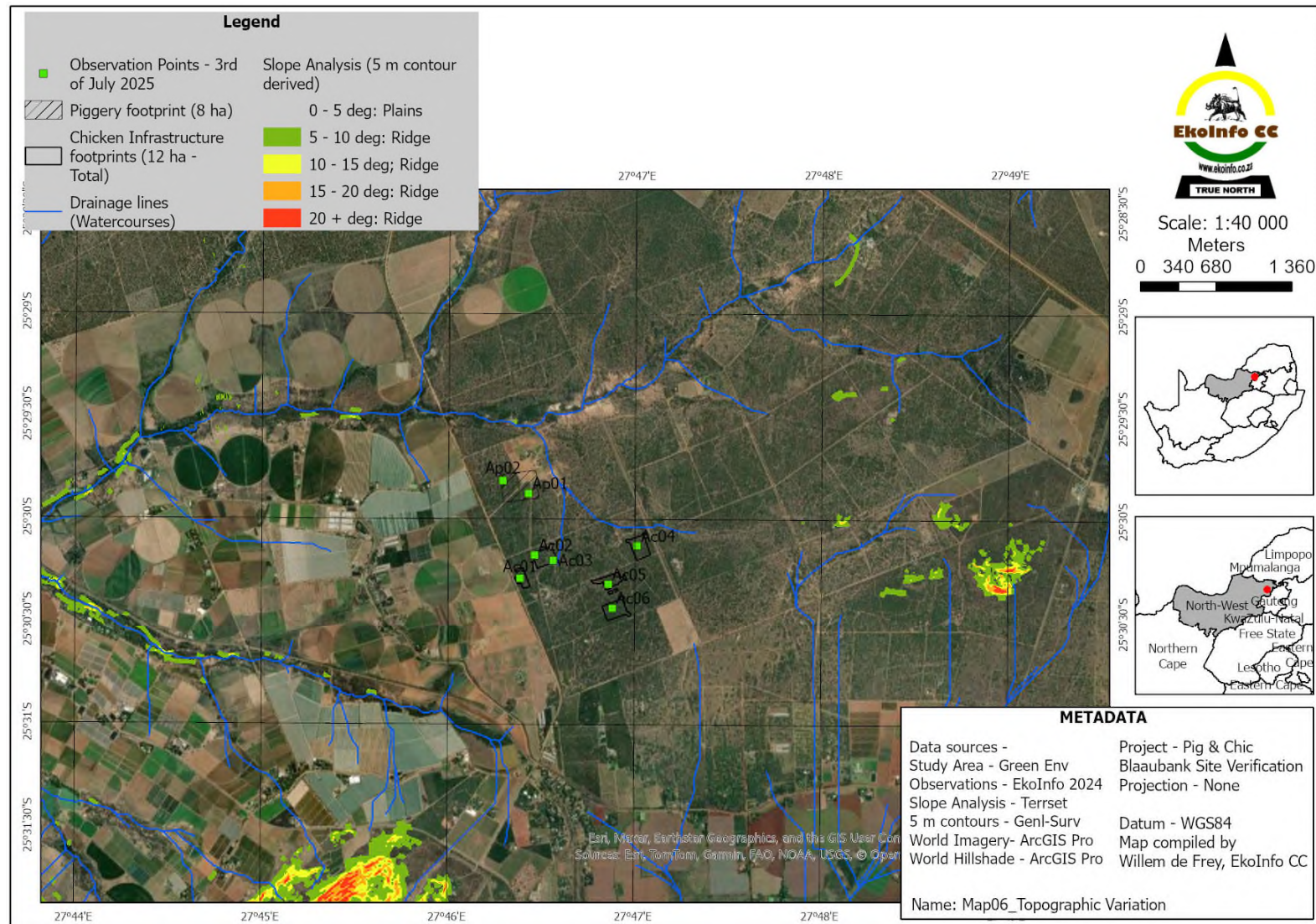


Figure 9: Potential distribution and extent of outcrops (ridges) within the study area and surrounding landscape derived from 5 m contours

Table 2: Overview of animal production footprints size relative to the property size

Footprint Property	Surface Area (ha)	Footprint extent (ha)	% of property	Note
Piggery Property	127	8	6%	Single footprint
Chicken Farm Property	115	12	10%	Seven footprints – mean size: 2 ha

5.2 Chicken Farm Footprints (Portions 8 & 9)

5.2.1 Ecological Condition

Six plots were sampled across the chicken farm infrastructure footprints (Figure 8), namely plot AC01 to AC06. Appendix B lists the plant species observed within these six plots, which links the study area to the regional vegetation unit. Appendix C (10.2) shows the georeferenced ground-based observations, while Appendix D (11.2) shows the georeferenced air-based observations. Both datasets confirm the undisturbed/ intact nature of the vegetation within the chicken farm infrastructure footprints (Figure 4). AC06 does indicate that change occurred but it was from dense vegetation to more open natural vegetation. In essence no cultivation related activities occurred within these areas since 1959 (Figure 10, Figure 11, Figure 12).

5.2.2 Wetland Potential

The SAGA wetness index model (Appendix E), which indicates the potential presence of wetlands, suggested a high likelihood of wetlands occurring at observation plots AC02 and AC03. However, the soil profiles at all six surveyed plots, including AC02 and AC03, were consistently classified as Clovelly soil form, with a depth ranging between 800 mm and 1,200 mm and an estimated 11% clay content in the topsoil. According to DWAF (2005), the Clovelly soil form is not typically associated with wetland conditions.

At plots AC02 and AC03, a thin, soft plinthic or wetness-indicating layer was observed at approximately 600 mm below the surface. Despite this, the profile below this layer transitioned into deep yellow-brown apedal B horizons, similar to the other plots. This wetness layer may suggest that during periods of good rainfall, the soil profile could become temporarily saturated up to 600 mm deep. This is likely due to the low slope, which favours infiltration over runoff, as well as the coarse soil texture, which further promotes water infiltration. No marked difference in plant species composition could be noticed at these plots from the other plots, except for an increase in *Terminalia sericea* and *Cheilanthes viridis* individuals. Neither of these two species are known as wetland related species, but are referred to as terrestrial species.

5.2.3 Flora Species Of Conservation Concern

The screening report does (Figure 3) not list any plant species of concern for the area. However, the important taxa listed in Appendix B, does contain a nationally protected tree, namely *Sclerocarya birrea* subsp. *caffra* (Marula). Marula individuals were recorded in the observation plots associated with the chicken farm infrastructure footprints. At AC03, an additional national protected tree *Boscia albitrunca* and provincial protected tree *Spirostachys africana* was observed.

A permit is required for the removal/ destruction/ pruning of this species and any other national protected trees that might be present. The owner of the land does not require a permit to pick provincial protected plants, only special protected plants which belong to the genus *Encephalartos*.

5.2.4 Fauna Species Of Conservation Concern

The screening report rates the animal species theme sensitivity as medium, based on the potential presence of two fauna species (Table 1): *Dasymys robertsii* (Mammalia) and *Kinixys lobatsiana* (Reptilia).

The mammal *Dasymys robertsii* requires wetlands which does occur within the immediate landscape but not in the footprint of the chicken farm infrastructure footprints (Figure 4, Figure 8).

The second species, the reptile *Kinixys lobatsiana*, has the highest probability to occur within the landscape, but requires outcrops (ridges) (Figure 9). This species main threat is habitat loss, but other land use practices can also have a negative influence on its populations (Appendix F).

However, the small cumulative footprint (12 ha – mean 2 ha) of the chicken farm infrastructure footprints within the properties (portion 8 and 9) (Table 2) and in the broader landscape towards the east of the study area will have a very low risk to any of the fauna, with specific reference to the tortoise in terms of



Figure 10: Old aerial image from 1959 of the study area and surrounding landscape (Approximate Study Area in Red)

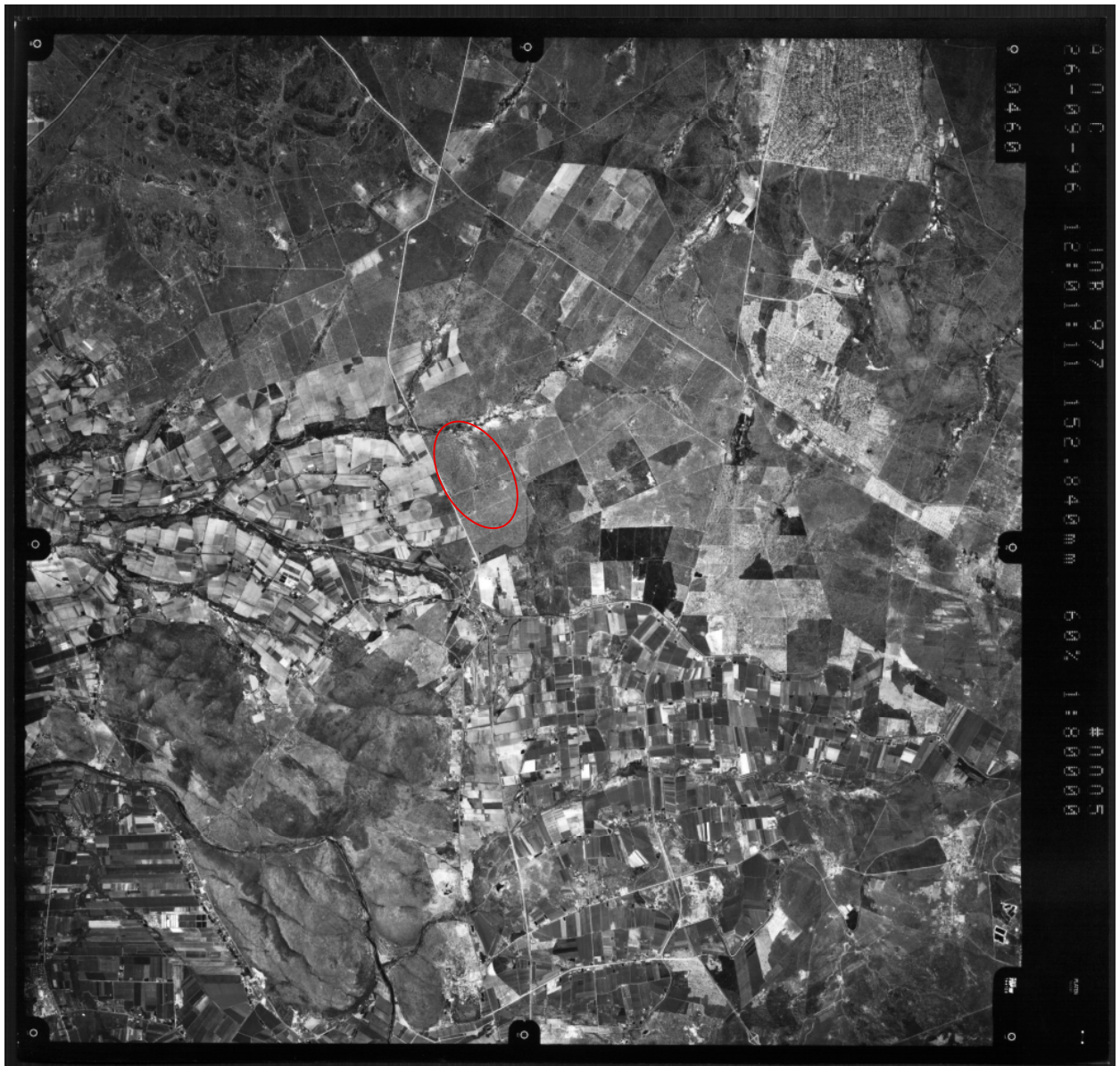


Figure 11: Old aerial image from 1996 of the study area and surrounding landscape (Approximate Study Area in Red)

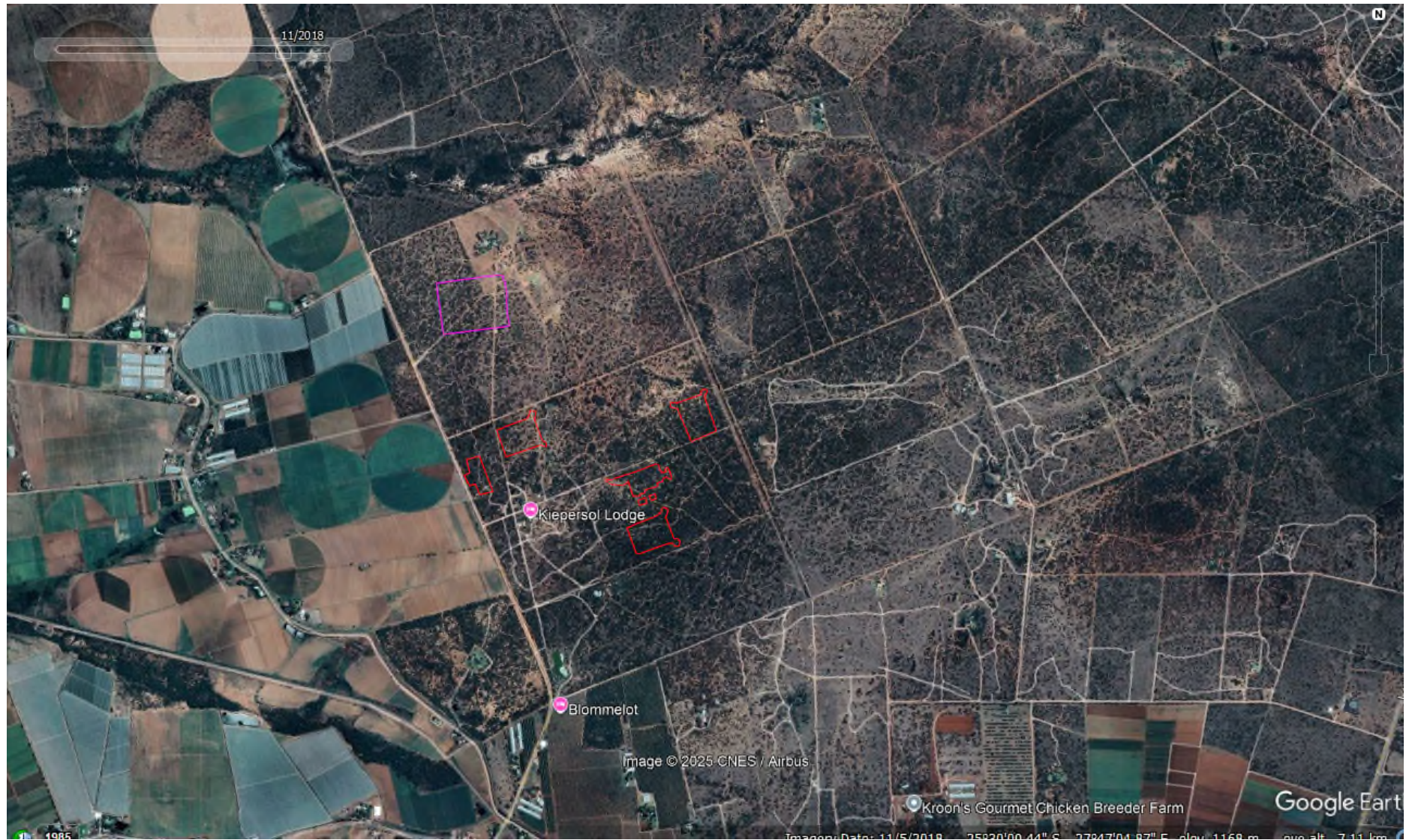


Figure 12: Google Earth Image from November 2018 showing the current status quo (**Piggery footprint**, **Chicken Infrastructure footprints**)

habitat loss or habitat fragmentation (Appendix G). The chicken farm infrastructure footprints cumulatively contribute to 10% of the properties in which it is located, and clearly even less on a landscape level, with specific reference to the tortoise (reptile) where fragmentation becomes an issue at 30% and more (Appendix G).

6 CONCLUSION

The footprints of the proposed animal production activities, namely a piggery and chicken farm are located within persistent climax natural vegetation, with a low sensitivity rating according to the screening tool. Based on the absence of topographic and pedological variation and subsequent plant diversity, this low sensitivity is supported. The overall vegetation would represent a *Sclerocarya birrea* – *Combretum apiculatum*/ *Peltophorum africanum* woodland community on well drained coarse textured soils (Clovelly) in a flat (plains) landscape within the Least Concern Central Sandy Bushveld regional vegetation unit. Two national protected trees, Marula and Shepard Tree had been observed, as well as a single provincial protected tree Tamboti. All of these species threat status is Least Concern²

Of the three fauna species of conservation no habitat occurs within the footprints, as two of the species are associated with aquatic ecosystems namely open water or wetland in a pristine state, and the third species, the tortoise requires outcrops which occur in the landscape, but not in the footprints. The localised nature and small extent of these footprints contribute to limit habitat loss and no habitat fragmentation; there is enough intact vegetation for any fauna species to move around the proposed infrastructure. Therefore, with regards to the study area (footprints) and immediate landscape the medium sensitivity state of animal theme should rather be low, and no additional studies are required.

The Critical Biodiversity Area (CBA) status on provincial level has relevance as the area has been untransformed as far back as the 1959 (available records), there is protected trees present albeit with a Least Concern threat status, and the area can support a variety of wildlife, not within the properties specifically, but as part of the larger landscape. However due to the extensive human influence (cultivation, human settlements) in the broader landscape (Figure 11), this potential is limited, and therefore the very high sensitivity for the terrestrial biodiversity should be low with regards the proposed infrastructure footprints, unless the broader remaining natural landscape can be consolidated.

In consideration of the precautionary principle as contained within the National Environmental Management Act, it is recommended that the following footprints are shifted at least 32 m:

1. Piggery footprint towards the west
2. Chicken infrastructure footprint associated with AC02 and AC)3 towards the southwest.

² <https://redlist.sanbi.org>

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8 APPENDIX A – ABRIDGE CV, PRINCIPLE CONSULTANT

Name of firm: EkolInfo cc Environmental and Wildlife Management Consultancy

Name of staff: WILLEM HENDRIK DE FREY

Profession: Environmental and Wildlife Management consultant

Years with firm: Since 1995

Nationality: RSA

Membership of professional societies:

The South African Council for Natural Scientific Professions (Reg no 400100/02)

Categories: Botanical Science and Ecological Science

Currently in the process of affiliating to:

South African Association of Botanist (SAAB)

Grassland Society of Southern Africa

South African Institute of Ecologist and Environmental Scientists (SAIE)

KEY QUALIFICATIONS:

Mr W de Frey has been involved in the discipline of ecology since 1989. During this period he prepared himself for a profession in environmental and wildlife management, by attending courses in chemistry, geology, pedology and statistics, while majoring in Botany and Zoology. His working knowledge was obtained while completing projects for his post-graduate studies in wildlife management in both the Savanna and Grassland Biomes. In addition to his academic publications, he has contributed to numerous reports regarding EMPR's, EIA's, vegetation - and soil surveys and monitoring since the registration of his own consultation close corporation in 1995. He is actively involved in the management and marketing of his close corporation while completing tasks in his field of expertise namely soil, vegetation science and Geographical Information Systems. Mr W de Frey is task orientated with consideration of people's needs and safety. He believes in a holistic approach to environmental and wildlife management and has therefore established a network with individuals in related fields. He is also assisting previously disadvantaged persons in establishing a presence in the environmental industry, namely Lordwick Makhura of Baagi Environmental Consultancy CC and a joint venture company Bonolo Biodiversity And Environmental Management consisting of Baagi Environmental Consultancy CC and Disa Mphago Community Helpers CC.

EDUCATION:

1992 BSc Botany & Zoology, University of Pretoria

Course	Content	Level
Chemistry	Organic and Inorganic chemistry	1 st year
Geology	Introduction/ Geomorphology, Stratigraphy, Structural, Sedimentology Palaeontology, Crystallography	1 st and 2 nd year
Pedology	Introduction, soil classification, soil fertility, soil ecology, soil physics	1 st and 2 nd year
Botany	Morphology, Anatomy, Physiology, Taxonomy, Mycology, Ecology, Reproductive biology	1 st , 2 nd and 3 rd year
Zoology	Taxonomy (Vertebrates and Invertebrates), Physiology (mainly vertebrates), Ecology (mainly vertebrates), Animal behaviour (mainly vertebrates)	1 st , 2 nd and 3 rd year
Statistics	Sampling methods, Statistical Analysis, Probabilities	1 st year

1993 BSc (Hons) (Cum laude) Wildlife Management, University of Pretoria

Dissertation: 'N HOLISTIESE EKOLOGIESE BENADERING TOT DIE DRAKRAGBEPALING VAN 'N GEMENGDE WILD- EN BEESBOERDERY IN DIE UBOMBO DISTRIK, MET ENKELE BESTUURS AANBEVELINGS, 1993

1999 MSc (Cum laude) Wildlife Management, University of Pretoria

Thesis: PHYTOSOCIOLOGY OF THE MPUMALANGA HIGH ALTITUDE GRASSLANDS, 1999

COURSES/ WORKSHOPS ATTENDED

1. Red List And Threatened Species Assessment Training Workshop, Hosted by the Conservation Breeding Specialist Group Southern Africa & Endangered Wildlife Trust, December 2003
2. National State of the Environment Workshop, Hosted by DEAT and SRK, ESKOM Convention Centre – November 2004
3. Gauteng Red Data Flora Workshop, Hosted by SANBI and GDACE – November 2005
4. Gauteng Flora Minimum Requirement Workshop, Hosted by GDACE Nature Conservation – August 2007

EMPLOYMENT RECORD:

1986 – 1987

5 Signals Regiment, SADF

1998 – 1993 – Parttime

Council of Geoscience, Palaeontology Section

University of Pretoria, Botany Department

Academy of Marksmanship, Range Officer

U Huisoppasser, Own enterprise

1994 – 1995

University of Pretoria, Botany Department, Assistant researcher

1995 – present

EkolInfo cc Environmental and Wildlife Management Consultancy, Founding member and consultant

Overall EkolInfo CC's principal consultant completed or administrated more than 58 vegetation studies as part of Environmental Impact Assessments within all of South Africa's nine provinces and adjacent countries such as Botswana and Mozambique with a focus on either terrestrial vegetation and/ or wetlands. Some projects were on provincial level such as the Mpumalanga and Gauteng Degradation Projects coordinated by the Institute for Soil, Climate and Water and sponsored by National Department of Agriculture. The majority of projects were on local scale from 5 ha to 50 000 ha or more for local developers and corporate institutions (SASOL, Anglo Coal, BHP Billington, Ingwe Coal, Deneys Rietz Attorneys, ESKOM) facilitated independently or as a subcontractor/ specialist for the following institutions: Oryx Environmental CC, African EPA, Arcuss Gibb, Digby Wells and Associates, Nature and Business Alliance and Eyethu Engineers, Strategic Environmental Focus.

COMMUNITY SERVICE

1. Substitute lecture – 2nd & 3rd year Botany Practical (Vegetation Survey Methods), University of Pretoria -1994 & 1995
2. Guest lecture – Wetland Vegetation Communities (2nd year students), Department of Landscape Architecture, University of Pretoria – 1996 & 1997
3. Guest lecture – Principles of Ecology (1st year students), Department of Landscape Architecture, University of Pretoria – 2002
4. Guest lecture – Principles of vegetation survey and mapping for EIA's (3rd year students), Department of Landscape Architecture, University of Pretoria – 2003
5. Referee – ILASA Merits Awards (Environmental Planning), Institute for Landscape Architects of South Africa - 2003

LANGUAGES:

Language	Capability
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English & Afrikaans	Speak, Read, Write - sufficient
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Sepedi (Northern Sotho)	Speak, Read, Write – insufficient
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9 APPENDIX B – IMPORTANT FLORISTIC TAXA: CENTRAL SANDY BUSHVELD

Vegmap unit	Recorded species	Significance Rating	Species Observed In Footprints	
			Piggery	Chicken Farm
Central Sandy Bushveld	<i>Acacia burkei</i>	Important Taxa		
Central Sandy Bushveld	<i>Acacia robusta</i> subsp. <i>robusta</i>	Important Taxa		
Central Sandy Bushveld	<i>Agathisanthemum bojeri</i> subsp. <i>bojeri</i>	Important Taxa		
Central Sandy Bushveld	<i>Aloe greatheadii</i> var. <i>davyana</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Antheophora pubescens</i>	Important Taxa		
Central Sandy Bushveld	<i>Aristida scabrivalvis</i> subsp. <i>scabrivalvis</i>	Important Taxa		
Central Sandy Bushveld	<i>Asparagus burchanani</i>	Important Taxa		
Central Sandy Bushveld	<i>Barleria macrostegia</i>	Important Taxa		
Central Sandy Bushveld	<i>Blepharis integrifolia</i> var. <i>integrifolia</i>	Important Taxa		
Central Sandy Bushveld	<i>Brachiaria nigropedata</i>	Important Taxa		
Central Sandy Bushveld	<i>Brachiaria serrata</i>	Important Taxa		
Central Sandy Bushveld	<i>Burkea africana</i>	Important Taxa		
Central Sandy Bushveld	<i>Combretum apiculatum</i> subsp. <i>apiculatum</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Combretum hereroense</i>	Important Taxa		
Central Sandy Bushveld	<i>Combretum zeyheri</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Crabbea angustifolia</i>	Important Taxa		
Central Sandy Bushveld	<i>Dicerocaryum senecioides</i>	Important Taxa		
Central Sandy Bushveld	<i>Dichapetalum cymosum</i>	Important Taxa		
Central Sandy Bushveld	<i>Elionurus muticus</i>	Important Taxa		
Central Sandy Bushveld	<i>Eragrostis nindensis</i>	Important Taxa		
Central Sandy Bushveld	<i>Eragrostis pallens</i>	Important Taxa		1
Central Sandy Bushveld	<i>Eragrostis rigidior</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Evolvulus alsinoides</i>	Important Taxa		
Central Sandy Bushveld	<i>Felicia fascicularis</i>	Important Taxa		

Vegmap unit	Recorded species	Significance Rating	Species Observed In Footprints	
			Piggery	Chicken Farm
Central Sandy Bushveld	<i>Geigeria burkei</i> subsp. <i>burkei</i> var. <i>burkei</i>	Important Taxa		
Central Sandy Bushveld	<i>Gnidia sericocephala</i>	Important Taxa		
Central Sandy Bushveld	<i>Grewia bicolor</i> var. <i>bicolor</i>	Important Taxa		1
Central Sandy Bushveld	<i>Grewia monticola</i>	Important Taxa		
Central Sandy Bushveld	<i>Hermannia lancifolia</i>	Important Taxa		
Central Sandy Bushveld	<i>Hyperthelia dissoluta</i>	Important Taxa	1	
Central Sandy Bushveld	<i>Hypoxis hemerocallidea</i>	Important Taxa		
Central Sandy Bushveld	<i>Indigofera daleoides</i>	Important Taxa		
Central Sandy Bushveld	<i>Indigofera filipes</i>	Important Taxa		
Central Sandy Bushveld	<i>Justicia anagalloides</i>	Important Taxa		
Central Sandy Bushveld	<i>Kyphocarpa angustifolia</i>	Important Taxa	1	
Central Sandy Bushveld	<i>Lophiocarpus tenuissimus</i>	Important Taxa		
Central Sandy Bushveld	<i>Loudetia simplex</i>	Important Taxa		
Central Sandy Bushveld	<i>Mosdenia leptostachys</i>	Biogeographically Important Taxa		
Central Sandy Bushveld	<i>Ochna pulchra</i>	Important Taxa		
Central Sandy Bushveld	<i>Oxygonum dregeanum</i> subsp. <i>canescens</i> var. <i>dissectum</i>	Biogeographically Important Taxa		
Central Sandy Bushveld	<i>Panicum maximum</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Peltophorum africanum</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Perotis patens</i>	Important Taxa		1
Central Sandy Bushveld	<i>Rhus leptodictya</i>	Important Taxa		
Central Sandy Bushveld	<i>Schmidtia pappophoroides</i>	Important Taxa		
Central Sandy Bushveld	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>	Important Taxa		1
Central Sandy Bushveld	<i>Strychnos pungens</i>	Important Taxa		
Central Sandy Bushveld	<i>Terminalia sericea</i>	Important Taxa		1
Central Sandy Bushveld	<i>Themeda triandra</i>	Important Taxa	1	1
Central Sandy Bushveld	<i>Trachypogon spicatus</i>	Important Taxa		
Central Sandy Bushveld	<i>Waltheria indica</i>	Important Taxa		

Vegmap unit	Recorded species	Significance Rating	Species Observed In Footprints	
			Piggery	Chicken Farm
Central Sandy Bushveld	Xerophyta humilis	Important Taxa		
			9	12

10 APPENDIX C – GROUND BASED DIGITAL IMAGERY

10.1 Piggery Footprint

Note –

1. Image sequence – North, East, South, West, Soil Profile, Soil Texture

Observation Plot No	Photo No	Date	Image Direction	Longitude	Latitude	Altitude (m)
Ap01	DSC09085.jpg	2025-07-03 0:00:00	351.31	27.77376917	-25.49793686	1120.47
Ap01	DSC09086.jpg	2025-07-03 0:00:00	85.131	27.77378367	-25.49793506	1120.47
Ap01	DSC09087.jpg	2025-07-03 0:00:00	183.972	27.77379147	-25.49793047	1120.46
Ap01	DSC09088.jpg	2025-07-03 0:00:00	268.732	27.77378886	-25.49793317	1120.46
Ap01	DSC09089.jpg	2025-07-03 0:00:00	21.1193	27.77380092	-25.49794472	1120.2
Ap01	DSC09090.jpg	2025-07-03 0:00:00	29.461	27.77380925	-25.49793175	1118.98
Ap02	DSC09091.jpg	2025-07-03 0:00:00	358.07	27.77149331	-25.49693794	1113.46
Ap02	DSC09092.jpg	2025-07-03 0:00:00	100.269	27.77148733	-25.496945	1113.52
Ap02	DSC09093.jpg	2025-07-03 0:00:00	198.28	27.77149122	-25.49694408	1113.51
Ap02	DSC09094.jpg	2025-07-03 0:00:00	279.091	27.77149231	-25.49694536	1113.51
Ap02	DSC09095.jpg	2025-07-03 0:00:00	313.067	27.77151483	-25.49691947	1110.66
Ap02	DSC09096.jpg	2025-07-03 0:00:00	18.2936	27.771507	-25.49693592	1110.51

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DSC09085



DSC09086



DSC09087



DSC09088



DSC09089



DSC09090



DSC09091



DSC09092



DSC09093



DSC09094



DSC09095



DSC09096

10.2 Chicken Farm Footprints

Note –

1. Image sequence – North, East, South, West, Soil Profile, Soil Texture

Observation Plot No	Photo No	Date	Image Direction	Longitude	Latitude	Altitude (m)
Ac01	DSC09097.jpg	2025-07-03 0:00:00	347.784	27.77311097	-25.50479664	1131.87
Ac01	DSC09098.jpg	2025-07-03 0:00:00	87.263	27.77312781	-25.50479825	1131.86
Ac01	DSC09099.jpg	2025-07-03 0:00:00	185.053	27.77312172	-25.50479758	1131.87
Ac01	DSC09100.jpg	2025-07-03 0:00:00	256.014	27.77311536	-25.5047975	1131.88
Ac01	DSC09101.jpg	2025-07-03 0:00:00	358.353	27.77311617	-25.50478819	1129.76
Ac01	DSC09102.jpg	2025-07-03 0:00:00	358.043	27.77309797	-25.50479506	1129.82
Ac02	DSC09103.jpg	2025-07-03 0:00:00	341.757	27.77435986	-25.50291708	1130.9
Ac02	DSC09104.jpg	2025-07-03 0:00:00	60.5028	27.77437031	-25.50292261	1130.88
Ac02	DSC09105.jpg	2025-07-03 0:00:00	158.459	27.77437208	-25.50292567	1130.87
Ac02	DSC09106.jpg	2025-07-03 0:00:00	246.083	27.77436897	-25.50292553	1130.87
Ac02	DSC09107.jpg	2025-07-03 0:00:00	61.1362	27.77437794	-25.50293575	1130.44
Ac02	DSC09108.jpg	2025-07-03 0:00:00	64.958	27.77436758	-25.50293378	1130.26
Ac03	DSC09109.jpg	2025-07-03 0:00:00	353.046	27.77602383	-25.50336206	1126.92
Ac03	DSC09110.jpg	2025-07-03 0:00:00	77.6215	27.77602567	-25.50335636	1126.92
Ac03	DSC09111.jpg	2025-07-03 0:00:00	193.415	27.77602383	-25.50335653	1126.92
Ac03	DSC09112.jpg	2025-07-03 0:00:00	270.653	27.77602717	-25.50335903	1126.92
Ac03	DSC09113.jpg	2025-07-03 0:00:00	355.872	27.77603583	-25.50337353	1128.58
Ac03	DSC09114.jpg	2025-07-03 0:00:00	4.62024	27.77604919	-25.50334589	1128.99
Ac04	DSC09115.jpg	2025-07-03 0:00:00	153.795	27.78352946	-25.50215181	1139.84
Ac04	DSC09116.jpg	2025-07-03 0:00:00	140.666	27.78353847	-25.50214547	1139.56
Ac05	DSC09117.jpg	2025-07-03 0:00:00	350.403	27.78097311	-25.50526167	1141.11
Ac05	DSC09118.jpg	2025-07-03 0:00:00	61.7168	27.78097678	-25.50526061	1141.08
Ac05	DSC09119.jpg	2025-07-03 0:00:00	170.041	27.78097503	-25.50526325	1141.06
Ac05	DSC09120.jpg	2025-07-03 0:00:00	254.468	27.78097192	-25.50526747	1141.04
Ac05	DSC09121.jpg	2025-07-03 0:00:00	118.433	27.78095894	-25.50526803	1139.64
Ac05	DSC09122.jpg	2025-07-03 0:00:00	73.2591	27.78097136	-25.505268	1139.27
Ac06	DSC09123.jpg	2025-07-03 0:00:00	345.448	27.78134461	-25.50720161	1146.9
Ac06	DSC09124.jpg	2025-07-03 0:00:00	81.3086	27.78133822	-25.50719844	1146.88
Ac06	DSC09125.jpg	2025-07-03 0:00:00	184.78	27.78133786	-25.50720264	1146.85
Ac06	DSC09126.jpg	2025-07-03 0:00:00	250.545	27.78133592	-25.50720583	1146.83
Ac06	DSC09127.jpg	2025-07-03 0:00:00	15.6229	27.78131397	-25.50721192	1146.65
Ac06	DSC09128.jpg	2025-07-03 0:00:00	340.225	27.78133469	-25.50719669	1146.32

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DSC09097



DSC09098



DSC09099



DSC09100



DSC09101



DSC09102



DSC09103



DSC09104



DSC09105



DSC09106



DSC09107



DSC09108



DSC09109



DSC09110



DSC09111



DSC09112



DSC09113



DSC09114



DSC09115



DSC09116



DSC09117



DSC09118



DSC09119



DSC09120



DSC09121



DSC09122



DSC09123



DSC09124



DSC09125



DSC09126



DSC09127



DSC09128

11 APPENDIX D – AERIAL BASED DIGITAL IMAGERY

11.1 Piggery Footprint

Note –

1. Image sequence – North, East, South, West

Observation Plot No	Photo No	Date	Longitude	Latitude	Altitude (m)
Ap01	DJI_0001.JPG	2025-07-03 0:00:00	27.77383908	-25.49807183	19.8
Ap01	DJI_0002.JPG	2025-07-03 0:00:00	27.77383692	-25.498074	19.9
Ap01	DJI_0003.JPG	2025-07-03 0:00:00	27.77383433	-25.49807286	19.7
Ap01	DJI_0004.JPG	2025-07-03 0:00:00	27.7738335	-25.49807219	19.9
Ap02	DJI_0006.JPG	2025-07-03 0:00:00	27.77148403	-25.49699742	19.5
Ap02	DJI_0007.JPG	2025-07-03 0:00:00	27.771487	-25.49699764	19.5
Ap02	DJI_0008.JPG	2025-07-03 0:00:00	27.77149053	-25.49699611	19.5
Ap02	DJI_0009.JPG	2025-07-03 0:00:00	27.77149314	-25.49699586	19.7
Ap02	DJI_0010.JPG	2025-07-03 0:00:00	27.77149731	-25.49699394	19.7

PLEASE REFER TO IMAGES ON NEXT PAGE



DJI_0001



DJI_0002



DJI_0003



DJI_0004



DJI_0007



DJI_0008



DJI_0009



DJI_0010

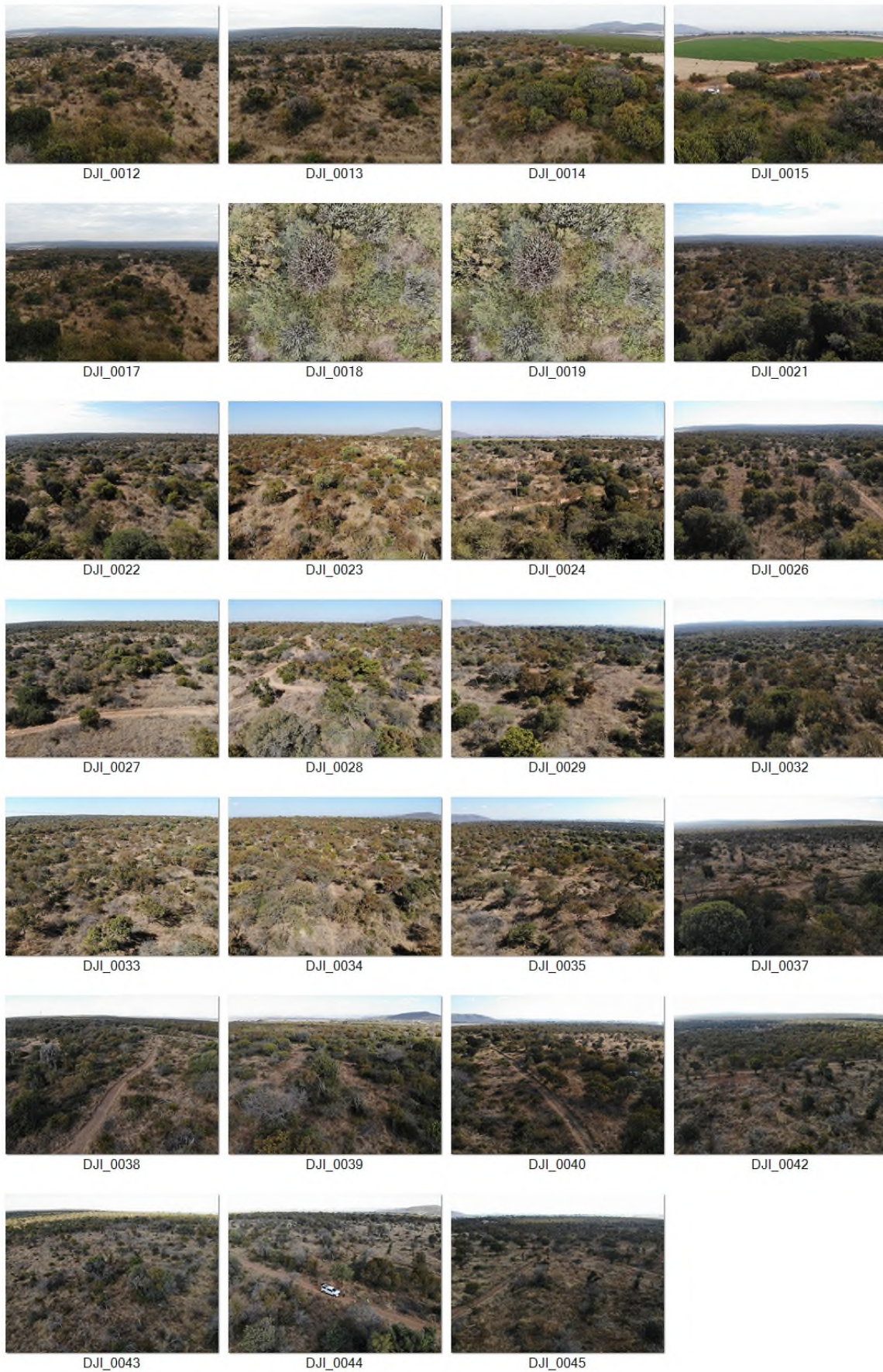
11.2 Chicken Farm Footprints

Note –

1. Image sequence – North, East, South, West

Observation Plot No	Photo No	Date	Longitude	Latitude	Altitude (m)
Ap02	DJI_0010.JPG	2025-07-03 0:00:00	27.77149731	-25.49699394	19.7
Ac01	DJI_0012.JPG	2025-07-03 0:00:00	27.77308922	-25.50478567	20
Ac01	DJI_0013.JPG	2025-07-03 0:00:00	27.77308875	-25.50478414	20
Ac01	DJI_0014.JPG	2025-07-03 0:00:00	27.77308783	-25.50478453	19.9
Ac01	DJI_0015.JPG	2025-07-03 0:00:00	27.77309036	-25.50478272	19.9
Ac01	DJI_0017.JPG	2025-07-03 0:00:00	27.77308817	-25.50478517	19.9
Euphorbia ingens stands	DJI_0018.JPG	2025-07-03 0:00:00	27.772815	-25.50495608	20
Euphorbia ingens stands	DJI_0019.JPG	2025-07-03 0:00:00	27.77281456	-25.50495458	20
Ac02	DJI_0021.JPG	2025-07-03 0:00:00	27.77451939	-25.50285517	19.9
Ac02	DJI_0022.JPG	2025-07-03 0:00:00	27.77452267	-25.50285319	19.8
Ac02	DJI_0023.JPG	2025-07-03 0:00:00	27.77452175	-25.50284906	19.7
Ac02	DJI_0024.JPG	2025-07-03 0:00:00	27.77452272	-25.50284828	19.8
Ac03	DJI_0026.JPG	2025-07-03 0:00:00	27.77594058	-25.50337328	20.1
Ac03	DJI_0027.JPG	2025-07-03 0:00:00	27.77593992	-25.50337353	20
Ac03	DJI_0028.JPG	2025-07-03 0:00:00	27.77593894	-25.50337161	19.8
Ac03	DJI_0029.JPG	2025-07-03 0:00:00	27.775941	-25.50336922	19.8
Ac04	DJI_0032.JPG	2025-07-03 0:00:00	27.78342849	-25.50197485	19.3
Ac04	DJI_0033.JPG	2025-07-03 0:00:00	27.78342815	-25.50197268	19.5
Ac04	DJI_0034.JPG	2025-07-03 0:00:00	27.7834266	-25.50197256	19.3
Ac04	DJI_0035.JPG	2025-07-03 0:00:00	27.78342485	-25.50196974	19.4
Ac06	DJI_0037.JPG	2025-07-03 0:00:00	27.78157181	-25.50735394	19.5
Ac06	DJI_0038.JPG	2025-07-03 0:00:00	27.78157553	-25.50735003	19.5
Ac06	DJI_0039.JPG	2025-07-03 0:00:00	27.7815765	-25.50734922	19.5
Ac06	DJI_0040.JPG	2025-07-03 0:00:00	27.78157717	-25.50734903	19.5
Ac05	DJI_0042.JPG	2025-07-03 0:00:00	27.78060936	-25.505029	19.5
Ac05	DJI_0043.JPG	2025-07-03 0:00:00	27.78060997	-25.50503033	19.5
Ac05	DJI_0044.JPG	2025-07-03 0:00:00	27.78060869	-25.50502978	19.6
Ac05	DJI_0045.JPG	2025-07-03 0:00:00	27.7806085	-25.50502711	19.4

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12 APPENDIX E – WETNESS INDEX OVERVIEW

A **wetness index** in GIS is a spatial metric used to predict the distribution and persistence of surface or subsurface water in a landscape based on topography. It is particularly useful in hydrological modeling, soil moisture estimation, and ecological studies. Wetness indexes help identify areas prone to water accumulation, making them important for understanding flood risks, vegetation patterns, and habitat suitability.

Purpose of a Wetness Index

The wetness index reflects:

1. **Water Accumulation:** Predicts zones where water is likely to collect due to topography.
2. **Soil Saturation:** Indicates areas with higher potential for soil saturation.
3. **Hydrological Connectivity:** Helps in modeling runoff and drainage patterns.
4. **Environmental Applications:** Supports agricultural planning, wetland identification, and habitat conservation.
- 5.

Topographic Wetness Index (TWI)

The **Topographic Wetness Index (TWI)**, or **Topowet**, is a widely used index calculated as:

$$TWI = \ln(\alpha / \tan\beta)$$

- α : **Upslope contributing area per unit width (m^2/m)** – the area draining into a point, reflecting water input.
- $\tan\beta$: **Slope angle (radians)** – representing water flow potential (steeper slopes promote faster drainage).

Key Features:

- Highlights areas where water accumulates based on slope and upslope area.
- Commonly used for hydrological and soil moisture studies.
- Assumes uniform soil properties and water flow.

SAGA Wetness Index (SWI)

The **SAGA Wetness Index (SWI)**, developed in the SAGA GIS software, is a modified version of TWI that incorporates additional considerations for areas with minimal slope. It is calculated as:

$$SWI = \ln(\alpha / \tan\beta + 1)$$

Key Features:

- Addresses issues in areas with very low slope angles ($\tan\beta$ approaches 0), which can cause TWI to become unrealistically high.
- Adds a constant (+1) to the slope term, stabilizing the index in flat areas.
- Provides more realistic wetness predictions in low-relief landscapes and floodplains.

Differences Between TWI and SWI

Aspect	TWI (Topowet)	SWI (SAGA Wetness Index)
Slope Adjustment	No correction for flat areas; sensitive to small $\tan\beta$.	Adds 1 to $\tan\beta$, stabilizing calculations in flat areas.
Application Focus	Better for steep and moderate slopes.	More effective for flat or gently sloping terrain.
Calculation Simplicity	Straightforward logarithmic function.	Slightly more complex, with added slope term.
Usability in GIS	Used in various GIS platforms.	Primarily available in SAGA GIS but adaptable.

When to Use Each

- Use **TWI** for areas with moderate to steep slopes where slope and water accumulation dominate hydrology.
- Use **SWI** in low-relief or floodplain environments where small slopes can exaggerate wetness predictions.

Both indexes are valuable tools, and the choice depends on the topography and the hydrological characteristics of the study area.

13 APPENDIX F – KINIXYS LOBATSIANA THREATS



Source: https://www.inaturalist.org/guide_taxa/705962

The Lobatse Hinged Tortoise (*Kinixys lobatsiana*) faces significant threats primarily from **habitat destruction and degradation**. This is driven by various human activities including:

- **Urbanization:** Expansion of urban areas encroaches on their natural habitat.
- **Mining:** Mining operations lead to direct habitat loss and fragmentation.
- **Agriculture:** Conversion of land for agricultural purposes reduces available habitat.
- **Alien species invasion:** Introduced non-native species can alter and degrade their preferred environments.

Evidence of this degradation is apparent in studies showing widespread deterioration of land cover in provinces where the species occurs.

Beyond habitat loss, other threats include:

- **Fire:** The use of fire for livestock and biodiversity management can directly kill large numbers of tortoises.
- **Collection for consumption:** Tortoises are actively hunted for food.
- **Cultural and medicinal purposes:** They are also collected for traditional practices.
- **International pet trade:** Both legal and illegal collection for the pet trade contributes to local extinctions, although quantitative data on local or regional hunting pressure is limited.

Source: <https://speciesstatus.sanbi.org/assessment/last-assessment/2446/>

14 APPENDIX G – HABITAT LOSS AND FRAGMENTATION OVERVIEW

Summary of Landscape Transformation and Its Impact on Habitat Loss and Fragmentation

With Quantitative Thresholds and Scientific References

1. Introduction

Landscape transformation through agriculture, infrastructure, mining, and settlement expansion leads to **habitat loss** (the direct reduction of available natural habitat) and **habitat fragmentation** (the division of remaining natural areas into smaller, isolated patches). These processes are among the most significant drivers of biodiversity loss globally and are especially critical in biodiversity-rich but development-vulnerable regions such as southern Africa.

2. General Ecological Thresholds

% of Landscape Transformed Ecological Impact

<20%	Habitat largely intact; ecological processes functional.
20–30%	Early signs of fragmentation; sensitive species begin to decline.
>40%	Significant reduction in connectivity; population isolation increases.
>50%	Fragmentation dominates; core habitat area becomes insufficient.
>70%	Landscape is functionally fragmented; risk of local extinctions escalates.
>90%	Only habitat remnants remain; long-term species persistence unlikely.

Sources: Andrén (1994); Fahrig (2001); Swift & Hannon (2010); Betts et al. (2019)

3. Mammals

- Large mammals (e.g. ungulates, carnivores) are impacted when **>40–50% of habitat is transformed**, as their home range requirements are no longer met and movement is restricted (Crooks, 2002; Woodroffe & Ginsberg, 1998).
- Small mammal species experience reduced gene flow and increased isolation at **30–40% transformation** (Epps et al., 2005).
- Beyond **60% transformation**, mammalian community structure shifts toward generalist or synanthropic species (Gaston & Fuller, 2008).

4. Reptiles

- Reptiles are particularly sensitive to edge effects, temperature shifts, and vegetation structure changes.
- Negative effects of habitat fragmentation become evident at **30% transformation**, and intensify significantly beyond **50–60%** (How & Dell, 2000; Jellinek et al., 2004).

- Species with limited dispersal and specific habitat needs (e.g., rocky outcrops, sandy soils) are especially vulnerable in arid and semi-arid systems.

5. Birds

- Avian diversity declines below **70% natural habitat cover**, with sharp declines in specialists (e.g. forest interior or ground-nesting birds) below **30–40% cover** (Robinson et al., 1995; Watson et al., 2005).
- Fragmentation disrupts nesting, foraging, and migratory movements, especially when patches fall below **10–20 ha** in size or when **>50% of the matrix** is disturbed (Laurance et al., 2002).
- Generalist and edge species may persist, but at the cost of ecological integrity.

6. Practical Conservation Guidelines

To maintain functional ecosystems that support mammals, reptiles, and birds:

- **Retain at least 60–70% of natural habitat** in any given landscape unit to ensure ecological integrity (Fahrig, 2001).
- **Avoid exceeding 30–40% habitat loss**, particularly in biodiversity hotspots or key corridors.
- Ensure patch sizes are **>10–20 ha**, and maintain **ecological connectivity** using corridors or stepping stones.
- Implement long-term **monitoring** to detect species-level responses to transformation.

Conclusion

Once landscape transformation exceeds **50%**, the ecological effects of fragmentation escalate rapidly, and many species — particularly those with large area requirements or narrow habitat preferences — struggle to persist. Recognising these thresholds helps guide land-use planning, environmental assessments, and conservation prioritisation to safeguard biodiversity across transformed and semi-natural landscapes.

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EMPr in terms of NEMA Act (107 of 1998)

Environmental Impact Regulations

APPENDIX 4 – EMPr

EMPr for the development and operation of a Piggery

***** Pig Farm Operation *****

OVERVIEW

An Environmental Management Programme (EMPr) is a living document which is assembled to govern and direct an activity from inception, through construction into the final operational phase. Throughout the life of a project circumstances may change and as such the EMPr must be such that it may be altered, added to and changed in order to provide ongoing guidance to the operations but ultimately provide protection to the environment in which the activity is taking place.

As the EMPr is a guidance document to ensure environmental protection and compliance, the structure is such that it will initially “explain” the issue and then provide direct guidance under the heading **OPERATOR ACTIONS**. These Operator Actions are the direct instruction[s] to the operator of what is expected and what should be implemented.

1. Project Description

The development on Ptn 10 & 15 of Farm Blaauwbank 241 JQ in the Brits District / Bojanala District Municipality of:

- A pig farm with a holding capacity of 800 breeding sows;
- Building / pens / breeding operation of 50 000 sqm consisting of 24 houses for the breeding sows;
- Water supply from borehole supplies;
- Electricity supply from ESKOM connection;
- Feed silos for the storage of bulk feed;
- Animal waste to be utilized as organic fertilizer

2. Who is the EAP?

- RP Colyn / Green Environmental Consulting Services (Pty) Ltd / EAPASA EAP 2019/1358
- 1126 Waterpoort Street, Faerie Glen, Pretoria 0081
- Tel: 012 991 2575
- Mobile: 082 553 8844
- Email: rpolyn@telkomsa.net

2.1 Expertise of the EAP

- EIA Consultant since 1996
- EAP Registered / EAPASA 2019/1358
- CV (attached as annexures)

2.2 Map showing the existing and proposed additions

Refer Annexures – MAP – showing the existing infrastructure [farm house] as well as the proposed new additions.

2.3 Property Details

Ptn 10 & 15 of Farm Blaauwbank 241 JQ Brits District / North West Province

3. Aspect of the activity contained in this EMPr

The EMPr will be looking at specific aspects in terms of:

- **Construction Phase**
 - Design of the infrastructure [buildings]
 - Excavations and Foundations
 - Building materials and its storage

- Waste and waste handling
- Sanitation in terms of staff ablutions and health
- **Operational Phase**
 - Traffic and Dust
 - Delivery times of incoming and outgoing trucks
 - Light and Light pollution
 - Animal waste and its handling / removal at the end of a cycle
 - Mortalities and its handling
 - Bio-Security and a Bio-Security Plan for the operation
 - Electricity and Water Supply
 - Supplies of new breeding stock to the facility
- **Closure Phase**
 - Actions and considerations should the facility need to close down permanently.

NOTE:

This EMPr will govern the operation, from inception and construction, through operational for the life time of the facility.

As a living document the EMPr may be amended as and when required, with all changes documented and the EMPr being the main document against which compliance must be determined via an independent audit.

SECTION A – Planning & Pre-Construction Phase

1. Management objectives in terms of impacts and risk that require consideration during the PLANNING & DESIGN Phase.

The main objective of assessment and consideration of risks and impacts is to:-

[a] avoid impacts as far as possible, and

[b] where impacts cannot be avoided to mitigate and minimise impacts and risks to a point where it becomes small in the bigger picture of development.

The following has been brought into consideration during the **PLANNING & DESIGN** of the proposed project and the impact management outcome required:-

- **Solar**
The inclusion of solar for water heating and where possible for solar power is being considered. Such installation will minimise the impact on electricity supply from the National Grid and will also be more carbon neutral in terms of emissions.
- **Rainwater**
Harvesting of rainwater where possible to offset against the use of water from borehole. Borehole water is a valuable resource and should be protected. Utilising rainwater saves on electrical power to run the pumps and save power from the National Grid.
- **External lights**
The consideration of down-lighters to minimise the effect of light pollution in terms of the adjacent properties. Lights are necessary for security, however there is no need to light up the surrounding properties but rather provide light at key points that are vulnerable.
- **Separation of Waste**
The separation of waste to promote recycling and re-use of waste items before being sent to landfill.
- **Integration of existing infrastructure**
The integration of the new development into the existing infrastructure and the sharing of common infrastructure to minimise the development requirements and footprint.

2. Documentation and Actions required during Pre-Construction

The following is required to be in place and readily available as part of the “site office” set-up before the commencement of any construction activity:-

- **EA / Authorisation**
A copy of the formal NW-DEDECT approved Environmental Approval [EA], for the construction, development and operation of a piggery [800 nbreeding sows];
- **EMPr**
A copy of the approved EMPr, to be on file at the Site Office;
- **Contractor Acceptance**
Signed acceptance of the approved EMPr by all contractors that will provide a service during the development /construction, on file at the Site Office;
- **Site Office**
A demarcated Site Office area with storage for documents and authorisations together with:
 - First Aid kit;
 - Specific waste bins for biodegradable items i.e. plastics; metal and dangerous goods such as paint tins;

- Ablution facilities for the construction workers;
- Storage for cement and empty cement bags;
- Fire extinguishers
- **Development Area**
 - Demarcated area where the development will take place;
 - Chevron [Red & White plastic] tape demarcating the bio-area where no construction workers may pass into;
 - Demarcated area for the parking of construction equipment and the fuel bowser / fuel donkey together with drip trays and spill kit cleaning equipment.

Section B – Construction Phase

The possibility of impacts on the receiving environment is greatest during the Construction Phase. It is for that reason that the following has been identified and requires special attention and where necessary mitigation to minimise impacts on the environment.

The design of the buildings will be for environmentally controlled and fully enclosed type houses where an advanced computer system controls temperature; air flow; oxygen levels; feeding times and heating in the event of a cold spell.

a) Determination of the best position / portion of land to be used

A Specialist review of the land was undertaken to determine the best possible portion of the farm to be utilised. The study identified a portion of land that was formerly cultivated land [many years ago] and as such will see minimal impacts in terms of indigenous trees being removed.

b) During Construction

- **Excavations and Foundations**

All excavations or open foundation areas must be clearly marked and made safe as part of the overall H&S of the site. Trenches must be infilled and compacted to prevent soils subsiding or posing a danger to those working on site.

- **Staff training and briefing**

All construction staff are to receive an introductory briefing on protection of the environment; waste handling; safety and health issues. Attendance and training to be documented and all staff to sign off that training was done.

Regular weekly refresher sessions at the start of business to be undertaken to ensure that construction staff remain current. Attendance to be documented and kept on file.

- **Ablutions and personal wash areas**

Portable ablutions for the construction staff to be cleaned and sanitised on a daily basis.

Portable ablutions to be serviced and refreshed by a service company at least once a week.

Proof of servicing to be kept on file.

The use of the adjacent environment as a toilet convenience is not permitted.

- **Trees & Shrubs**

The removal of any vegetation may only occur in the identified portion of land.

- **Cement wash-down**

A specific area must be provided for cement wash-down to take place. This area must be allowed to dry and the dried cement removed for disposal. No indiscriminate wash-down is allowed.

- **Rubble and refuse**

Daily cleaning of the construction site will reduce the risk of rubble blowing around and polluting the adjacent area / other properties.

Rubble must be sorted into the correct bins as to their nature i.e. bio-degradable; glass; plastic; cardboard and metal. The use of different coloured bins for the different types of waste stream is encouraged.

Cement bags must be kept aside and must be disposed of at an appropriate site.

No burning of waste or cement bags to take place on site at any time!

No burying of waste or cement bags to take place anywhere on site!

- **Building rubble**

The construction will produce solid building rubble i.e. broken bricks and concrete. Such items should be placed in a proper waste skip [obtainable from the municipality or private contractor], and should be removed and emptied when full to an approved landfill site.

Building rubble not utilised as infill should be disposed of at an approved landfill site and not left as rubble heaps on the property or merely disposed of onto vacant land.

All waste removal to an approved landfill site must be documented and a receipt obtained for future audit purposes.

- **Audits and Audit Reports**

An Internal Audit must be undertaken at least **once a week** to ensure that the construction phase adheres to the approved EMPr. The audit must be undertaken by the on-site Environmental Control Officer [ECO]. These Audit Reports must be kept on file for external audit purposes or inspections by the NW-DEDECT when undertaken.

A **monthly External Audit** must be undertaken by the EAP / External ECO or another independent auditor as the next level of checking of compliance and adherence to the approved EMPr. Such audits must be accompanied by a formal report and the reports must be kept on file for auditing by the NW-DEDECT.

- **Non-Compliance; Issues & Remedies**

All issues; non-compliance and remedies must be recorded and kept on file for audit purposes. Where remedies are suggested and changes to the actual EMPr is made, such changes must be fully documented and the signed off as part of the overall audit programme.

- **Environmental Incident Register**

The on-site ECO must keep a formal **Environmental Incident Register** where all complaints received; information of plaintiff along with contact details and the remedy provided must be recorded. This will ensure that similar incident do not occur again.

c) After Construction

Certain aspects need specific attention at the end of construction before operations commence in terms of the rehabilitation of the environment.

- **Building rubble**

All building rubble not used as infill during construction must be removed from site to an approved landfill.

No burning or burying of rubble allowed on site and no trash heaps to be left unattended.

- **Excess soils**

Excess soils not utilised during the construction of the new houses must be levelled out, any rubble removed for disposal. No waste soils may be dumped without authorisation.

d) Ensuring Compliance

As the Construction Phase is the time where most impacts may occur and where there is likely to be unwanted impacts, the following must be adhered to:-

- **EMPr**

Ensuring that each contractor receives a copy of the EMPr before starting to work on sit; signs acceptance of the EMPr and all signed document to be kept on file at the on-site ECO station. That all contractors receive a list of fines for non-compliance and signs acknowledgement of the information.

- **Audits**

Environmental Audit by an independent person to be undertaken once a month in addition to the weekly audits undertaken by the on-site ECO. The independent audit report must contain a list of irregularities [if there are any] as well as the rectifications required.

- **Daily checks**

The on-site ECO must undertake daily checks to ensure compliance of the EMPr; ensure staff training; address issues as they arise and assist in solving problems as and when they arise. Careful record keeping of all actions must be kept for audit purposes.

e) Who are the main players?

The following are the main players during the Construction Phase in terms of enforcing and maintaining the EMPr:-

- **ECO [on-site] [Environmental Control Officer]**

The on-site ECO must ensure daily enforcement and compliance as well as record keeping of all actions; rectifications and adjustments made to the approved EMPr.

The on-site ECO must also ensure that the construction phase undergo a weekly internal audit to ensure compliance.

- **EAP / External Auditor / Independent ECO**

The EAP / External Auditor must ensure monthly audits; an audit report and assist in rectifying issued as and when they arise. All reports and amendments to the EMPr must be documented and kept on file at the on-site ECO station.

Section C – Operational Phase

During the Operational Phase certain aspects require careful attention in order to protect the receiving environment. The following aspects have been identified.

- **Traffic & Dust**

Traffic and dust creation goes hand in hand. The operation must enforce speed control where possible and advise deliveries to adhere to speed limitations in order to minimise dust creation and also the noise coming from large trucks.

- **Traffic times**

Being a rural area the noise of vehicles may be bothersome. As such deliveries and uplifting of stock should ultimately be scheduled for normal day light hours in order to minimise disturbances.

- **Waste**

No animal waste or mortalities collected may be left outside to develop odours; attract flies or cause an environmental nuisance. Bins, readily available, should be at hand to receive any form of rubble [i.e. municipal waste] where it must be removed to an approved landfill site. Waste separation should be done prior to deposition in order to assist in recycling of waste of value i.e. glass; plastic and cardboard.

Bins must be sanitised on a weekly basis to ensure that they remain odour free and do not allow the breeding of flies.

- **Animal Waste**

Animal waste is a major source of smells and fly infestations.

All animal waste collected at the end of a rearing cycle must be removed from site on the day that the waste is collected.

Timeous planning for the uplifting by end users must be made so that they can uplift the waste on the day that it becomes available.

Waste heaps **are not allowed** to lie outside the animal houses where water and heat can cause flies to breed uncontrolled.

No burying of animal waste is allowed to occur on the farm.

NOTE: Records must be kept of who takes/buys the animal waste; where its final destination [address] will be and what will the waste be used for [i.e. fertiliser]

- **Flies**

To maintain an environment where flies do not abound the operation should:-

- Employ a formal fly spray regime to control flies on the farm [normally contact spray];
- Ensure that feed has the required dosage of larvae control substance included to prevent larvae from developing;
- That all water points are properly working and does not cause leaks / wet areas in the animal house;
- That roofs are clear of leaks to prevent the animal waste becoming wet and being a place where flies can abound.

- **Mortalities**

All animal houses must be checked for sick or dead birds at least twice a day.

All mortalities must be removed to the cold storage area, awaiting removal by the contracted lion farm or animal feed manufacturer.

All mortalities removed from the farm must be transported in an enclosed container.

Equipment used to collect and gather mortalities must be disinfected after each use to protect the rest of the animals from any disease.

NOTE: Records of mortalities taken; by whom; final destination and final use to be documented and saved for audit purposes.

NOTE: No incineration of mortalities are allowed on site. Should incineration be considered then the appropriate application and an Air Emissions License Application be done.

- **Bio-Security**

The area around the operation must be clearly demarcated as a Bio-Security Area with proper access control; footbaths and sanitiser for all entering or leaving the site is a requirement. The site must have a biosecurity plan in place, and the staff must be trained in its requirements.

- **Supply of day-old chicks**

There are a number of suppliers of breeding animals to piggeries in South Africa. All new breeding stock must arrive having undergone their first set of inoculations. No “outside stock” from unknown sources should be allowed on site, as this may be dangerous to the rest of the operation.

- **Access points**

All access points to the farm must provide, as a minimum standard, foot baths and sanitising liquid for all incoming and outgoing staff.

- **Entrance Notices**

All access points to the farm must display the required information boards to announce bio-security area; the need to sanitise and the right of access being controlled.

- **Ablution facilities**

The farm must supply proper ablution facilities for staff to **shower in** and **shower out** at the end of a working day. This forms part of the bio-security regime for the operation.

- **External Lighting**

All external lighting to be down-lighter type lights where possible in order to prevent light pollution and light being a nuisance to adjacent properties.

- **Electricity and Water Supply**

Electricity supply; connections and installations must be approved and duly signed off along with the required CoC Certificates.

- **Incineration**

The incineration of mortalities on site is not allowed. Incineration requires an additional Air Emissions License to be obtained from the NW-DEDECT.

- **Coal Bunkers**

All coal bunkers must be supplied with a cement floor and either a roof or a sturdy tarpaulin to prevent the ingress of water taking place.

NOTE: The dumping of coal and ash on the bare ground is not allowed.

All coal dumps must be provided with a proper coal bunker.

All bunkers must either be covered by a roof or by a tarpaulin.

Water ingress is not allowed.

a) Compliance to Environmental Management Standards

There are certain standards and practices that the operation must follow at all times:-

- **EMPr**

It is important to scrutinise and follow the dictates of the approved EMPr at all times. This will ensure complete compliance; regular evaluation of the operation and its environmental standards and amendments being implemented to ensure that the environment is always the No.1 priority.

- **Bio-Security**

Bio-security and adhering to the rules of the bio-security plan for the operation are of prime importance.

Staff must be fully trained in all aspects of the bio-security plan and know exactly what is allowed and what is not.

Record keeping of training is essential and will form part of the audits in future.

- **Audits**

It is essential to ensure that the operation undergoes an external independent audit in terms of its environmental compliance, at least once a year. Such an audit must be accompanied by a formal report and suggested remedies [should there be any].

Formal record keeping is required for inspections by the NW-DEDECT.

Once in every five [5] year cycle a formal external audit report must be forwarded to the NW-DEDECT Compliance Division for insight and compliance.

NOTE: In the event that an environmental audit reveals major non-compliance issues to be present, the independent environmental auditor can issue a non-compliance notice requesting remedy within a period not exceeding 30 days followed by a second audit to ensure compliance.

Should the issues persist then the environmental auditor must report the non-compliance to the relevant authority with a request for inspection and further actions.

b) Ensuring Compliance

In order to ensure compliance and the enforcement of the EMPr as approved during the operational phase the following must be adhered to:-

- **EMPr**

The developer/operator must provide a signed acceptance of the approved EMPr and this acceptance letter must be placed along with the EA and EMPr onto the company environmental file.

- **Operational Documents**

An environmental file containing [a] Environmental Authorisation; [b] EMPr; [c] Signed EMPr acceptance letter by the developer and [d] Incident Report Form, must be available on site at all times for any inspection by the NW-DEDECT.

- **Audits**

Monthly internal audits by the operator / farm manager to ensure compliance. The operation will be provided with a check-list called **Aspects for Environmental Compliance / Operations** against which compliance must be checked.

REFER: Annexures - Aspects for Environmental Compliance / Operations

After the first year of full capacity operations, the operations will receive an environmental audit by an independent consultant, inclusive of a report and a list of non-compliance issues.

All non-compliance issues will be remedied and the correct procedures will be brought in place.

All audit reports; non-compliance issues; remedies and other actions undertaken will be kept on the on-site environmental file for inspection purposes. A copy of the Audit Report must be forwarded to NW-DEDECT once every 5 years [Compliance Division].

c) Who are the main players?

The following are the main players during the Operational Phase in terms of enforcing and maintaining the EMPr:-

- **Farm Manager**

The Farm Manager must ensure daily enforcement and compliance as well as record keeping of all actions; rectifications and adjustments made to the approved EMPr.

The Farm Manager must also ensure that the operational phase undergoes a monthly internal audit to ensure compliance.

- **EAP / External Auditor**

The EAP / External Auditor must ensure that a yearly audit is undertaken; an audit report is provided and assist in rectifying issues as and when they arise. All reports and amendments to the EMPr must be documented and kept on file at the Farm Manager's office.

d) Special Precautions

It is an acceptable practice that animal mortalities are taken away by other farming activities such as lion farms and crocodile farms where the mortalities are used as supplement feeding.

- a. No mortalities may be buried without authorisation from the authorities as such action poses a threat to underground water reserves;
- b. No mortalities may be incinerated as the action of incineration triggers activities under NEM:AQA and NEM:WA where additional licensing and an AEL will be required.

WHEN IN DOUBT ASK YOUR ENVIRONMENTAL CONSULTANT
ILLEGAL ACTIVITIES MAY INCUR FINES FROM THE AUTHORITIES

Section D – Closure Phase

NOTE: Closure is not contemplated and as such is NOT APPLICABLE for this EMPr.

Should a situation arise where the developer decides to close down the operation and scrap the activity, then the NW-DEDECT should be contacted in order to follow the correct procedure for closure and rehabilitation.

As there is no intention to proceed to closure no financial provision has been made for rehabilitation.

Section E – Roles & Responsibilities

Planning & Pre-Construction Phase

Impact Management Outcome: Design for renewables and other aspects to protect the environment						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Plan for renewables i.e. solar; rainwater harvesting; solar heaters and down lighter	Owner Architect	Through design	During design before construction	Owner Architect	ECO throughout the construction phase	ECO Signoff of installations as per architect design

Impact Management Outcome: Legal Authorisations and infrastructure						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Ensure that EA; EMPr and signed EMPr from contractors are on file; Ensure ablution facilities are available; Ensure H&S are in place	Owner ECO	Site office with documents; Installation of temporary toilets on site	Before the onset of Construction Phase	Owner Contractor ECO	Ongoing throughout the set-up and Construction Phase	ECO audit reports ; External Audit Reports

Construction Phase

Impact Management Outcome:						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Owner / Operator to sign acceptance of the EMPr and copy on file	Owner Farm Manager	Signed documents on file	Before construction and operational phase	Farm Manager Owner	Quarterly	Documents of file
File with copy of approved EMPr on site	Farm Manager	Copies on file	Before construction and operational phase	Farm Manager	Quarterly	Documents of file
Incident record keeping on file on site	Farm Manager	Record keeping on file	Before the construction and operational phase	Farm Manager	Quarterly	Documents of file
Audit after 1 year and record on file	Farm Manager External Auditor	Records on file	At end of first year of operations	Farm Manager Owner to arrange	Yearly	Documents of file

Impact Management Outcome: Construction Compliance						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
External Audits monthly with full report on file	Owner Farm Manager	Documents on file in office	Monthly	Owner Farm Manager	Monthly	Reports on file
Issues & Remedies to be implemented	Owner Farm Manager	Report on file in office	Monthly	Owner Farm Manager	Monthly	Reports on file

Impact Management Outcome: Construction Activities						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Daily staff briefings on environmental safety	ECO	Daily morning briefing sessions	From onset of the construction activities	Eco External Audit	Daily Monthly	ECO Report External Audit Report
Sanitising of ablution facilities	Contractor ECO	Daily in the morning	From onset of construction	Contractor ECO	Daily	ECO Report External Audit Report
Rubble clearing	Contractor ECO	Collection daily at close of work	From onset of construction	Contractor ECO	Daily	ECO Report External Audit Report
Sorting of Waste Streams	Contractor ECO	Daily when rubble is collected	From onset of construction	Contractor ECO	Daily	ECO Report External Audit Report
Availability of waste drums and coloured waste bins	Contractor ECO	At start of construction	From onset of construction	Contractor ECO	Daily	ECO Report External Audit Report
Waste removal to landfill must be documented and proof retained	Contractor ECO	At start of construction	From onset of construction	Contractor ECO	Daily as required	ECO Report External Audit Report
Audit Reports must be retained on file	ECO	At start of construction	From onset of construction	ECO	Weekly and monthly	ECO Report on file External Audit Report on file
Non-compliance and remedies to be kept on file	ECO	From start of construction through audit reports	From onset of audits	ECO Contractor	Daily	ECO Audits External Audit Reports

Impact Management Outcome: Implementation of impact management actions – Construction Phase						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Day by day checks and remedies	ECO	Check list and internal audits	From start of construction	ECO	Daily	Records and internal audit reports
Monthly independent audits	EAP External Auditor	External audits with report	From start of construction	EAP External Auditor	Monthly	External Audit Reports and recommendations

Impact Management Outcome: Avoiding pollution or degradation						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Regular Internal and External Audits to monitor compliance	ECO External Auditor	ECO Reports EAP Audits once a month	From onset of construction phase	ECO External Auditor	Daily, weekly and monthly	ECO Report External Audit
Regular staff training and record keeping of training given	ECO Contractor	ECO Contractor	From onset of construction phase	ECO Contractor	Weekly	ECO Report External Audit
EMPr to each contractor against signature	ECO	ECO	From onset of construction phase	ECO	Start of each contract	ECO Report External Audit
Waste separation to take place in support of recycling	ECO Contractor	ECO Contractor	From onset of construction phase	Contractor ECO check	Daily	ECO Report External Audit
No burning of cement bags or burying of bags on site	ECO Contractor	ECO check Contractor	From onset of construction phase	Contractor ECO	Daily	ECO Report External Audit
No removal of any trees unless authorised by the EAP for the project	ECO Contractor EAP	ECO check Contractor	From onset of construction phase	Contractor ECO EAP	Ongoing for construction phase	ECO Report External Audit
Cement tools wash down in designated area only	ECO Contractor	ECO Contractor	From onset of construction phase	Contractor ECO	Daily	ECO Report External Audit
Ensure that ablutions are clean and serviceable. No use of the bushes or adjacent environment as a toilet	ECO Contractor	ECO	From onset of construction phase	ECO	Daily	ECO Report External Audit

Impact Management Outcome: Rehabilitation of the environment						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Removal of rubble not used as infill to landfill	Contractor ECO	By truck to landfill and receipt for deposition	Upon start of construction	Contractor ECO	As and when rubble is large enough for removal	ECO Report External Audit Report
No burning or burying of waste allowed	Contractor ECO	Daily checks by ECO	Upon start of construction	Contractor ECO	Daily checks by ECO	ECO Report External Audit Reports
Waste soils to be used in foundations or disposed at an approved site	Contractor ECO	Daily checks if soils are not being used	Upon start of earth works on site	Contractor ECO	Ongoing throughout construction	ECO Report External Audit Report
Must be infilled and compacted to ensure safety	Contractor ECO	Checked at end of construction	At end of construction	Contractor ECO	Whenever a trench needs closing in	ECO Signoff External Audit Report
Removal of the temporary site office and mobile toilets to final clean-up	Contractor ECO	End of construction phase removal by contractor	At end of construction	Contractor	End of Construction Phase	ECO Report External Audit Report

Operational Phase

Impact Management Outcome: Operational aspects						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Environmental Incident Register at reception	Owner Farm Manager	Environmental File at reception	As from the Construction Phase throughout the life span of the facility	Owner Farm Manager	Ongoing daily	Internal Audit quarterly External Yearly
Communicate Health Regime for safety of animals and employees	Farm Manager	Farm Manager Weekly training	From start of operations	Farm Manager	Weekly staff training	Record keeping
Light; signage, display boards are operational and clear	Farm Manager	Physical checking	Weekly checks & maintenance	Farm Manager	Weekly checks and maintenance	Record keeping
Communicate best route for deliveries to minimise dust generation	Farm Manager	Communicate when placing an order	At time of ordering stock i.e. feed; coal; day old chicks	Farm Manager	When making orders	Record keeping
Communicate speed restrictions to delivering companies	Farm Manager	Communicate when placing an order	At time of placing an order	Farm Manager	When making orders	Record keeping
Communicate bio-security rules to delivery companies	Farm Manager	Communicate when placing an order	At time of placing an order	Farm Manager	When making orders	Record keeping
All houses to be checked twice a day for mortalities	Farm Manager Staff	Physical walk through	Daily in the morning and afternoon	Farm Manager Staff	Daily	Record keeping
Mortalities to be removed to refrigeration pending removal	Staff working in the animal houses	Physical removal and transferring mortalities to refrigeration	Twice a day as and when mortalities are encountered	Farm Manager Staff	Daily morning and afternoon	Record keeping
Ablution facilities to be disinfected and provided with warm water and soap for staff	Farm manager Staff	Physical clean down and replenishing of soap	Daily in the morning and in the afternoon	Farm Manager Staff	Daily morning and afternoon	Record keeping
All access points to have foot baths	Farm Manager	Physical filling and checking	Twice per day	Farm Manager Staff	Daily	Record keeping
Timeously notify 3 rd party users of the animal waste on date that waste must be removed from site	Farm Manager	Call and arrange for removal	As and when clean-out is contemplated	Farm Manager	When cleaning out	Record keeping
All old bedding and manure to be removed from site upon clean-out – no stock piling to occur	Farm Manager	Physical collection and removal from the houses for old bedding	As and when clean-out is being done	Farm Manager	When cleaning out	Record keeping
Implement as secure fly spray regime to combat flies	Farm Manager Farm Vet	Add additives to the feed as prescribed	Weekly operation	Farm Manager Company Vet	Weekly	Record keeping
Use contact spray on outside of the houses to combat flies	Farm Manager Farm Vet	Spray down as prescribed by the company Vet	Weekly operation	Farm Manager Company Vet	Weekly	Record keeping
Undertake daily farm area clean-up of rubble	Farm Manager Staff	Physical walk through	Daily pick-up	Farm Manager	Daily	Record keeping
Ensure rubble sorted at source for recycling purposes	Farm Manager Staff	Physical sorting as and when rubble is collected	Daily	Farm Manager Staff	Daily	Record keeping
Ensure weekly removal of waste to landfill	Farm Manager	By vehicle to the landfill	Once a week to landfill	Farm Manager	Weekly	Record keeping
Ensure waste removal is done against receipt	Farm Manager	Person taking waste must request a receipt	When waste goes to landfill	Farm Manager	Weekly when removal is done	Record keeping
Waste bins to be disinfected once a week	Farm Manager	Physical wash down and	Weekly at least once	Farm Manager	Weekly	Record keeping

	Staff	disinfection inside				
Impact Management Outcome: Prescribed Standards & Practices						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Ensure Health & Safety and Bio-security rules communicated to staff Sign-off on record	Farm Manager	Staff training and sign-off of training	From start of operations	Farm Manager	Weekly training	Record keeping sign-off on training
Internal Audit of aspects as contained in the approved EMPr	Farm Manager	Record keeping of audits undertaken	From start of operation	Farm Manager	Quarterly	Record keeping
Undertake internal audit quarterly and external audit once a year	Farm Manager EAP	Records of audits on file	From start of operations	Farm Manager EAP	Internal quarterly External Yearly	Record keeping
Ablution facilities must be sanitised and kept clean – service twice a day	Farm Manager	Check and record keeping	From start of operations	Farm Manager	Daily morning and afternoon	Record keeping
Coal bunkers must have either roof or tarpaulin	Farm Manager	Physical check	From start of operation	Farm Manager	Daily	Part of regular audit

Impact Management Outcome: Operational compliance						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Quarterly external audits in 1 st year of operations	Owner Farm Manager	External audit with full report	Once operations start	Owner Farm Manager	Quarterly	Report and findings on file
After 1 st year only yearly external audits	Owner Farm Manager	External audit with full report	After 1 year of operations	Owner Farm Manager	Yearly	Report and findings on file

Impact Management Outcome: Operational Activities						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Waste must be containerised and not be left outside to create problems	Owner Farm Manager	Daily checks Daily removal	From the onset of the operational phase	Owner Farm Manager	Daily	Internal Audits Yearly external audit
Waste separation for ease of recycling	Owner Farm Manager	Daily checks	From the onset of the operational phase	Owner Farm Manager	Daily	Internal Audits Yearly external audit
Exit / entrance points must provide sanitising and footbaths	Owner Farm Manager	Equipment at the gates	Prior to the onset of operational phase	Owner Farm Manager	Daily	Internal Audits Yearly external audit
All exit / entrance points must have correct signage	Owner Farm Manager	Signage at the gates	Prior to the onset of the operational phase	Owner Farm Manager	Daily	Internal Audits Yearly external audit
Proper ablution facilities and showers for staff on site	Owner Farm Manager	To be constructed during the construction phase	Must be available from onset of the Operational Phase	Owner Farm Manager	Daily	Internal Audits Yearly external audit
Exterior lights must be down-lighter to prevent light pollution	Owner Farm Manager	To be installed during construction phase – ongoing maintenance	During construction phase	Owner Farm Manager	Ongoing maintenance and upkeep	Internal Audits Yearly external audit

Impact Management Outcome:						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Owner / Operator to sign acceptance of the EMPr and copy on file	Owner Farm Manager	Signed documents on file	Before construction and operational phase	Farm Manager Owner	Quarterly	Documents of file
File with copy of approved EMPr on site	Farm Manager	Copies on file	Before construction and operational phase	Farm Manager	Quarterly	Documents of file
Incident record keeping on file on site	Farm Manager	Record keeping on file	Before construction and operational phase	Farm Manager	Quarterly	Documents of file
Audit after 1 year and record on file	Farm Manager External Auditor	Records on file	At end of first year of operations	Farm Manager Owner to arrange	Yearly	Documents of file

Impact Management Outcome: Implementation of impact management actions – Operational Phase						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Uphold the dictates of the approved EMPr	Owner Farm Manager	Signed EMPr and acceptance by signature	From time of operations	Owner Farm Manager	Quarterly for 1 st year then yearly	Documents on file
Monthly external audits	Owner EAP	Full audit with report	From time of operations	Owner Farm Manager EAP	Monthly	Records on file
Guidance and remedies where required	EAP	Written Report	After each audit	EAP Farm Manager	Monthly or as and when required	Record on file
Record keeping of all findings and remedies suggested	Owner Farm Manager	Reports on file	After each audit	Owner Farm Manager	Monthly	Records on file

Additional Aspects to be added:

NOTE: The EMPr is a living document and allows for additions to be made as and when circumstances arise that demand changes or additions. ALL additions or changes must be documented and properly dated in order to maintain a date line and proper paper trail.

- This EMPr has been accepted by the developer of the proposed activity for on behalf ofand will be circulated, against signature to all contractors involved in the construction process.
- Such signed documents will be kept on file for audit purposes by the relevant authorities.

Signed for and on behalf of the developer:

_____ Signature	_____ Name	_____ Date
--------------------	---------------	---------------

EAP (RP Colyn / EAPSA 2019/1358)

Aspects for Environmental Compliance – CONSTRUCTION

ITEM	YES	NO
Is the construction site clearly demarcated?		
Is there a clearly demarcated barrier between the existing infrastructure and the new area to indicate where construction workers may not go?		
Is there a footbath and disinfectant for all arrivals on site?		
Is the site office in place?		
Is there a bulk skip on site?		
Are there bins for waste separation on site?		
Has staff received training on environmental issues?		
Are ablutions in place and being serviced?		
Has an area for cement wash down been set aside?		
Has an area been demarcated for the keeping of building sand; stone; cement etc?		
Has an area been demarcated where staff may prepare food and tea / coffee?		
Is the environment clear of rubble and waste?		
Are all documentation i.e. EA; EMPr; Contractor Acceptance docs on file and on site?		
Has an Incident Record File been opened and kept on site?		
Are copies of waste removal receipts kept on file on site?		
Are copies of ablution services kept on file on site?		
Are all excavations / trenches safe and clearly marked?		
Are the weekly audits and monthly external audits on file and on site?		

Aspects for Environmental Compliance - OPERATIONAL

ITEM	YES	NO
Is the environmental file with all authorisations on site?		
Is traffic speed being regulated?		
Are delivery trucks following the best possible routes via tar roads to minimise dust?		
Are vehicle activities restricted to day light hours?		
Is the site free of waste?		
Is daily site clean-up being done?		
Is the area clear of animal waste?		
Are the take-off agreement in place and on file?		
Are mortalities kept refrigerated pending removal?		
Are mortalities removed in enclosed containers?		
Is the operation following a fly spray regime?		
Is the operation adding medication to feeding to prevent fly larvae from developing?		
Is the operation following a bio-security plan?		
Are access point to the premises provided with foot baths and sanitiser?		
Are ablution facilities clean and serviced?		
Are the coal bunkers cover and kept closed to prevent ingress of water?		
Are the coal ashes kept covered pending removal to landfill?		
Is internal audits being undertaken by the farm manager?		
Is external audits being undertaken by the independent auditor?		
Coal bunkers – roof or covered?		
Coal bunkers – no water ingress?		
Coal Ash bunkers – available to accept ash from the heating system?		

Impact Assessment Matrix

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUM	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
TOPOGRAPHY																				
Dust	roads either delivering or collecting of stock	6	5	2	2	3	5	90		90	Negative	Reduction in speed. Combining deliveries into one truck	4	4	2	1	1	3	36	
Noise - Vehicles	Vehicle noise from deliveries / collections	4	5	2	1	3	3	45		45	Negative	Reduce speed and delivery consolidations	4	3	2	1	2	3	36	
Noise - Operations	Generator of the piggery running during load shedding	6	4	2	2	4	4	72		72	Negative	As and when regular ESKOM power becomes available the generator will no longer be required	2	3	2	2	1	1	10	
Smells / odours	Smells from the piggery may be unpleasant into the adjoining environment											Strict cleaning protocols are in place, with all manure processed along with waste streams from the operation, fed into the biosystem. Regular disinfection will eliminate smells developing								
		6	3	2	2	3	4	64		64	Negative		4	3	2	1	2	3	36	
Flies	Flies breeding due to wet manure and stock piles of waste on site	8	3	2	2	3	3	54		54	Negative	Remove manure, process with waste streams, no stock piles allowed.	4	3	2	1	2	2	24	
Unwanted Elements into the area	The need for labour at the abattoir will bring in more "unwanted" elements to the area											The area is hard pressed for employment and the abattoir will provide much need employment and training opportunities								
		4	4	2	2	1	2	26		26	Negative		2	4	2	1	1	1	10	
Road damage	Vehicles will damage the roads											Restrict speed, utilise tarred road and not gravel where possible, consolidate deliveries to one vehicle where possible and avoid gravel roads as far as possible								
		6	3	3	3	3	3	54		54	Negative		4	3	3	2	2	2	28	
Animal Health & Wellbeing	Reducing stress and strain on chickens being processed											Slaughter to comply with regulations and directives. Increase ventilation, dim lights result in a calmer atmosphere								
		4	4	1	1	2	4	48		48	Negative		2	3	1	1	3	1	10	
Water	Abstraction of water from borehole may impact the water table of the area	6	4	2	3	3	3	54		54	Negative	Agriculture, water is strictly controlled and no excessive water is taken for any other purposes than the operation.	2	3	2	2	2	2	22	
Animal Waste	Can attract and breed fleas and cause bad smells											Waste is scraped and sprayed down daily and the area disinfected and cleaned on a regular basis in order to minimised odours and flies								
		6	4	3	2	3	4	72		72	Negative		2	3	3	2	2	2	24	
Employment	Employment is important for the local economy											Employment of local labour is preferred as the area is short of opportunities, however due to automation there will be no large workforce.								
		4	3	2	0	3	3	36		36	Positive		4	3	2	0	2	3	33	
Food	Food security	8	3	3	1	3	3	54		54	Positive	Additional fresh meat to the market and a better supply in the food security chain of the country	6	4	4	0	3	2	34	
Coal	No use of coal on site	8	3	2	3	4	4	80		80	Negative	Provide a bunker with a concrete floor and roof to stop water ingress	2	3	1	2	3	2	22	
Bottom Ash	No bottom ash	6	3	2	3	3	3	51		51	Negative	Ash to be containerised and disposed at an approved landfill site	2	2	2	1	2	2	18	

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: NW-DEDECT

Project name: LEBOKA Agriculture Pty Ltd

Project title: Leboka Pig Farm

Date screening report generated: 14/02/2025 11:58:20

Applicant: LEBOKA Agriculture Pty Ltd

Compiler: RP Colyn

Compiler signature:

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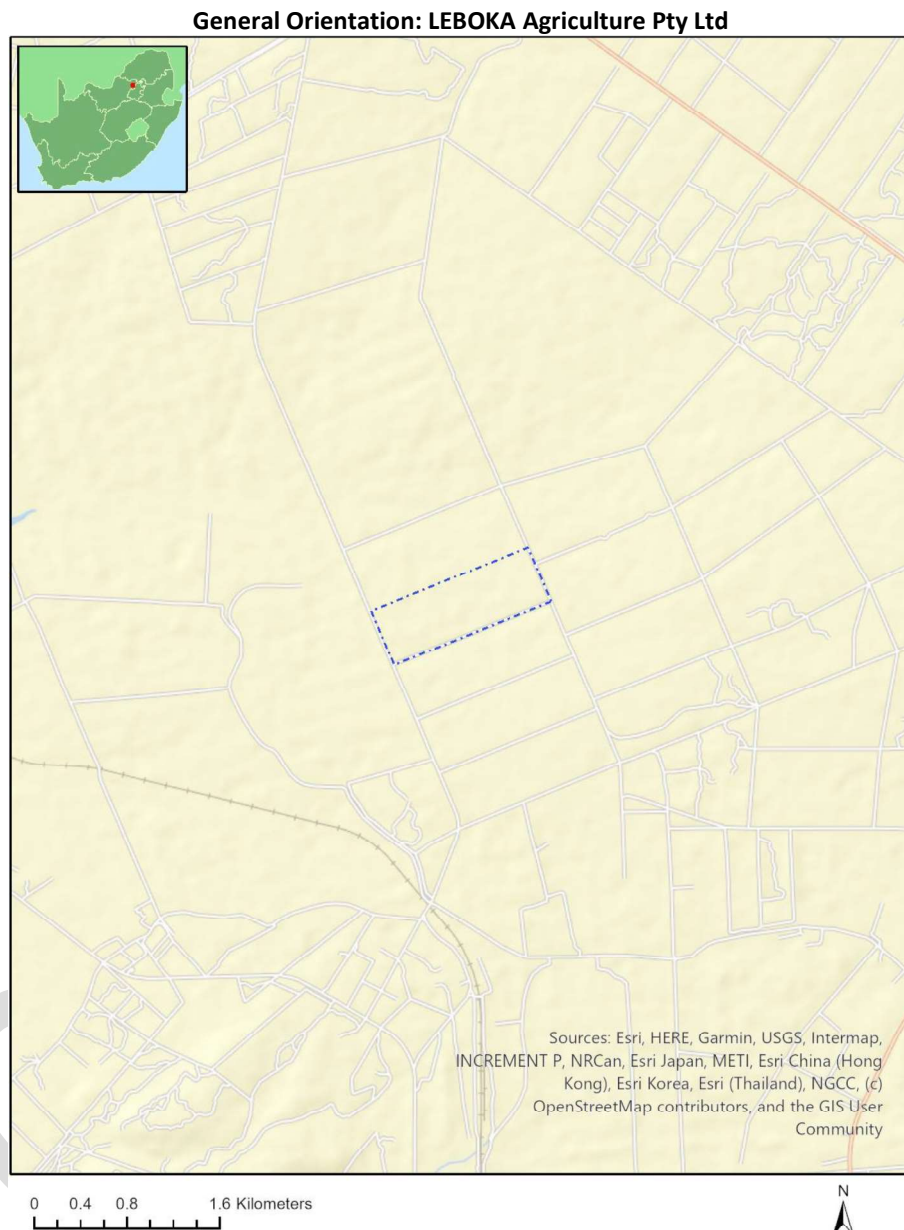
Application Category: Agriculture_Forestry_Fisheries|Animal Production

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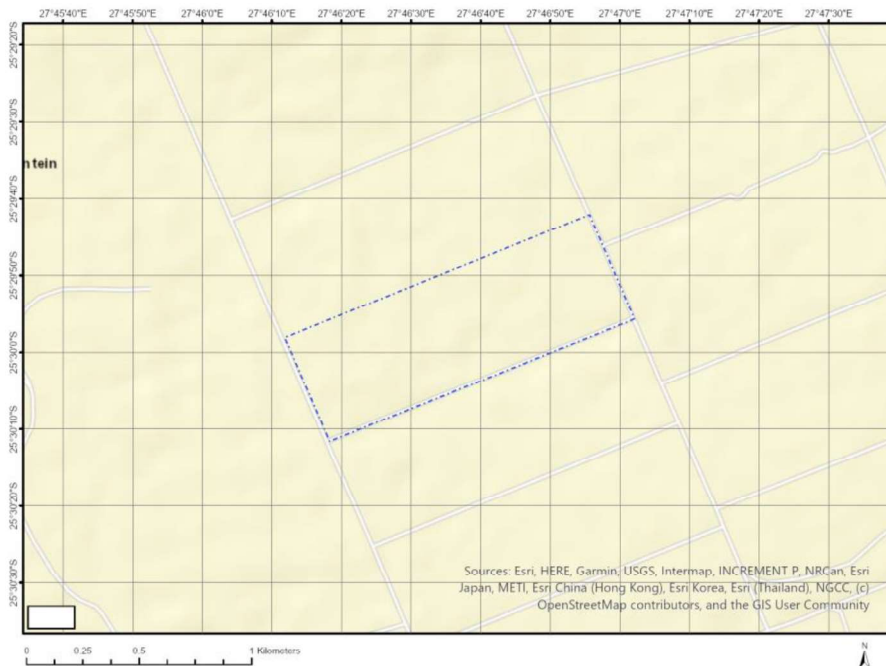
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Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	BLAAUWBANK	241	0	25°28'52.24S	27°47'42.64E	Farm
2	BLAAUWBANK	241	10	25°29'56.85S	27°46'37E	Farm Portion

Development footprint¹ vertices:

No development footprint(s) specified.

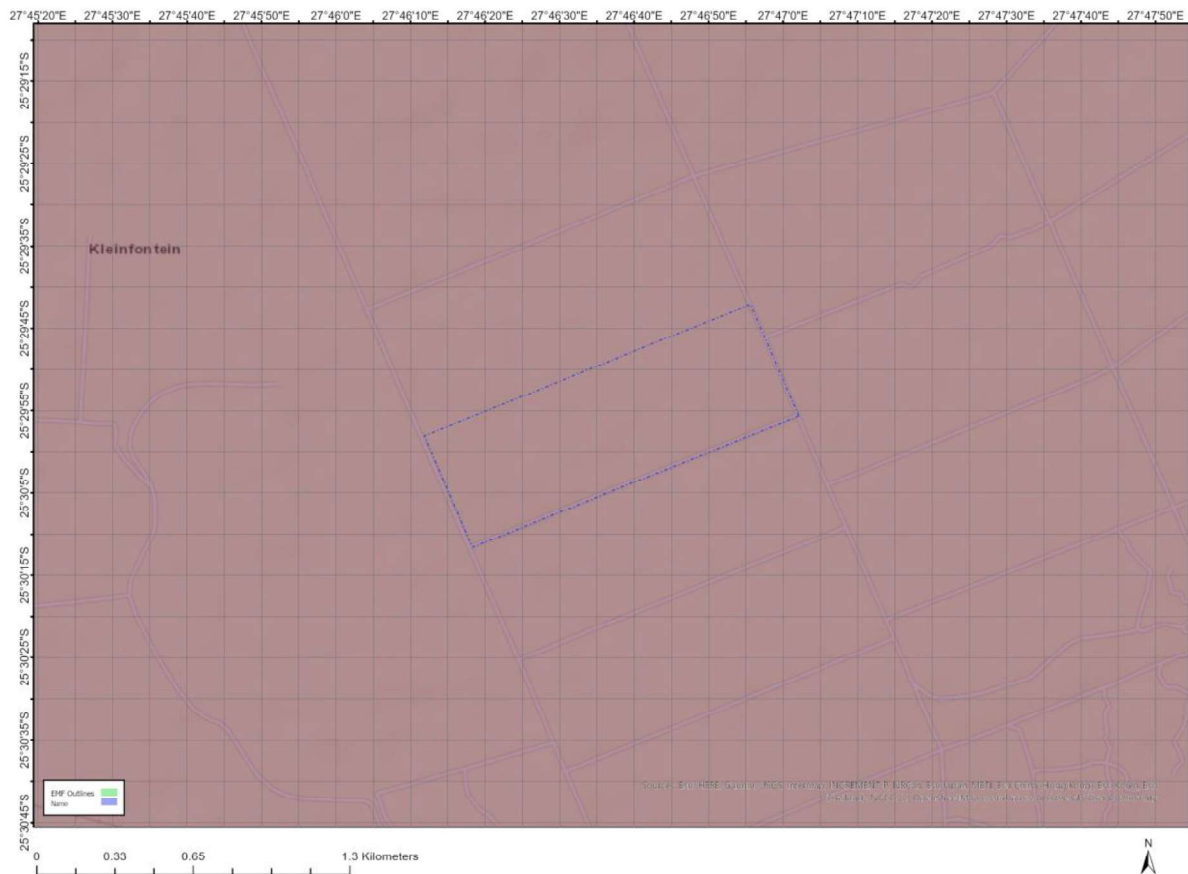
Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/850	Solar PV	Approved	23.4
2	14/12/16/3/3/2/510/AM1	Solar PV	Approved	14.9
3	14/12/16/3/3/1/492	Solar PV	Approved	14.9
4	14/12/16/3/3/1/1842	Wind	Approved	23.4
5	12/12/20/2172	Solar PV	Approved	23.6
6	14/12/16/3/3/1/491	Solar PV	Approved	14.9

¹ "development footprint", means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

7	14/12/16/3/3/2/850/AM2	Solar PV	Approved	23.4
8	12/12/20/2220/AM2	Solar PV	Approved	20

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Bojanala EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/BojanalaEMF.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Agriculture_Forestry_Fisheries|Animal Production.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Air Quality-Waterberg-Bojanala Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/gg39489_nn1207a.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Hydrology_Assessment_Protocols.pdf

		ssmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
11	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

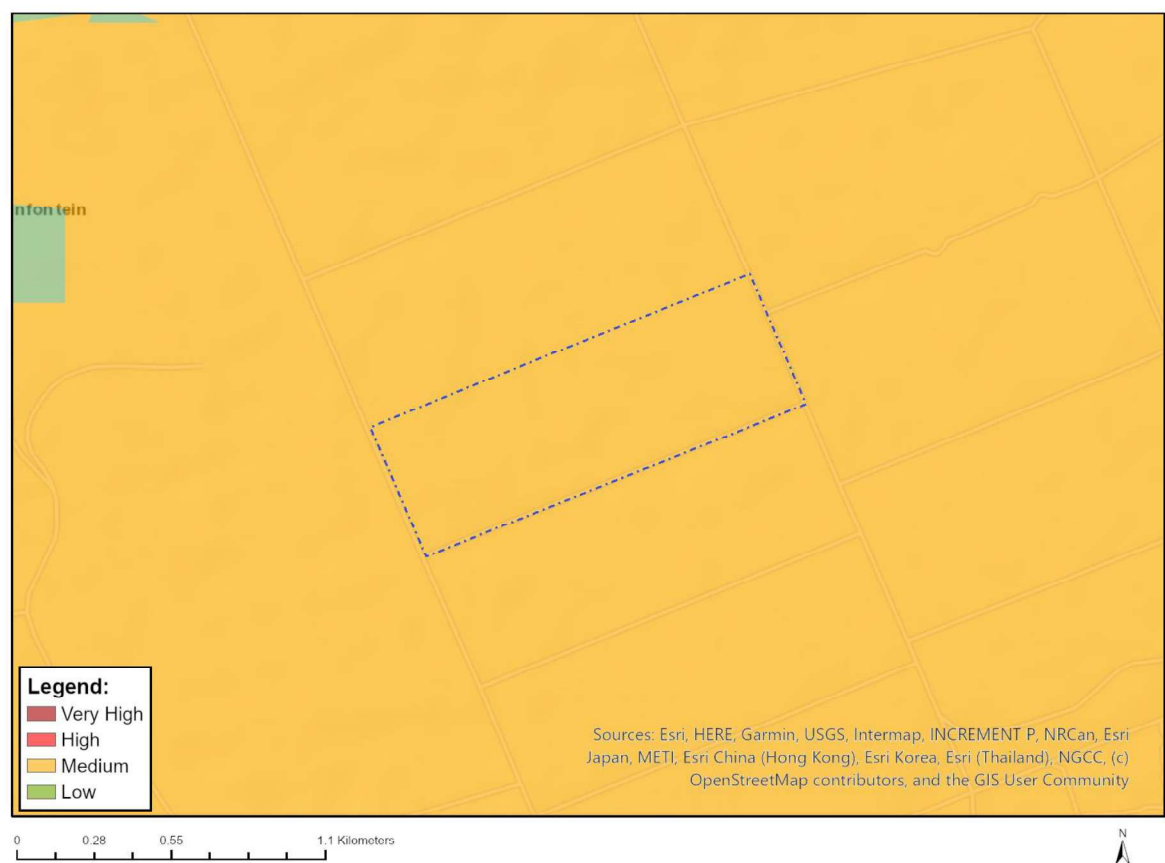


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Mammalia-Dasymys robertsii
Medium	Reptilia-Kinixys lobatsiana

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	ESA 1

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

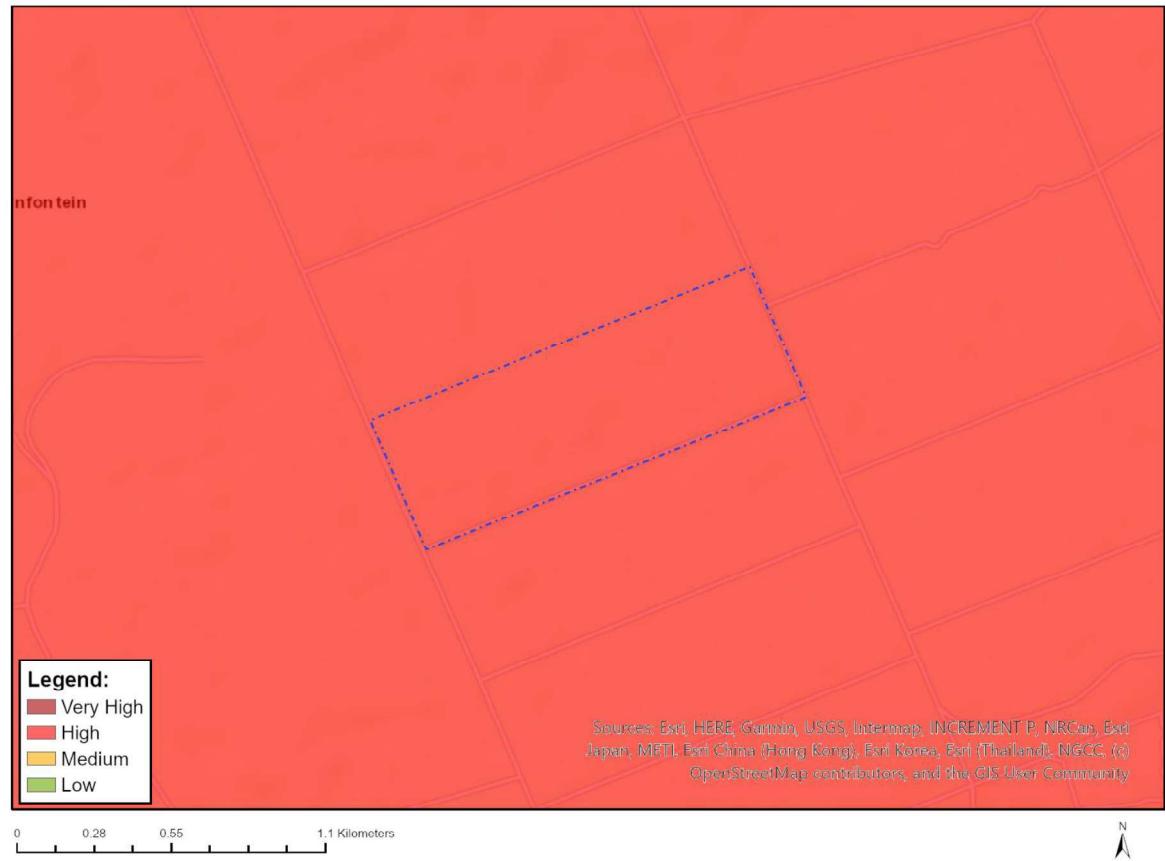


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

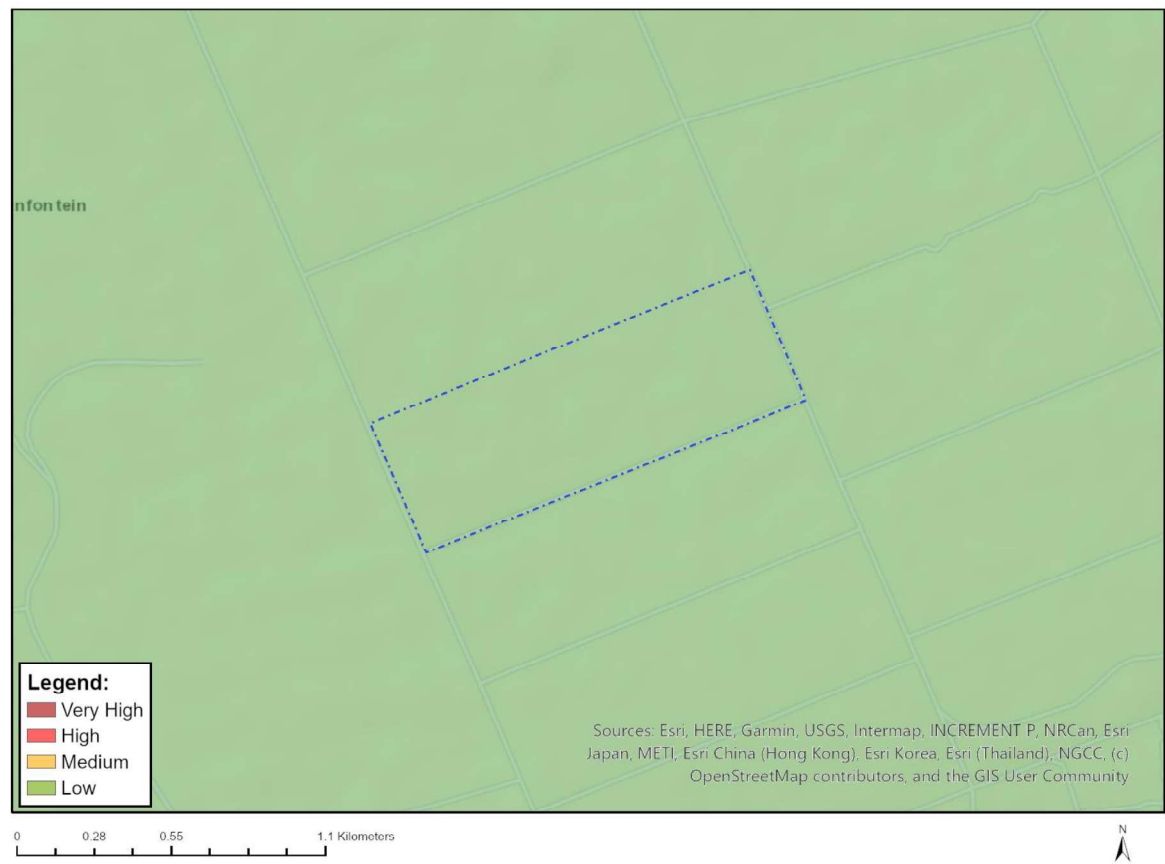


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

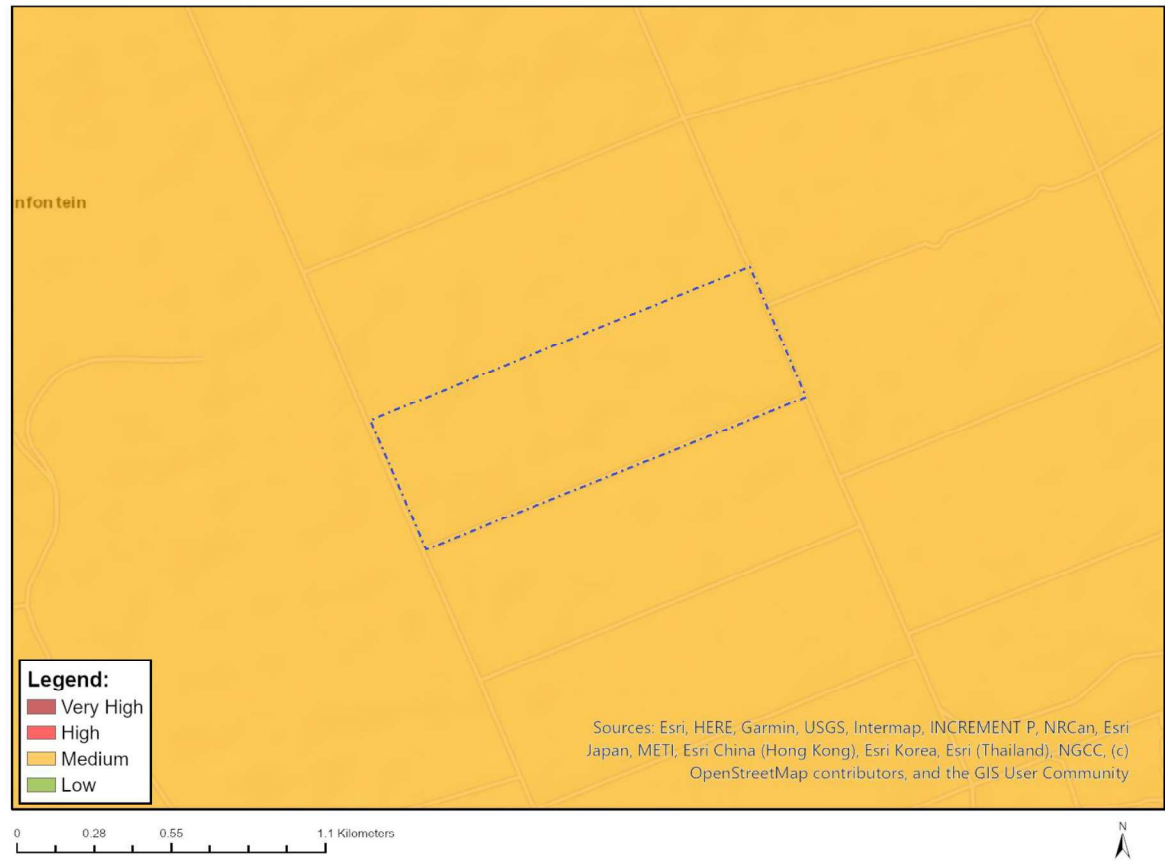


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

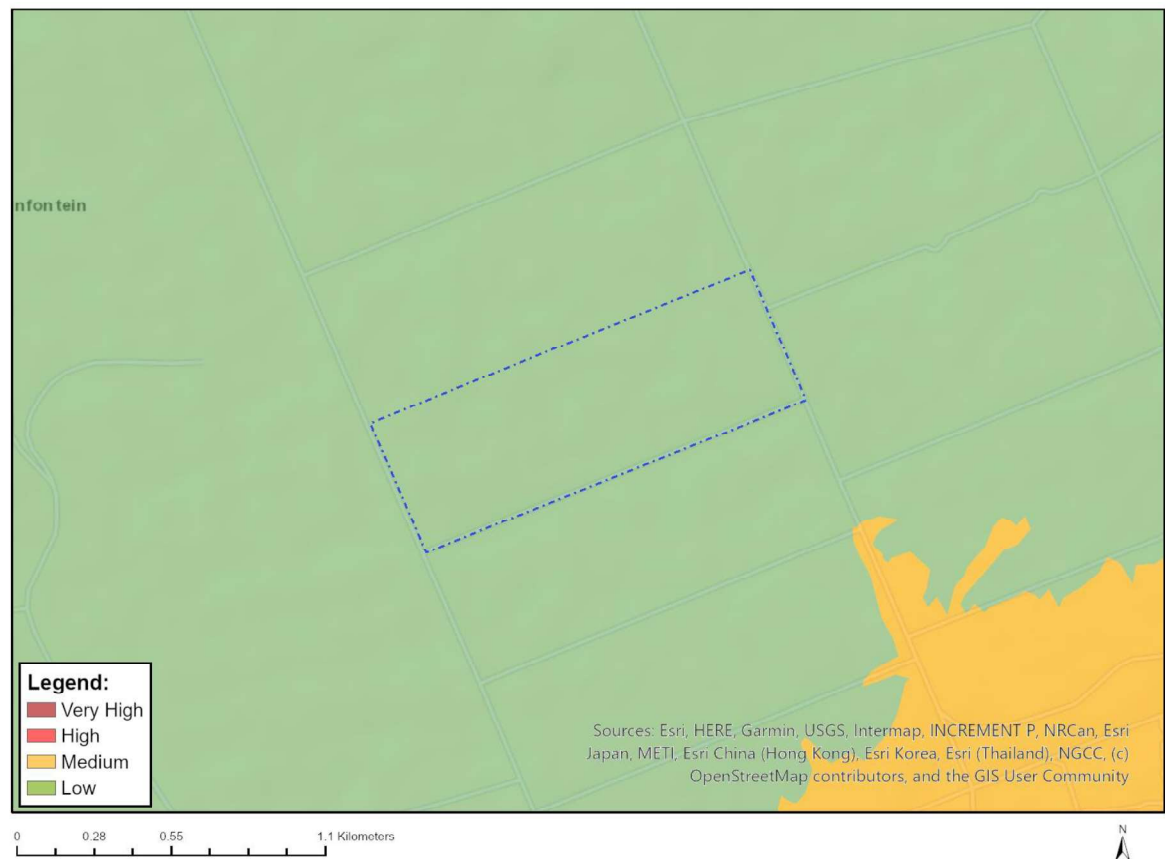


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



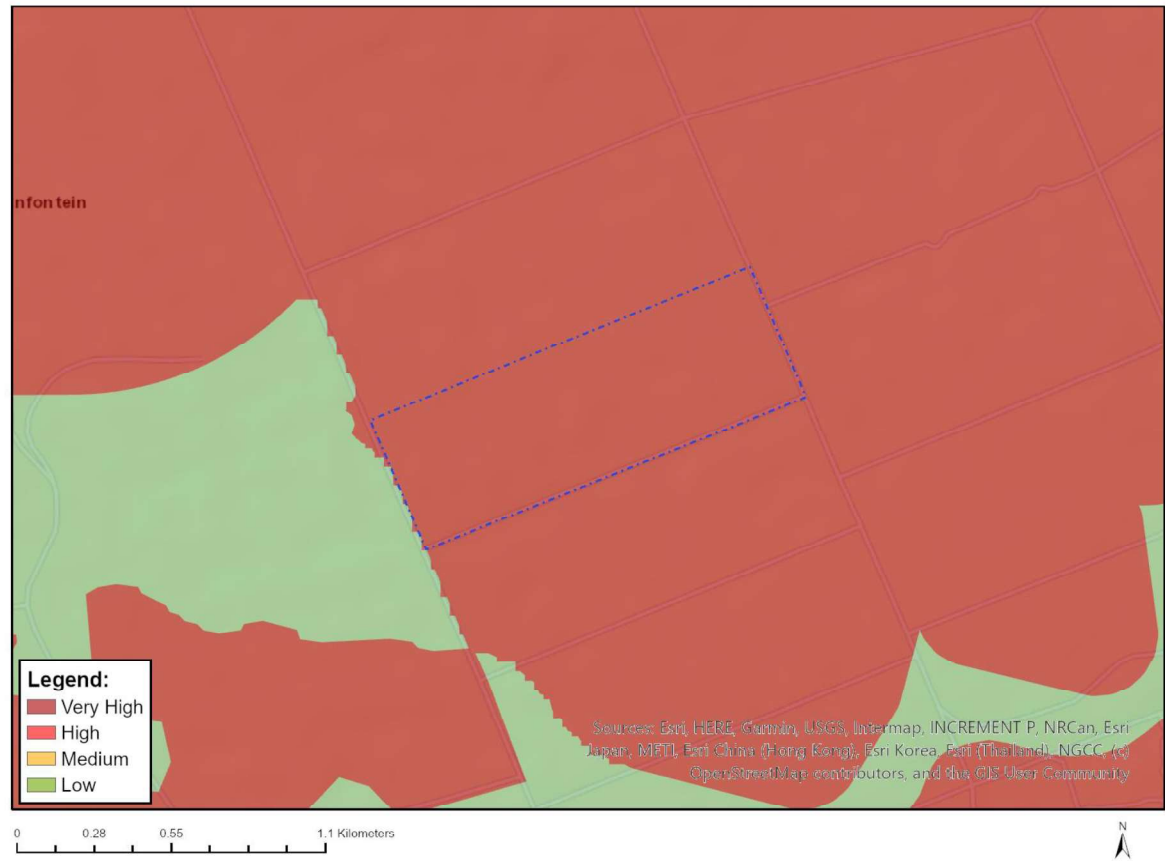
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Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	CBA 2
Very High	National Protected Area Expansion Strategy (NPAES)

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: NW-DEDECT

Project name: LEBOKA

Project title: LEGOKA PIG FARM [Ptn 15]

Date screening report generated: 14/02/2025 10:41:39

Applicant: LEBOKA Agriculture Pty Ltd

Compiler: RP Colyn

Compiler signature:

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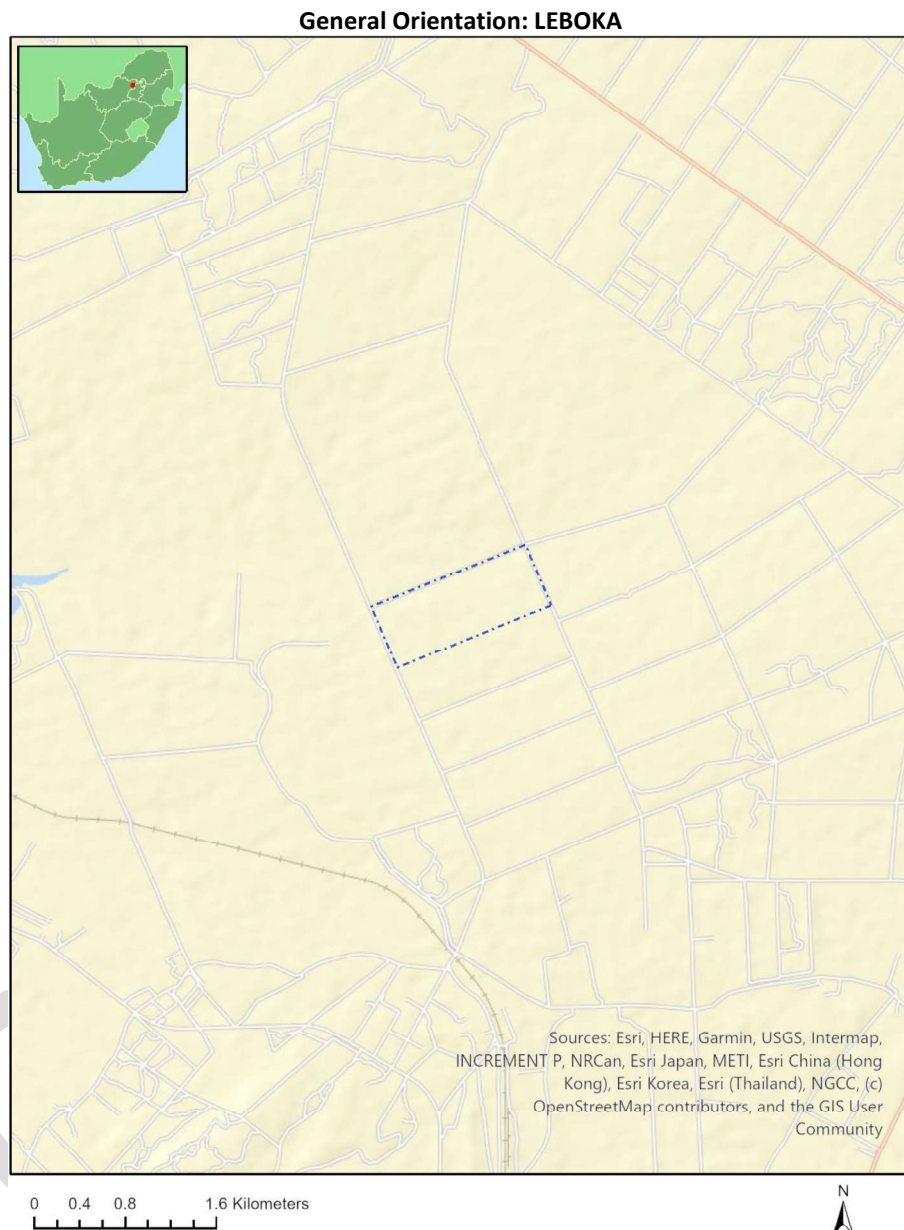
Application Category: Agriculture_Forestry_Fisheries|Animal Production

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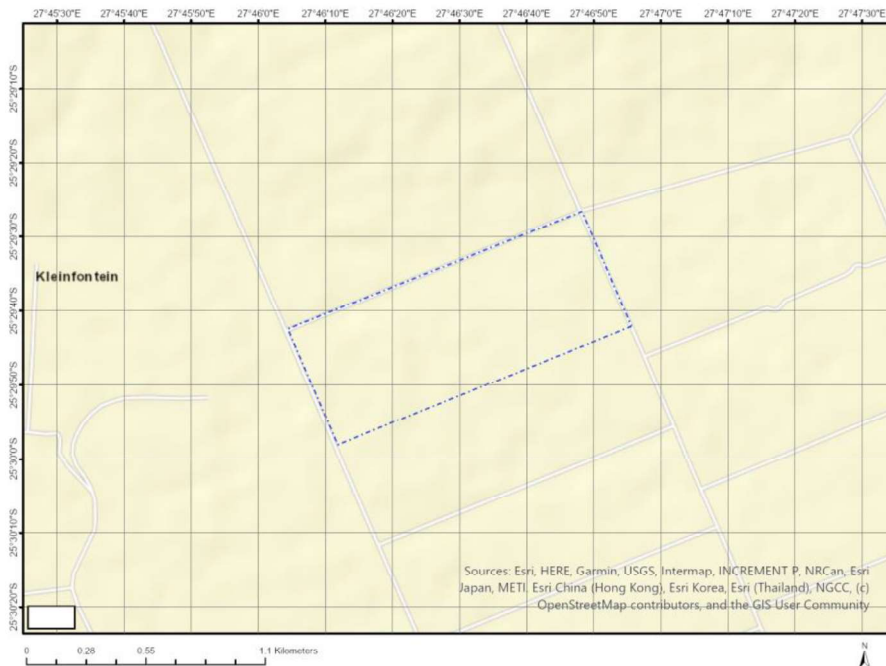
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Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	BLAAUWBANK	241	0	25°28'52.24S	27°47'42.64E	Farm
2	BLAAUWBANK	241	15	25°29'42.33S	27°46'30.03E	Farm Portion

Development footprint¹ vertices:

No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/850	Solar PV	Approved	23.9
2	14/12/16/3/3/2/510/AM1	Solar PV	Approved	15.3
3	14/12/16/3/3/1/492	Solar PV	Approved	15.3
4	14/12/16/3/3/1/1842	Wind	Approved	23.9
5	12/12/20/2172	Solar PV	Approved	24.1
6	14/12/16/3/3/1/491	Solar PV	Approved	15.3

¹ "development footprint", means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Incentive, restriction or prohibition	Implication
Air Quality-Waterberg-Bojanala Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/gg39489_nn1207a.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

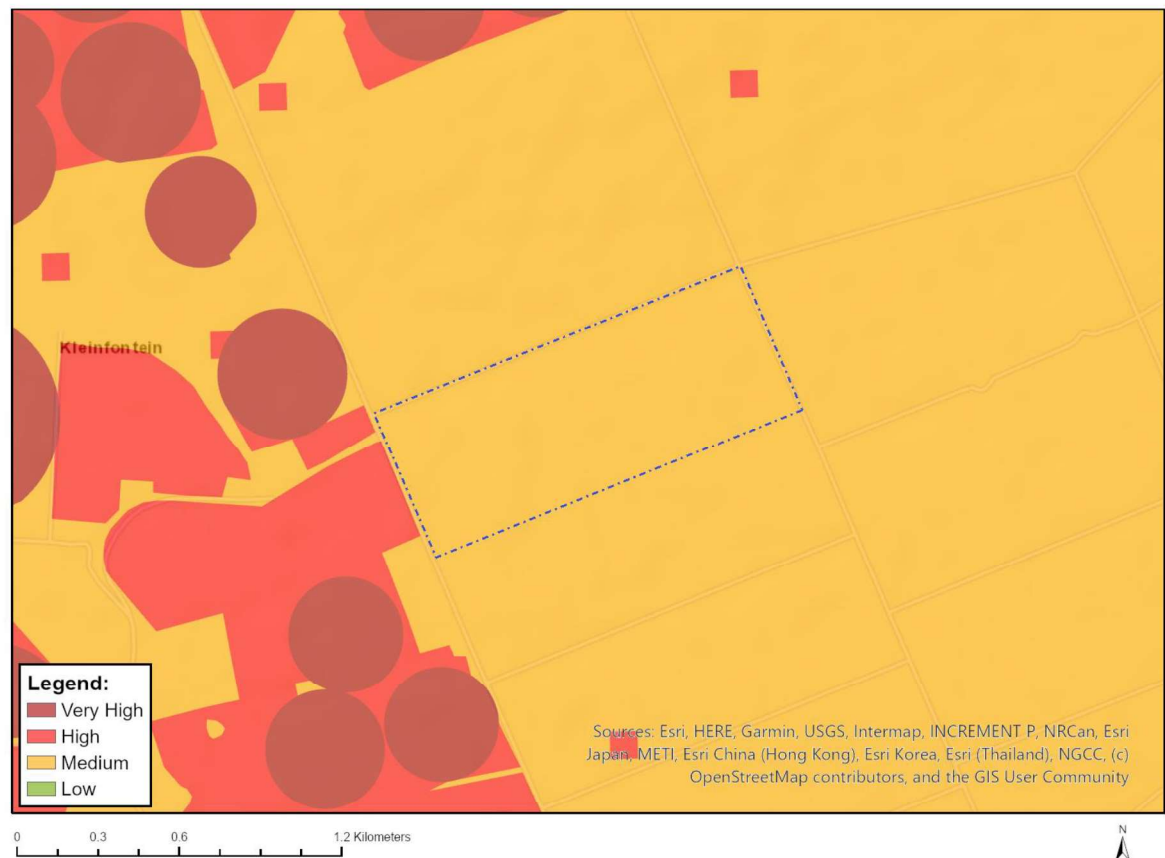
No	Specialist assessment	Assessment Protocol
1	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Hydrology_Assessment_Protocols.pdf

		ssmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
11	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



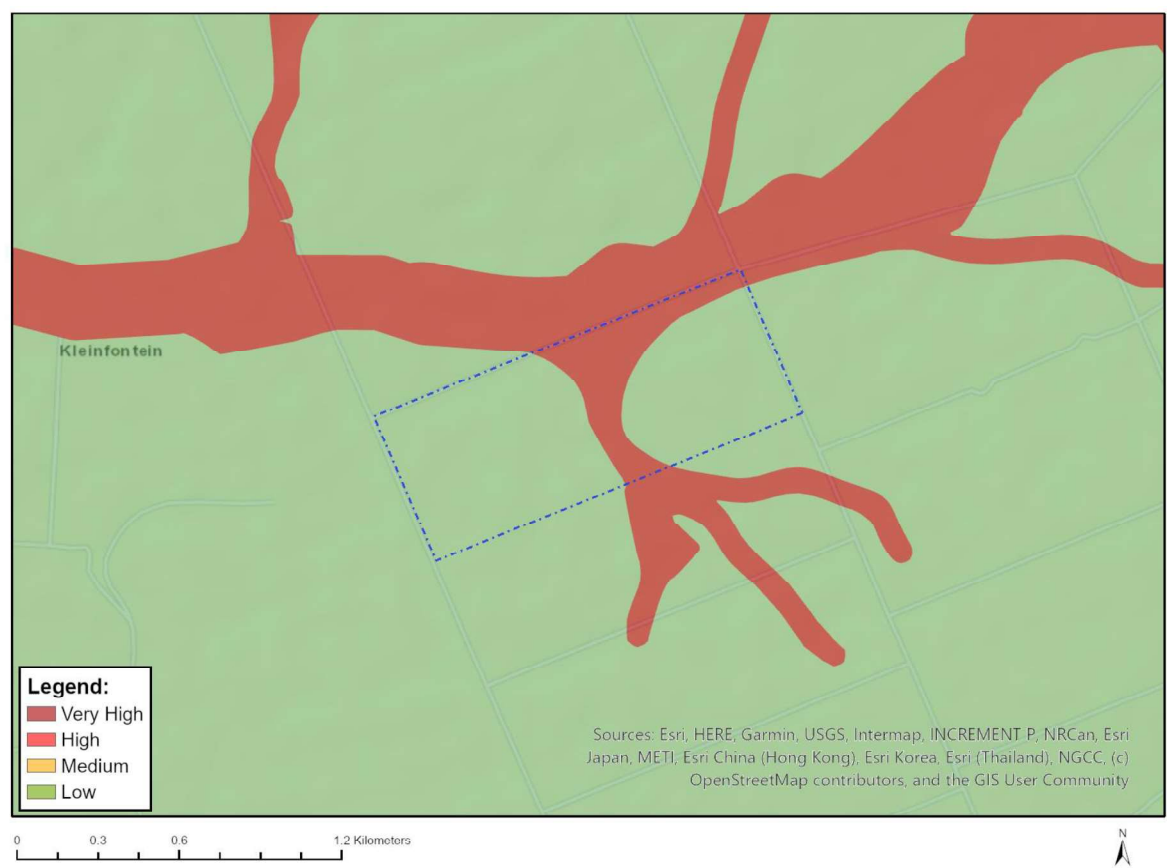
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Aves-Podica senegalensis
Medium	Aves-Hydroprogne caspia
Medium	Mammalia-Dasymys robertsii
Medium	Reptilia-Kinixys lobatsiana

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

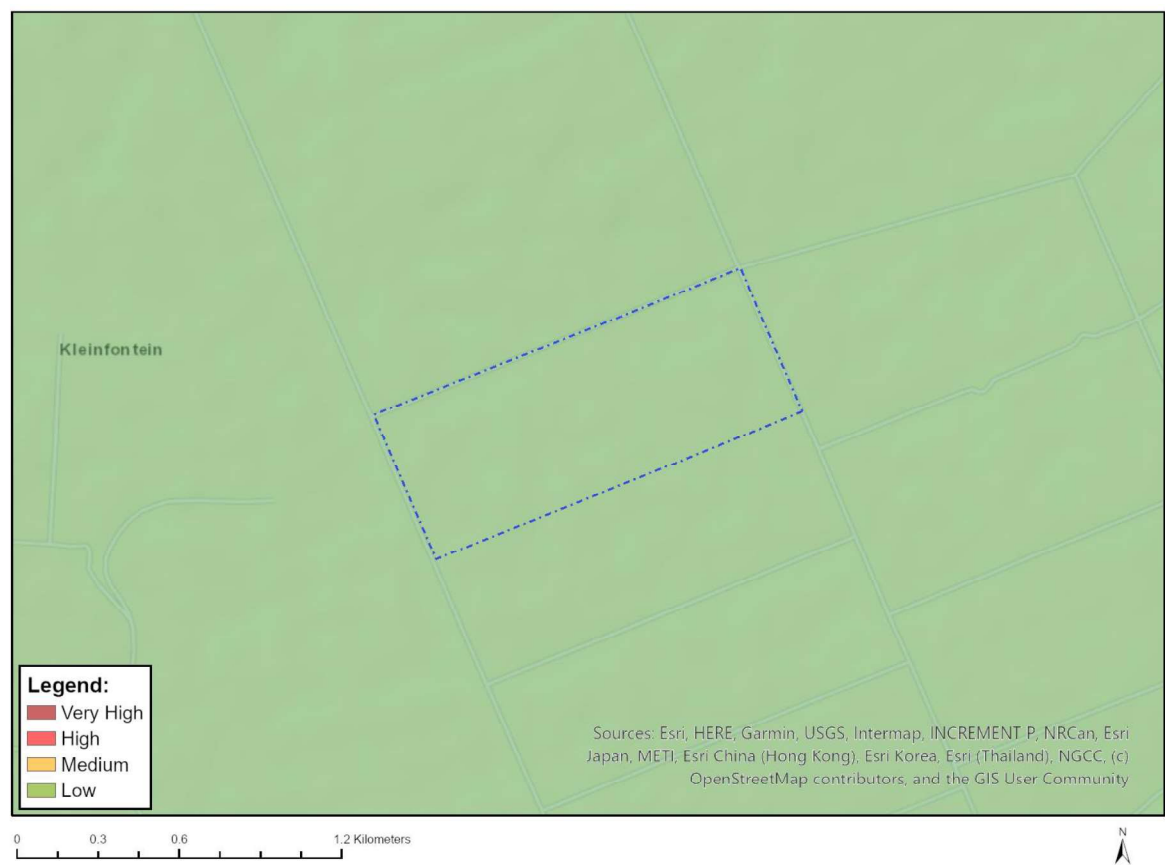


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	CBA 2
Very High	ESA 1

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

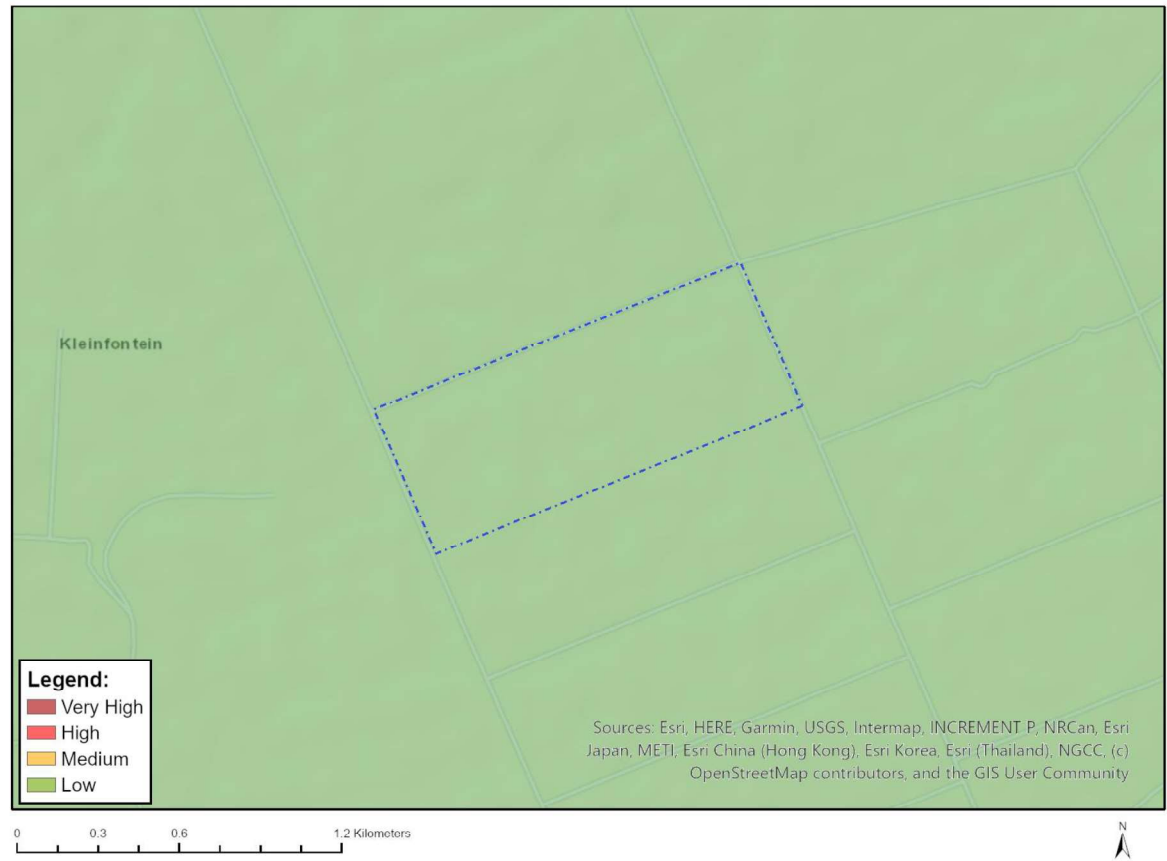


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

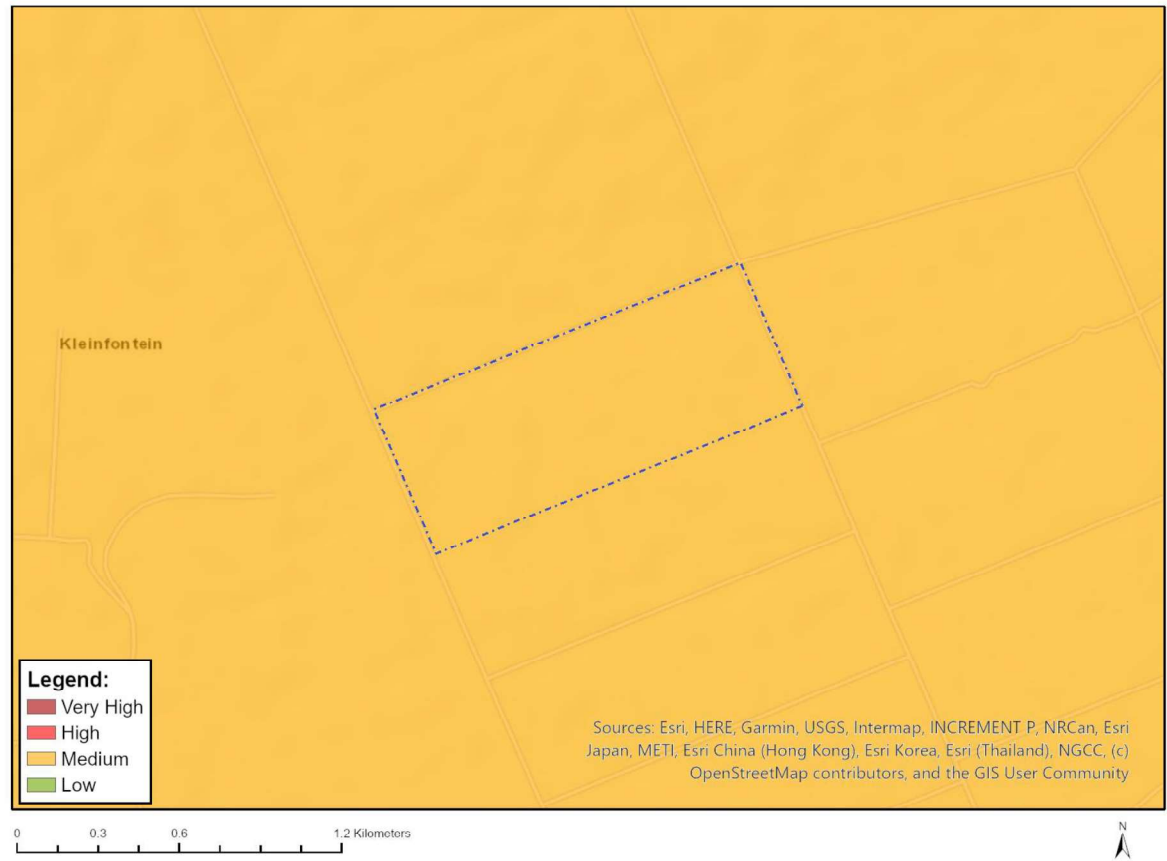


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



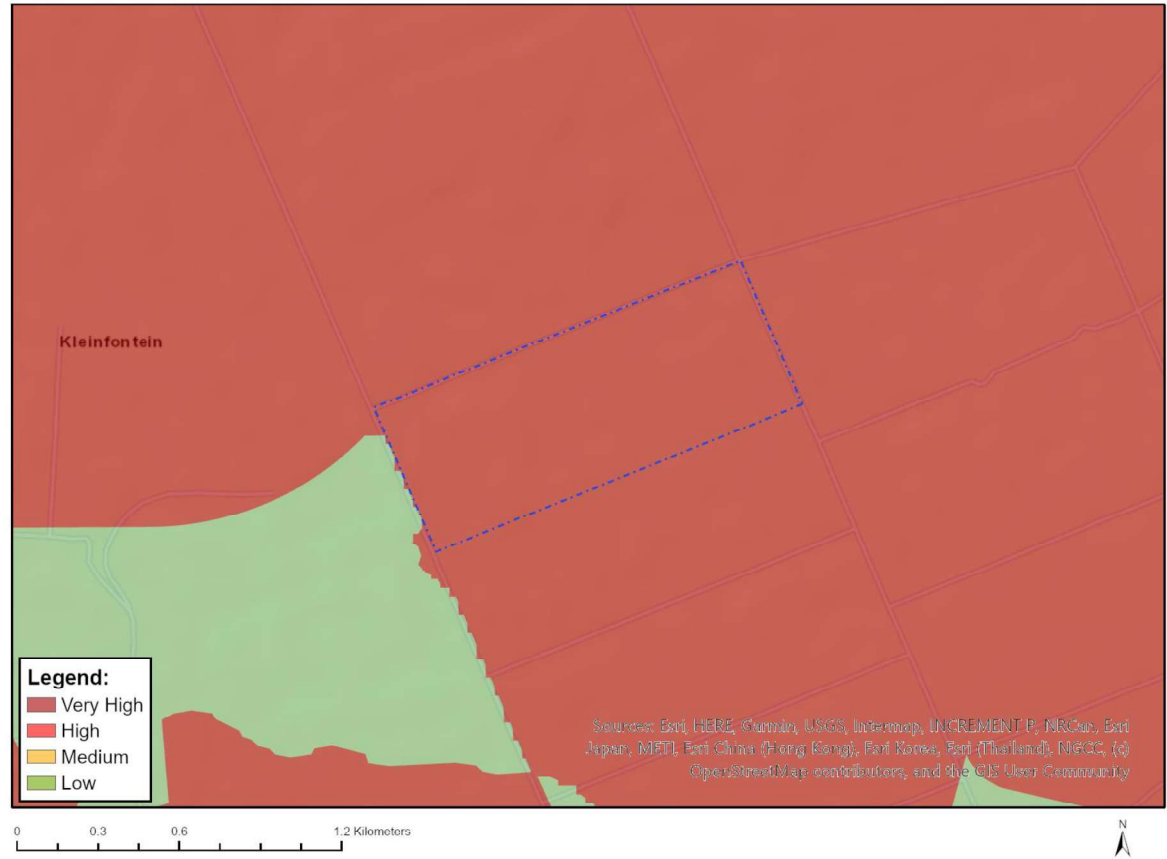
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 2
Very High	National Protected Area Expansion Strategy (NPAES)