FINAL ENVIRONMENTAL SCOPING REPORT

Proposed Expansion of Piggery Operations on Portion 21 Hardig and Rem of Farm Rhenosterpoort 455, Modimolle Municipality, Waterberg District, Limpopo Province

REF: 12/1/9/2-W14

PREPARED FOR Greyling Vark Boerdery (Pty) Ltd.

July 2012

JEC
Environmental Services

JANET EDMONDS CONSULTING cc.
Tel: (033) 940 0450
Fax: 086 219 9059
Email: liz.jec@edelnet.co.za
P O Box 239, Pietermaritzburg, 3200
www.jecenviro.co.za

CONTACT DETAILS

APPLICANT:

Company:	Greyling Vark Boerdery (Pty) Ltd.
Contact Person:	Mr. Jan Greyling
Postal Address:	PO Box 141, Modimolle 0510
Tel Number:	014 717 5901
Fax Number:	014 717 5901
Cell Number:	079 506 5340
E-mail Address:	j.greyvark@yahoo.com

ENVIRONMENTAL ASSESSMENT PRACTITIONER:

Name:	Liz Allan / Lauren Booth
Company:	Janet Edmonds Consulting cc.
Postal Address:	P.O. Box 239 Pietermaritzburg 3200
Tel Number:	033 940 0450
Fax Number:	086 219 9059
Cell Number:	-
E-mail Address:	liz.jec@edelnet.co.za

The Curriculum Vitae (CV) of the Environmental Assessment Practitioner (EAP) is included in Appendix 1.

EXECUTIVE SUMMARY

The proposal involves the refurbishment of the existing piggery operations and the establishment of a second piggery site, at Greyling Vark Boerdery, on the Farm Rhenosterpoort, located approximately 9km south of Modimolle in Limpopo Province.

The existing piggery covers approximately 52 800m^2 and houses 1 000 sows. The proposed development aims to refurbish the existing piggery by upgrading, constructing and/or demolishing the existing infrastructure and expanding operations to accommodate an additional 3 000 sows, bringing the total amount of breeders at the site to 4 000. This will result in a dedicated Breeding Unit. A new piggery specifically for growers and weaners, termed a Grower Unit, is also proposed to be constructed approximately 2.5km east of the existing site, on the same farm. The refurbished and proposed new piggery will be built in line with modern design criteria and will house the latest equipment based on current trends and international standards. A purpose built effluent dam is also proposed for the new piggery. As an energy saving technology, the Applicant is also investigating the possibility of trapping all Methane Gas (CH_4) expelled from the associated effluent dams (existing and proposed) via an impermeable membrane, and converting it into a green energy source via a bio-digester. It is proposed that this energy then be fed back into the system in order to power the piggery operations on the farm, thereby reducing electricity demand on Eskom.

The motivating factors for the project are as follows:

- **Improved Bio-security:** Separation of the Breeding and Grower Units for improved disease control;
- **Improved Water Use Efficiency:** Replacement of out-dated buildings (solid floors) with new buildings (slatted floors) – reduces wash-down requirements;
- **Improved Pig Performance:** Cleaner living conditions due to slatted floors and replacement of open-sided buildings with new buildings featuring automatic curtains for temperature control;
- **Increase in Profits:** An increase in the amount of pigs bred at Greyling Vark Boerdery will result in an increase in return once the capital investment for the expansion and refurbishment has been settled;
- **Decrease in Noise Nuisance:** Due to houses being enclosed, noise should be limited;
- **Decrease in Odour Nuisance:** Impermeable membranes will be placed over both effluent dams (existing and proposed) essentially trapping methane gas and decreasing / limiting odour nuisance; and
- **Reduction in Electricity demand:** Reduction in electricity demand on Eskom due to bio-digester technology.

Adverts were placed in The Post / Die Pos newspaper in both English and Afrikaans, and site posters were placed at the entrance to the Farm; on the main road (R101) just outside Modimolle travelling south towards the property; and on the main road (R101) north of Bela-Bela travelling towards the property. Background Information Documents were circulated to Interested and Affected Parties (I&APs) and the relevant authorities. A Public Meeting was held on 13 April 2011 in order to provide I&APs with more information on the project and to enable I&APs to ask questions and raise any concerns.

The main issues raised during consultation with the authorities and public related to adverse visual impacts, increase in noise and odour for neighbours, additional traffic and labourers on-site, security concerns and potential for contamination of natural water resources.

This report, (Final Scoping Report) has been circulated to all relevant government departments and Stakeholders, and all registered Interested and Affected Parties (I&APs) identified to-date have been notified of the availability of the report for comment and review.

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1 INTRODUCTION

The proposed development requires Environmental Authorisation from the Limpopo Department of Economic Development, Environmental and Tourism (DEDET) in terms of the Environmental Impact Assessment (EIA) Regulations (2010) promulgated under Section 24 of the National Environmental Management Act (NEMA, Act 107 of 1998). In terms of these regulations, the applicant is required to appoint an independent Environmental Assessment Practitioner (EAP) to conduct the process. Janet Edmonds Consulting cc. (JEC) has been appointed as the EAP to conduct the necessary EIA Process.

2 LEGISLATIVE FRAMEWORK

2.1 National Environmental Management Act (NEMA, Act 107 of 1998)

2.1.1 EIA Regulations

In terms of the Environmental Impact Assessment (EIA) Regulations (GNR 543, 02 August 2010), promulgated in terms of the National Environmental Management Act (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GNR 544 and/or GNR 546) or an EIA Process (GNR 545) are required.

The Listed Activities under GNR 544 (Basic Assessment) which are applicable to the proposed development include:

- Item 1 (ii): *"The construction of facilities or infrastructure for the generation of electricity where the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare"*;
- Item 4 (b): *"The construction of facilities or infrastructure for the concentration of animals for the purpose of commercial production in densities that exceed more than 250 pigs per facility excluding piglets that are not yet weaned";*
- Item 12: *"The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010";*
- Item 13: *"The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres";*
- Item 31 (ii)b: *"The expansion of facilities for the concentration of animals for the purpose of commercial production in densities that will exceed 8 square metres per small stock unit, where the expansion will constitute more than 250 additional pigs, excluding piglets that are not yet weaned*"; and
- Item 35: *"The expansion of facilities for agri-industrial purposes outside industrial complexes, where the development footprint of the facility will be increased by a 1 000 square metres or more, with the exception of hatcheries, where activity 36 in this Notice applies".*

No Listed Activities under GNR 545 are triggered by the proposed development. However, Category B Activities under the National Environmental Management: Waste Act (Act 59 of 2008) (NEM:WA) are triggered, therefore a Scoping and EIA Process and Waste License Application are required. The applicable Listed Activities as triggered in terms of NEM:WA are detailed below in Section 2.1.2.

2.1.2 National Environmental Management: Waste Act (Act 59 of 2008)

In terms of the National Environmental Management: Waste Act (NEM:WA, Act 59 of 2008, "the Waste Act"), there are certain Listed Activities related to waste storage, treatment and disposal that require a Basic Assessment or EIA Process to be conducted as part of the Waste Management License Application ("Waste License"). The Listed Activities are divided into two Categories, dependent on the nature of the waste.

The Waste Act Activities are classified as either:

- **Category A** – those requiring a Waste Management License Application and a Basic Assessment Process; or
- **Category B** – those requiring a Waste Management License Application and an EIA Process.

The Listed Activities triggered with regards to the proposed development are listed below:

Category A:

- Item 1: *"The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons";*
- Item 3: *"The storage, including temporary storage of general waste in lagoons";*
- Item 8: *"The recovery of waste including the refining, utilisation or co-processing of waste at a facility that has the capacity to process in excess of 3 tons of general waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises";*
- Item 9: *"The biological, physical or physico-chemical treatment of general waste at a facility that has the capacity to process in excess of 10 tons of general waste per day";*
- Item 10: "*The processing of waste at biogas installations with a capacity to process in excess of five tons per day of bio-degradable waste";*
- Item 17: *"The storage, treatment or processing of animal manure at a facility with a capacity to process in excess of one ton per day";*
- Item 18: *"The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity)"; and*
- Item 19: *"The expansion of facilities or of changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste."*

Category B:

- Item 7: *"The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000m^3 or more";*
- Item 10: *"The disposal of general waste to land covering an area in excess of 200m^2"; and*
- Item 11: *"The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity)".*

Therefore, although the legislation requires that a Basic Assessment Process be conducted under the NEMA as only Listed Activities under GNR 544 are triggered and not those under GNR 545; Listed Activities under Category B of the NEM:WA are triggered, therefore stipulating that a full Scoping and EIA Process is required. Hence the entire EIA Process will be conducted under one Environmental Authorisation Process taking into account both the NEMA triggers and the NEM:WA triggers.

Based on the above, the Applicant is therefore required to appoint an independent Environmental Assessment Practitioner (EAP) to conduct the necessary process. A copy of the revised Environmental and Waste License Application Forms (with details of the EAP) is included in Appendix 2. Confirmation of receipt of the Application by the DEDET is also included in Appendix 2.

2.1.3 Purpose of the Process

The aim of the EIA Regulations is to assess the possible environmental impacts that may arise from a proposed development, in order to make an informed decision on the future of the proposed development. Scoping is carried out at as Phase 1 of the Scoping and EIA Process and aims to identify all potential issues, impacts and project alternatives. The project then proceeds into Phase 2, the EIA Phase, during which the potential impacts and alternatives identified in the Scoping Phase are investigated in further detail. This phase also includes Specialist Studies to investigate certain potential impacts in more detail.

Public Participation forms a major part of the Scoping and EIA Process, and aims to assist in identifying potential impacts and areas of concern through consultation with interested and affected parties (I&APs).

Based on the findings of the Scoping and EIA investigation, the following outcomes are possible:

- The DEDET may determine that the proposal is too environmentally detrimental and will refuse the application; or
- The DEDET may determine that the issues identified in the EIA Process can be mitigated and will then issue Environmental Authorisation in the form of a Record of Decision, with or without conditions attached.

2.1.4 Sustainable Development

The principle of sustainable development has been established in the Constitution of the Republic of South Africa, and is given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations.

Thus sustainable development requires that:

- *The disturbance of ecosystems and loss of biological diversity is avoided, or, where it cannot be altogether avoided, is minimised and remedied;*
- *That pollution and degradation of the environment is avoided, or, where it cannot be altogether avoided, is minimised and remedied;*
- *The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
- *Waste is avoided, or where it cannot be altogether avoided, is minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
- *A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
- *Negative impacts on the environment and on people's environmental rights are anticipated and prevented, and where they cannot altogether be prevented, are minimised and remedied.*

2.1.5 "Polluter Pays" Principle

The "polluter pays" principle states that '*the cost of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment*'.

Section 28 of NEMA makes provision that anyone who causes pollution or degradation of the environment is responsible for preventing impacts occurring, continuing or recurring, and for the costs of repair of the environment. In terms of the provisions under Section 28:

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

2.2 National Water Act (Act 36 of 1998)

The project proposal falls within the ambit of the National Water Act (Act 36 of 1998) because of the proposed water use, storage and potential to cause pollution of water resources defined under the Act.

The National Water Act recognises that water is a natural resource that belongs to all people. The National Water Act regulates the manner in which persons obtain the right to use water and provide for just and equitable utilisation of water resources.

Sustainability and equity are identified as central guiding principles in the protection, use and management of water resources. These guiding principles recognise:

- *The basic human needs of present and future generations;*
- *The need to protect water resources;*
- *The need to share some water resources with other countries; and*
- *The need to promote social and economic development through the use of water.*

Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed and which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

Part 5 of the National Water Act deals with pollution of water resources following an emergency incident. This could include an accident involving the spill of a harmful substance that finds or may find its way into a water resource. In terms of Section 30 of NEMA and Section 20 of the National Water Act, the responsibility for remedying the situation rests with the person responsible for the incident or the substance involved. If there is a failure to act, the relevant Catchment Management Agency may take the necessary steps and recover the costs from the responsible person(s).

2.2.1 Water Use Licensing

Water use requires a licence or other form of regulatory authorisation under the National Water Act. For the purposes of the National Water Act, 'water use' includes, among other things:

- *Taking water from a water resource;*
- *Storing water;*
- *Stream flow reduction activities;*
- *Diverting the flow of water in a watercourse;*
- *Disposing of waste in a manner that may detrimentally impact on a water resource;*

- *Altering the bed, bank, course or characteristics of a watercourse; and*
- *Controlled Activities, such as irrigating with waste, power generation with water, atmospheric modification or recharging an aquifer.*

2.3 National Veld and Forest Fire Act (Act 101 of 1998)

The purpose of the National Veld and Forest Fire Act is to prevent and combat veld, forest and mountain fires throughout South Africa. The Act provides regulations for the establishment, registration, duties and functioning of fire protection associations. In addition it provides for the prevention of veld fires through a fire emergency rating system. Chapter 4 of the Act places a duty on owners to prepare and maintain firebreaks, and provides regulations on the role of adjoining land owner. Chapter 5 places a duty on all owners to acquire fire fighting equipment and have personnel available to combat fire. Chapter 6 provides regulations on offences and penalties.

There will need to be fire prevention infrastructure installed into the refurbished piggery buildings, as well as in the new piggery buildings.

2.4 Conservation of Agricultural Resources Act (Act 43 of 1983)

The Conservation of Agricultural Resources Act (CARA) is an Act of the National Department of Agriculture and makes provision for the conservation of the natural agricultural resources of South Africa through:

- *Maintaining the production potential of land;*
- *Combating and prevention of erosion;*
- *Preventing the weakening or destruction of water sources;*
- *Protecting the vegetation; and*
- *Combating weeds and invader plants.*

Part 1 of the Act deals with the cultivation control measures. Sections of the Act relevant to the establishment of the plantations are listed below:

- *Section 7 (1) states that 'no land user shall utilise the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 metres horizontally outside flood area in a manner that causes or may cause the deterioration of or damage to the natural agricultural resources'.*
- *Section 9 (1) states that 'every land user shall… protect the veld on his farm unit effectively against deterioration and destruction'.*

The proposed development will make use of agricultural land for high intensity agricultural production, in the form of pig production. Furthermore, the proposed development has been sited outside of a wetland area, however this will need to be investigated in further detail on-site with the

use of a specialist Wetland Delineation Report (Section 9 – Plan of Study for EIA).

Amended Regulations 15 and 16 of CARA were promulgated on 30th March 2001. These changes were necessitated by the accelerating deterioration of South Africa's natural resources due to invasion by alien invasive plants, as well as a heightening public awareness with regards to environmental matters. With the amendments, the Act now boasts a far more comprehensive list of species that are declared weeds and invader plants and has also divided the species into three categories.

Category 1 species (e.g. Triffid Weed, Lantana) are generally the worst offenders. They are declared weeds and may not occur on any land or on any inland water surface throughout South Africa. No person is allowed to sell, advertise, exhibit, transmit, send, deliver for sale, exchange or dispose of any weed. It is also illegal to cause or permit the dispersal of any weed from one place to another.

Category 2 species (such as pine and eucalyptus) are also problematic but are commonly grown for commercial purposes or any viable and beneficial function, such as woodlots, fire belts, wind breaks, building material, animal fodder and soil stabilization. These invader plants can only be grown in areas demarcated as sites where such plants may be established, retained and strictly controlled.

The land user also has to ensure that steps are taken to curb the spread of propagating material of the invader plants to land and inland water surfaces outside the demarcated areas. Category 2 species are regarded as weeds outside of these demarcated areas, and landowners are required to take steps to control the species where they occur on their properties.

Category 3 plants (such as Jacarandas) are generally ornamental plants, which may be retained, but no new planting or trade or propagating of these plants is permitted.

If weeds or invader plants occur contrary to the provisions of these regulations, the land user must control them by means of any of the control methods that are appropriate for the species concerned. Any action taken to control weeds or invader plants must be executed with caution and in a manner that will have minimal environmental impact. If a landowner fails to comply with these regulations, a criminal case may then be brought against the landowner and the National Department of Agriculture may issue a directive setting a date by when the property must be cleared.

3 METHODOLOGY FOR THE SCOPING PHASE

The methodology for the Scoping and EIA Process is based on the procedures detailed in Regulations 26 to 35 of the Amended EIA Regulations (2010), promulgated in terms of Section 24(5) of the NEMA in Government Notice (GNR) 543.

The entire EIA Process will be completed in two phases, with the Scoping Process as Phase 1 and the EIA Process as Phase 2. The Scoping Phase is described below. The proposed scope of work for the EIA Phase of this project is described in more detail in the Plan of Study for EIA (see Section 9).

3.1 Site Visit & Baseline Information Gathering

The project was initiated by a meeting with the Applicant to discuss the proposed development. Further to this, site visits were undertaken to gather more detailed baseline environmental information and identify the sensitivity of the sites. This was supplemented by information gathered through related desktop and field studies, including:

- Soils (type, erosive potential, contaminants);
- Topography (visual aspects, steepness of slope, stability);
- Surface / groundwater (presence of sensitive hydrological features e.g. wetlands and aquatic ecology);
- Biodiversity (presence of sensitive vegetation communities and fauna, specifically Red Data species);
- Air quality and noise (effect of increased levels); and
- Socio-economic impacts (effect on neighbouring landowners / surrounding land uses e.g. traffic, employment, agriculture).

3.2 Application

The official Application Form, provided by the Competent Authority (DEDET), was duly completed with all the necessary details, including contact details of, and signed declarations by, the Applicant and EAP. It also included a description of the proposed development, applicable listed activities and a map showing the property location. This was then submitted to the DEDET on 09 March 2011. The project was issued the EIA reference number: 12/1/9/2-W14 (see Appendix 2).

3.3 Public Participation

Following submission of the Application, a Public Participation Process, as described in Regulation 54 to 57 of the Amended EIA Regulations, was undertaken. This included:

- Advertisements in Die Pos/The Post newspapers in English and Afrikaans;
- Placement of English and Afrikaans site notice boards at the entrance to the property, as well as on the major access routes;
- Circulation of Background Information Documents by fax, post and e-mail; and
- Holding a Public Meeting at the Modimolle NG Kerk on 13 April 2011.

More detail on the Public Participation Process is provided in Section 6 of this report.

3.4 Reporting

3.4.1 Scoping Report

This Scoping Report summarises the procedure followed during the course of the Scoping Phase. It includes a description of the proposed activity and property, as well as a description of the related geographical, physical, biological, social, economic and cultural environments.

All documentation regarding the Public Participation Process is incorporated into this Report, including notification methods, copies of adverts and notice boards, a list of all I&APs and a copies of concerns and objections raised.

All relevant legislation pertaining to the proposed activity is identified and has been considered. The need and desirability of the proposed activity has also been explored and any feasible alternatives are identified and evaluated.

The report is supplemented with other relevant and necessary documentation, including maps, photographs, layouts, designs etc.

The purpose of this Scoping Report is to identify the potential impacts and alternatives of the proposed development. It also includes a Plan of Study for EIA (see Section 9). The Plan of Study for EIA identifies the relevant Specialist Studies which will need to be undertaken during Phase 2, the EIA Phase, as well as further Public Participation to be conducted.

3.4.2 Circulation of Documentation

This Scoping Report has been made available to I&APs for review and comment. Comments received in response to this Scoping Report will be attached to, summarised and responded to in a final version of the Scoping Report, which will then be submitted to the Competent Authority (DEDET) for consideration.

3.4.3 Consideration of Documentation by the Competent Authority

Within 30 days of receipt of the final version of the Scoping Report, the Competent Authority will acknowledge receipt of the Report and state whether it is accepted, rejected or if any further information is required. Should additional information be necessary, the report will need to be amended, re-circulated for comment, finalized and re-submitted to the Competent Authority. When the Scoping Report is acceptable, the process can then advance into the EIA Phase.

A schematic illustrating the EIA process is provided in Figure 1 below.

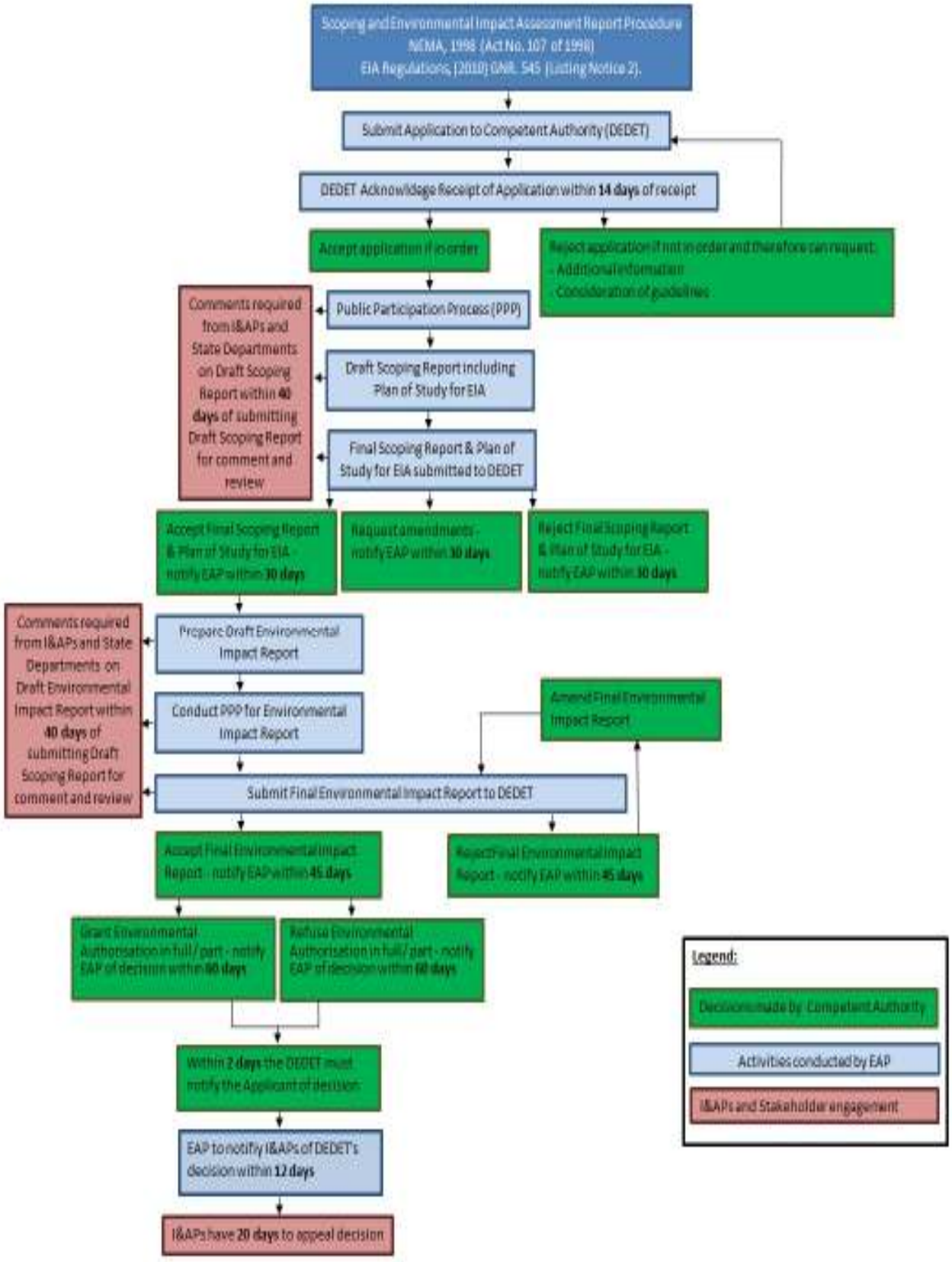


Figure 1: EIA Process flowchart

4 THE PROPOSED DEVELOPMENT

4.1 Property Location and Land Description

The property on which the development is proposed is Portion 21 Hardig and Rem of Farm Rhenosterpoort 455, which in total are 214.133 hectares (ha) in extent. The properties, which are operated as one farm (i.e. the Farm Rhenosterpoort), are located east of the R101, between Bela-Bela (Warmbaths) and Modimolle (Nylstroom) approximately 9km south-west of Modimolle (Nylstroom), southern Limpopo Province.

The farm currently features an existing piggery, which is 52 800m^2 in extent and which houses 1 000 sows. This piggery is proposed to be refurbished in order to contain 4 000 sows. The addition of 3 000 sows at the piggery will not be an immediate process, but will rather be an accumulation of sows, over time, as finances permit. An existing effluent dam on the property serves this piggery. It is proposed that the refurbished piggery becomes a specialized Breeding Unit, and all existing growers and weaners will be moved to the proposed new purpose built piggery, the Grower Unit. The GPS co-ordinates of the existing piggery, which is to be refurbished for the purpose of a Breeding Unit are: 24° 45′ 52.53″S; 28° 21′ 49.18″E.

The development of a new Grower Unit on-site is proposed to be 105 700m^2, and is proposed to contain growers and weaners only. The GPS co-ordinates for the Grower Unit site are: 24° 45′ 50.54″S; 28° 23′ 37.99″E. A new purpose-built effluent dam is proposed to be developed for the Grower Unit, with a surface area of approximately 9 000m^2. A bio-digester for the purpose of electricity generation is proposed to be placed over the existing effluent dam at the Breeding Unit, as well as the proposed effluent dam at the proposed Grower Unit in order to trap and convert methane gas (CH_4) into electricity. The existing piggery (Breeding Unit) and proposed site for the new piggery (Grower Unit) are illustrated on Topographic Map 2428CD Modimolle and aerial photograph in Figures 1 and 2.

The property is currently under agricultural use and is zoned as such. The proposed position of the Grower Unit is located on disturbed grasslands which have been previously cultivated. A wetland, defined by the National Water Act (Act No. 36 of 1998) as "*land which is transitional between terrestrial and aquatic systems, where the water table is usually at, or near the surface, or the land is periodically covered with shallow water and which land in normal circumstances supports, or would support, vegetation adapted to life in saturated soil*", lies between the Breeding Unit and the Grower Unit. This area will be delineated by a wetland specialist in the EIA Phase of the application (assuming acceptance of the Scoping Report) in order to determine the extent of the wetland area, so as to avoid any disturbance to this sensitive environment.

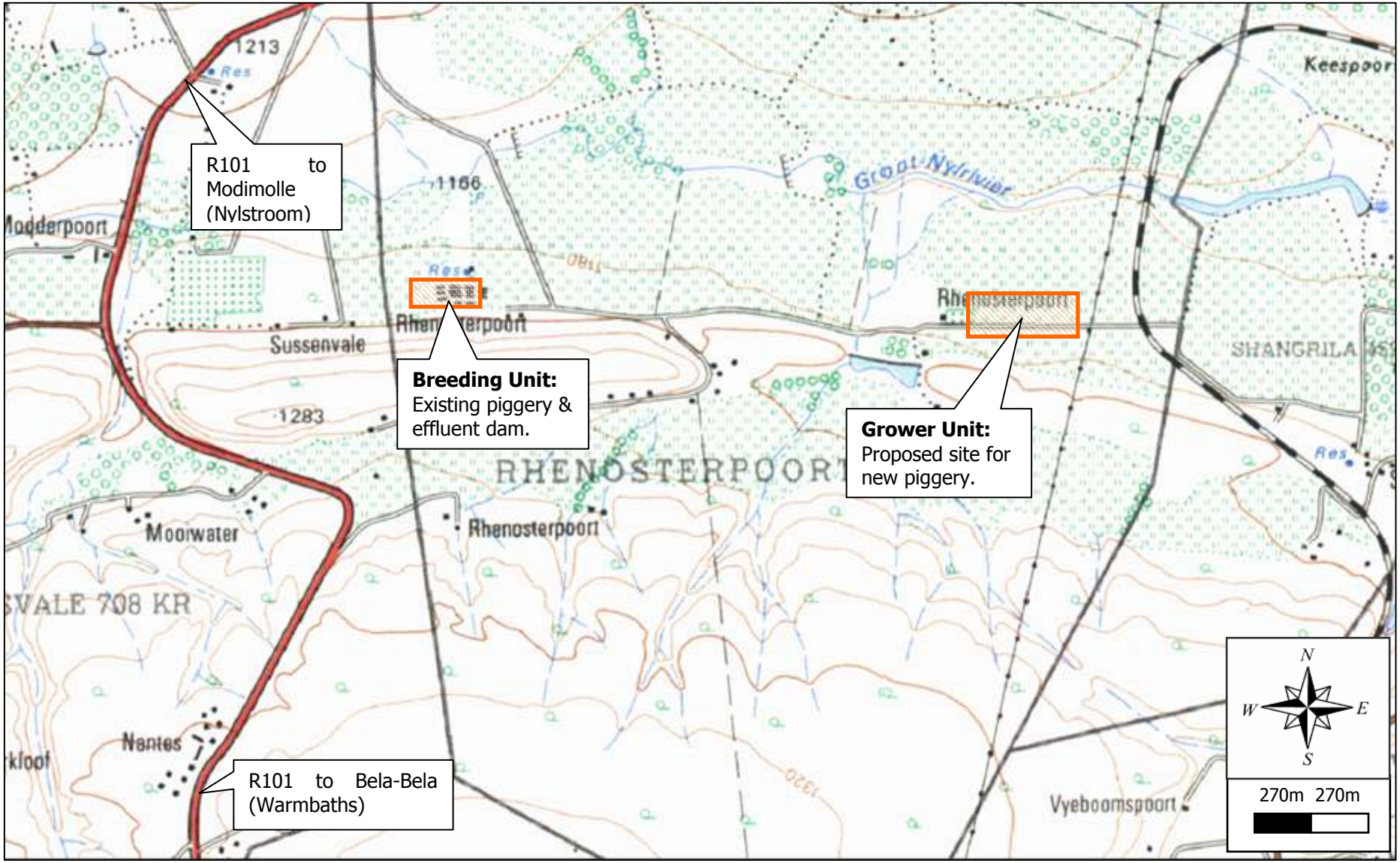


Figure 2: Topographic map showing the site of the existing piggery, proposed expansion sites and the surrounding area (Source: Topographical Map 2428CD Modimolle).

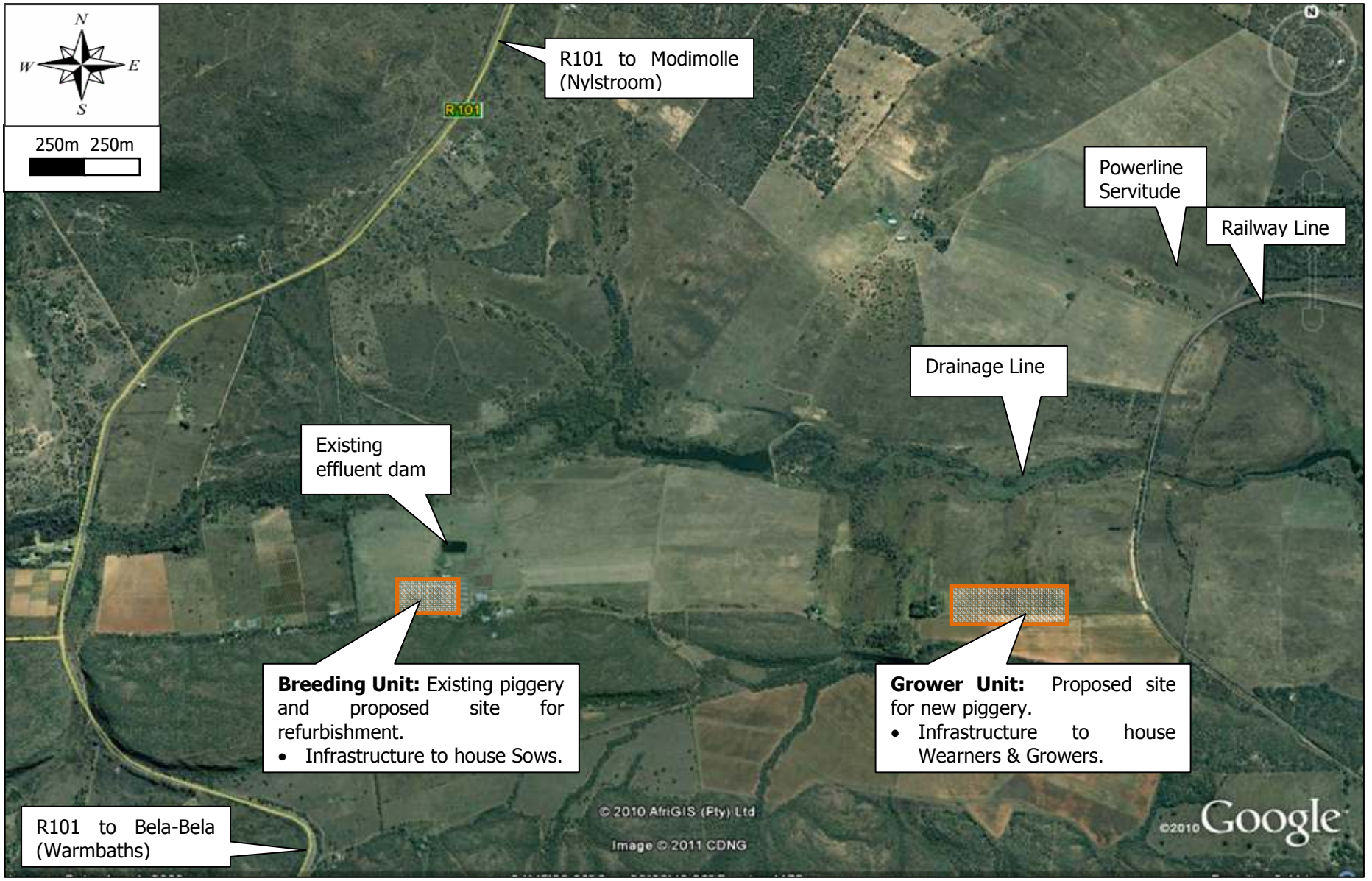


Figure 3: Aerial photograph showing the location of the existing piggery, proposed expansion site and surrounding land-uses.

4.2 The Proposal

4.2.1 Background

Greyling Vark Boerdery (Pty) Ltd. proposes to expand the existing piggery operations on the Farm Rhenosterpoort from 1 000 to 4 000 sows through the refurbishment of the existing piggery into a specialised Breeding Unit, as well as by constructing a new, a purpose built Grower Unit, approximately 2.5km east of the existing piggery site.

Current operations at the existing piggery include the breeding of pigs in order to increase numbers, termed "breeders" and the feeding and maintenance of pigs for commercial sale termed "growers". The existing piggery therefore houses infrastructure for both breeders and growers. The proposed refurbishment of this piggery into a specialised Breeder Unit will allow for the housing of breeders / sows only. The proposed Grower Unit has been designed to accommodate growers and weaners (i.e. young pigs, recently separated from sows) separately.

The refurbishment of the existing piggery into a specialised Breeder Unit involves the expansion and re-capitalisation of operations at Greyling Vark Boerdery. The expansion involves increasing the capacity of the existing piggery, while the re-capitalisation refers to the improvement of existing infrastructure through replacement of old, out-dated buildings and equipment, with new buildings of a more modern and efficient design, in line with international standards and trends in pig housing. An example of this is that the flooring in the existing piggery will be changed from solid to slatted flooring. Slatted flooring allows for excrement, spilled food and other waste products to be easily washed through to a lower level, usually a shallow drainage trench, which leads to an effluent dam for disposal. As such, slatted flooring allows for the easier cleaning of the pig holding pens.

Secondly, the proposal includes the development of a new piggery, a purpose built Grower Unit, at Greyling Vark Boerdery, located approximately 2.5km east of the existing piggery. The Grower Unit, which too will be built to modern design criteria and in-keeping with efficient design infrastructure, will have a roof area of 105 700m^2. The floor area, where possible, will be slatted and the housing structures will be enclosed to prevent exposure to the elements, while containing noise nuisance and limiting odour.

The proposed site for the Grower Unit was selected based on the following:

- Proximity to a water source;
- Road access;
- Orientation;
- Topography ; and
- Bio-security (maximum distances required between Grower Unit and Breeding Unit).

Effluent and bio-gas

An on-site effluent dam already serves the existing piggery. This effluent dam will continue to serve operations at the Breeder Unit only. A new effluent dam however will be required in order to capture the effluent from the Grower Unit. From both effluent dams, the Applicant proposes to capture methane gas (CH_4) which is to be converted via a bio-digester into electricity, which is to be fed back into Greyling Vark Boerdery's operations, thus reducing demand on Eskom. The technology of bio-digesters is currently being investigated in order to extract and convert the methane gas into electricity. The only emission envisaged to be released during this process, at this stage of the investigation, is Carbon Dioxide (CO_2). This technology will therefore potentially reduce, if not eliminate, odour nuisance from the effluent dams as they will be permanently covered with an impermeable membrane in order to contain the methane gas.

Footprint, transportation and water requirements

In total, the footprint of the proposed refurbishment (Breeding Unit), as well as the construction of the Grower Unit, will be approximately 121 900m^2, where currently the existing operational footprint is 16 900m^2. The increase in the number of pigs housed at Greyling Vark Boerdery will increase the number of transportation vehicles required to access the farm weekly, as well as the amount of water required in order to run operations. At present, with 1 000 sows being housed at the existing piggery, six (6) transportation trucks access the site per week. With the conversion of the existing piggery into a Breeding Unit, thereby increasing the number of sows by 3 000 (i.e. 4 000 sows housed on-site in total), it is expected that the number of trucks required to access the site per week will be twenty-eight (28). Likewise, the volume of water currently utilised to maintain 1 000 sows on-site is 1 630m^3 / week. The proposed refurbishment will require that 8 150m^3 of water be utilised per week.

The Grower Unit will also require delivery of food supplies, as well as water on a weekly basis. The cumulative impact of transportation vehicles, as well as water requirements to both the Breeding and Grower Units at Greyling Vark Boerdery will be assessed in the EIA Phase of the process.

4.2.2 Motivation / Need and Desirability

Housed pig systems, such as the one proposed by Greyling Vark Boerdery, allow for the pigs conditions to be monitored, ensuring minimum fatalities and increased productivity. The housing is ventilated and temperature regulated, as pigs have a limited tolerance to high temperatures. Heat stress can lead to death, as pigs do not possess sweat glands, therefore they cannot cool themselves. Furthermore, regulating temperature within the pig-tolerance range maximizes growth and growth to feed ratio.

Confining pigs to individual stalls, as is proposed, allows each pig to be allotted a portion of feed. The individual feeding system also facilitates individual medication of pigs through feed, ensuring medical well-being.

The main motivation factors for the development of a proposed Breeding and Grower Unit on-site are listed below:

- **Improved Bio-security:** Separation of the Breeding and Grower Unit for improved disease control;
- **Improved Water Use Efficiency:** Replacement of out-dated buildings (solid floors) with new buildings (slatted floors) – reducing wash-down requirements;
- **Improved Pig Performance:** Cleaner living conditions due to slatted floors and replacement of open-sided buildings with new buildings featuring automatic curtains for temperature control;
- **Increase in Profits:** An increase in the amount of pigs bred at Greyling Vark Boerdery will result in an increase in return once the capital investment for the expansion and refurbishment has been settled;
- **Decrease in Noise Nuisance:** Due to pig houses being enclosed, noise nuisance should be limited;
- **Decrease in Odour Nuisance:** Impermeable membranes will be placed over both effluent dams (existing and proposed) essentially trapping methane gas (CH_4) and decreasing / limiting odour nuisance; and
- **Reduction in Electricity demand:** Reduction in electricity demand on Eskom due to bio-digester technology.

Plate 1 illustrates the old style Breeder Units which are to be refurbished. Open sides allow for noise and odour nuisance to escape into the surrounding environment, whereas the proposed houses as illustrated in Plate 2 show closed sides, which assist in internal temperature control and noise and odour control. Plate 3 illustrates the existing grower conditions, which too will be upgraded in the new Grower Unit.

Plate 1: Old style breeder unit with open sides and concrete and slatted floors.

Plate 2: New style unit with closed sides and fully-slatted floors.

Plate 3: Existing grower unit showing open-sided buildings which are susceptible to seasonal changes.

The existing piggery is out-dated due to the use of solid floors and open-sided buildings which are susceptible to the elements and seasonal changes. Large volumes of water are also utilised during cleaning operations due to current design specifications (see Plates 1 and 2). Furthermore, the solid floors do not allow waste to drain away from the buildings, creating dirty conditions inside the units, which is often associated with unpleasant odours and fly nuisance (Plate 4). This results in poorer pig performance and production.

Plate 4: Existing piggery showing solid floors which result in dirty conditions and need high volumes of water for cleaning.

4.2.3 Site Requirements

In choosing the site for the new piggery, a number of factors need to be considered in order to satisfy several requirements. These are:

- Bio-security – The grower site must be a maximum distance away from the breeding site to ensure that any diseases are not easily spread;
- Topography – The grower site requires flat land in order to reduce the necessary earthworks, and therefore building costs;
- Orientation - The housing needs to be positioned in a north-facing arrangement, for prevention of direct sunlight onto the pigs; and
- Services - The site needs to be located close to services, including water supply, electricity and road access.

4.3 Project Description

4.3.1 Description of the Proposed Upgrading of the Breeding Unit

The proposal is to convert the existing piggery to a specialised Breeding Unit. Some existing buildings are to be demolished and / or re-configured. The following new buildings are to be erected:

- Four (4) new Farrowing Houses with a footprint of 1 584m^2 each;
- Six (6) new Dry Sow Houses of which four (4) will have a footprint of 1 624.5m^2 each and two (2) will have a footprint of 712.5m^2 each; and
- 2 new Gilt Houses with a footprint of 712.5m^2 each.

Existing sheds and associated infrastructure, including two existing Dry Sow Houses with a footprint of 712.5m^2 each and two existing weaner houses will remain at the Breeding Unit site, as is illustrated on the Layout Plan: Breeding Unit (Appendix 3). Individual layout designs for the Farrowing Houses, Dry Sow Houses and Gilt Houses are attached as Appendix 4.

The ultimate goal of the Applicant is to increase the number of sows at the Breeding Unit from 1 000 (as it currently stands) to 4 000. This is not to be immediately achieved. Instead the Applicant hopes to reach this number as and when finances permit, and when the need arises in terms of pig farming productivity.

4.3.2 Description of the Proposed Grower Unit

The proposal is to construct a purpose built Grower Unit, with an overall footprint of 105 700m^2, 2.5km to the east of the existing piggery (Breeder Unit). The growers currently housed at the existing piggery will be relocated to the new Grower Unit. The new Grower Unit is proposed to comprise twenty-four (24) houses, each covering 1 326m^2, and orientated in a north-facing direction. Each grower house will be able to accommodate 1 200 growers, which equates to 28 800 growers in total. However, it must be noted that this maximum capacity will not be reached at any one time due to production and/or cleaning requirements of the grower houses.

Twelve (12) weaner houses will be constructed at the same site, forming part of the Grower Unit. The weaner houses will be 486m^2 in size (Appendix 5: Grower Unit). It is proposed that each house will be able to accommodate 1 200 weaner pigs, which equates to 14 400 in total. Each weaner house will contain 28 pens, of which four of the pens will contain 30 weaners each, and the remaining 24 pens will contain 45 weaners each. It is important to note however, that not all of the houses will be fully occupied at any one time as this is dependent on production cycles and cleaning requirements.

4.3.3 Description of Facilities (Breeding and Grower Unit)

Each of the newly constructed houses, for both the Breeding and Grower Units, will be constructed of metal, with silver IBR sheeting as the roofing material. The houses will feature fully slatted concrete floors. This will allow for any waste produced by the pigs to drain away quickly, resulting in cleaner living conditions for the pigs (see Plate 5). Furthermore, odours and fly problems will be reduced, and less water will be required during the cleaning operations.

Plate 5: Proposed design showing slatted concrete floor.

The houses will also feature automatic drop-down curtains and insulated ceilings which will serve to control seasonal fluctuations in temperature and air movement, which can adversely affect production (see Plate 6).

Use will also be made of walkways (see Plate 7) to ensure that the movement of pigs are controlled. Security lighting will be necessary at night. This light will be directed inwards into the houses so as to avoid light pollution at night.

Plate 6: Proposed design of houses showing clean conditions and automatic drop-down curtains.

Plate 7: Concrete walkways for efficient control of pigs outside of houses.

4.3.4 Description of Services

ELECTRICITY on the property currently consists of overhead supply to the existing piggery, via Eskom. Eskom will continue to supply the Breeding Unit once constructed. It is proposed that this infrastructure will be extended to supply the new Grower Unit. Comment and capacity from Eskom in this regard will be sourced and confirmed as they receive a copy of this report.

It is proposed that a further electricity supply will be sourced via the proposed bio-digester which will convert Methane Gas (CH_4) from the effluent dams into energy. As is noted in Section 4.2, the Applicant proposes to cover both the existing effluent dam and the proposed effluent dam for the Grower Unit with an impermeable membrane. By covering and essentially trapping the CH_4, which is expelled by the collected effluent, it is possible to convert the gas into electricity via the means of a bio-digester. This electricity can then be fed back into operations at the piggery, thus reducing the piggery's reliance on Eskom for electricity supply. This technology will be further assessed in the EIA Phase of the application as it is still under investigation.

WATER for the existing piggery is currently sourced from existing boreholes on the property. Current use of water for existing operations is 580m^3/day. As an estimation, the Grower Unit would also use approximately 580m^3/day. Thus a total of approximately 1 160m^3/day would be required to run both operations on-site, i.e. Breeder Unit and Grower Unit. The Applicant already holds Water Registration Certificates from the Department of Water Affairs and Forestry, whereby rights in terms of the National Water Act exist, permitting the Applicant to abstract water from a water resource in the amount of 811 900m^3/year (see Appendix 6: Registration Certificates).

It should also be noted that the proposed building designs and drinking systems proposed to be installed at the Breeding Unit, are more superior and efficient than the existing systems, in terms of water use. Thus water requirements may decrease. This also applies to the proposed Grower Unit, as brand new, water efficient systems will be installed, in keeping with international norms and standards. Furthermore, wash-down requirements will be reduced due to the use of slatted floors.

EFFLUENT from the existing piggery is currently directed to the existing effluent dam, located immediately downslope of the piggery buildings. The solids are separated and composted for use on dry lands, while the remaining liquid effluent is used for irrigation on cultivated lands. The existing effluent dam has a surface area of approximately 7 000m^2. This effluent dam will continue to serve the refurbished Breeding Unit, however the management of the solids and liquid will change according to the specifications of the proposed bio-digester technology, currently being investigated, as noted above. This will be investigated in further detail in the EIA Phase.

The proposed Grower Unit will require a purpose built effluent dam. The effluent dam will be clay-lined and is expected to have a lifespan of 20 years, before excavation of solids will be required. However, as is the case with the existing effluent dam, the methane gas (CH_4) as released by the effluent is proposed to be captured with the aid of an impermeable membrane, which will cover the dam. This gas will then be converted into electricity via the aid of a bio-digester. The only emission envisaged to be released at this stage, during the energy conversion process is Carbon Dioxide (CO_2), which is odourless. Bio-digesters are proposed to be fitted to both effluent dams (existing and proposed) and should aid in decreasing odour nuisance to surrounding properties. The proposed new effluent dam will have a surface area of approximately 9 000m^2.

In terms of the specifics of the bio-digester technology, this is still being investigated by the Applicant. However, in order for an effluent dam to operate efficiently, bacteria management is vital. The bacterial process is managed by sampling the pH levels in the dam. If the pH level drops below 4, lime is added to increase the pH to approximately 6. Effluent dams are generally 3 metres deep to ensure that the temperature of the effluent remains fairly constant at approximately 42^oC, which aids bacteria growth and function.

STORMWATER from within the existing piggery is currently directed to the effluent dam. This creates a number of management challenges as it reduces the available volume in the dam for pure effluent, thereby necessitating active and ongoing management of the effluent dam. With the proposed conversion of the existing piggery to a specialised Breeding Unit, clean stormwater from roofs will be directed to open lawned areas for infiltration, limiting effluent dilution and increasing the volume available for effluent.

At the proposed Grower Unit, stormwater from paved areas (i.e. potentially contaminated by pigs) will be directed to the purpose-built effluent dam. Stormwater from roofs will be clean water and will therefore be directed to open lawned areas or contours which will direct it to the nearest natural water resource. Use will need to be made of rock-lined drains and velocity dissipaters to ensure that erosion is prevented along the stormwater route and at its end-points.

ACCESS AND TRAFFIC to the existing piggery is via the existing gravel district road which adjoins the R101. Access to the Grower Unit will be along the same district road, travelling through the property (Farm Rhenosterpoort) on the existing gravel access road to the site.

Approximately twenty-eight (28) deliveries per week will need to be made to the Breeding Unit, where currently only six (6) are made per week. The amount of deliveries required in order to sustain the Grower Unit will also increase the amount of deliveries required to be made to Greyling Vark Boerdery

per week. However, the possibility does exist that with the increase in feed requirements, (for both the Breeding and Grower Units), that the size of the delivery trucks may increase, thereby decreasing the total amount of smaller trucks accessing the property per week, and ultimately decreasing the overall amount of delivery trucks to Greyling Vark Boerdery.

A formalized **MORTALITY PIT** does not exist on-site. Due to the expansion proposals, a dedicated mortality pit will be required due to increased numbers of pigs housed on-site. The details of the mortality pit will be explored in the EIA Phase.

5 ALTERNATIVES

The EIA Regulations require an identification and investigation of alternatives. These could include alternative layouts, activities, locations, infrastructure, landuses, as well as the "do-nothing" alternative. For the purposes of the Scoping Phase and this Scoping Report, several alternatives have been identified. These alternatives and their feasibilities will be evaluated further in the EIA Phase and reported on in the EIA Report.

5.1 Do-nothing

The "do-nothing" option would be to retain the existing piggery, with the current capacity of maintaining 1 000 sows on the property. Hence no expansion activities would be undertaken on the site. All breeders, growers and weaners would continue to be housed at the existing piggery. As such, noise and odour impacts would continue to impact upon neighbours as no bio-digester technology would be employed with regards to the existing effluent dam; the bio-security risk on the farm would not be addressed as all pigs would housed together in the same area; no new employment opportunities or skills development opportunities would be created; and pig production levels would remain constant.

5.2 Alternative Locations

As the Applicant owns the Farm Rhenosterpoort, the obvious and most cost effective location to construct a Breeding and Grower Unit would be on their existing property, i.e. the Farm Rhenosterpoort. The refurbishment of the existing piggery into a specialised Breeding Unit and the construction of a new Grower Unit expands the current operations and thus is in keeping with the Need and Desirability of the application i.e. to increase the amount of sows housed on the property and therefore expand operations.

In terms of the Breeding Unit, as the existing site is currently utilised as a piggery, it is already serviced with water, electricity and ready access. In addition, a working effluent dam is already located at the site. Therefore, financially it is logical to refurbish the existing piggery and convert it into a dedicated Breeding Unit as all service infrastructure already exists on-site. Development of the Breeding Unit elsewhere on the farm would incur a far greater expense, and would render the existing piggery useless. In addition, the disturbance of land for another site for a Breeding Unit on the farm could not be justified given the already disturbed piggery site.

For the Grower Unit however, as the Need and Desirability of the application is to expand operations at Greyling Vark Boerdery, a new site had to be identified for a dedicated Grower Unit. In this regard,

several different alternative locations where investigated on the Farm Rhenosterpoort by the Applicant, before deciding on the preferred site alternative on the farm. Factors taken into consideration in this decision-making process included:

- Topography;
- Orientation;
- Land suitability (i.e. disturbed land versus pristine land);
- Electricity availability;
- Water resource availability and proximity to a water resource;
- Accessibility in terms of delivery and transportation vehicles; and
- Biosecurity.

The preferred site alternative is located on relatively flat land, with a north-facing aspect. The site was previously cultivated, hence the site is disturbed and is not virgin or pristine land. Existing electricity and water supply can be extended to reach the site easily. An existing farm road is located adjacent to the site, allowing for the easy delivery of feed and collection of pigs when necessary; and the site is located more than 2km away from the Breeding Unit so as not pose a biosecurity threat.

5.3 Alternative Effluent Disposal

5.3.1 Bio-digester

The preferred method of effluent disposal is to channel all effluent into a purpose-built effluent dam for the proposed new piggery on-site. The dam will be covered with a specifically designed impermeable membrane or 'digester' which will capture the methane gas (CH_4) as released by the effluent (Plate 8). The Methane Gas will then be converted into electricity and be re-fed into the electricity grid in order to assist in farm operations, thus placing less demand on Eskom. The technicalities and details of the process at this stage are still being investigated. The existing effluent dam at the existing piggery on-site is also proposed to be covered and the methane gas converted into electricity.

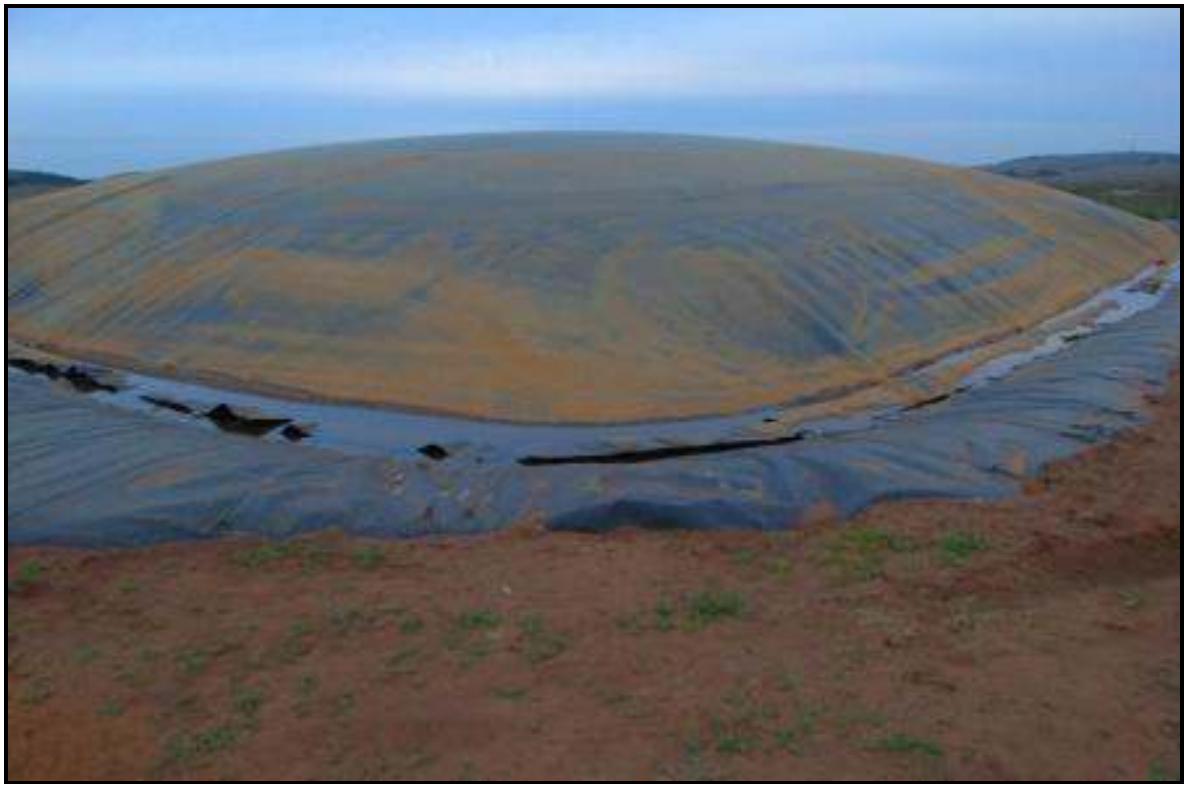


Plate 8: Example of a 'digester' covering an effluent dam.

5.3.2 Effluent Settling Ponds

Another alternative for effluent disposal is to install of a series of effluent settling ponds. Following the settling out of the effluent, the liquid component would be linked to an irrigation system and be sprayed onto cultivated lands. The solids would be collected and spread onto dry lands via tractor and trailer as a fertilization method. The effluent ponds would not be covered as per the preferred alternative, thus exposing the effluent to the elements.

5.3.3 Holding Tank

The third alternative with regards to effluent disposal would be to utilise a holding tank, for both the Breeding and Grower Units, which would periodically be pumped out into tanks and transported to cultivated lands via tractor. This would also serve as a fertilization method.

5.4 Alternative Water Supplies

5.4.1 Existing Water Use Permits

Current operations on the farm utilise water supplied by existing boreholes on the property. Existing extraction requirements are 580m^3 per day. This is likely to be doubled following the proposed refurbishment and construction of the Grower Unit, bringing the total requirement to approximately 1 160m^3 per day. These figures however are to be confirmed upon the final design plan.

In terms of water use permits and/or abstraction rights required to provide water to the proposed piggery operations, the Applicant already holds three Registration Certificates as issued by the Department of Water Affairs and Forestry. Certificate Numbers are as follows: 27040167, 27040489 and 27040504. The Registration Certificates entitle the Applicant to, as per the National Water Act, 1998 (Act No. 36 of 1998), Section 21(a), "Take water from a water resource"; and as per Section 21(b) of the Act, "Store water". Currently the volume required by the proposed development is far less than what the Applicant holds rights to in terms of the Registration Certificates. Please refer to Appendix 6 for copies of Registration Certificates.

5.4.2 Extraction from boreholes

The preferred water supply is from the existing boreholes located on-site. A new borehole may need to be installed for the Grower Unit, depending on accessibility of water to the site. Should a new borehole be required, the Department of Water Affairs will be notified. This will be investigated in further detail in the Assessment Phase of the EIA Process.

5.4.3 Extraction from the Groot Nylrivier

Given the proximity of the Grower Unit to the Groot Nylrivier, the Applicant may consider extracting water from this source for use at the Grower Unit. A Water Abstraction License and/or General Authorisation however would need to be sourced from the Department of Water Affairs in order to secure this alternative.

6 PUBLIC PARTICIPATION PROCESS

A Public Participation Process was undertaken according to Regulation 54 to 57 of the EIA Regulations (2010), as promulgated under Section 24 of the National Environmental Management Act (NEMA, Act 107 of 1998).

6.1 Notification of the Proposed Development

Notification of the application for the proposed development was conducted through the publication of newspaper adverts and placement of site notice boards.

Newspaper adverts were published in The Post / Die Pos Newspaper in both English and Afrikaans on 21 January 2011 to notify potential Interested and Affected Parties (I&APs) of the proposed development.

Environmental notice boards were placed on-site to notify the local public of the development. The notice boards were in English and Afrikaans and included details of the application, its nature and location, the assessment procedure in terms of the EIA Regulations and details of the EAP. The notice boards were placed at the following locations on 13 January 2011:

- At the entrance to the property from the R101;
- On the outskirts of Modimolle travelling south towards the property on the R101; and
- Opposite the entrance to the Klein Kariba Resort on the R101.

Copies of the newspaper adverts and photos of the environmental notice boards on site are included in Appendix 7.

6.2 Interested and Affected Parties

A register of I&APs was compiled at the outset of the project. This includes names and contact details of Authorities, Government / Municipal departments, NGOs, local interest groups and neighbouring landowners.

The register of I&APs has been continually updated to include persons responding to the newspaper adverts and site notice boards. The I&AP register is included in Appendix 8.

6.3 Background Information Document

Written notification of the proposed development, in the form of a Background Information Document (BID), was issued to the following I&APs on 06 January 2011:

- Neighbouring landowners and land occupiers;
- Representatives of the local and district Municipalities;
- Relevant authorities and Government Departments; and
- Local organisations and community representatives.

A copy of the BID is included in Appendix 9. Comments received following circulation of the BID are included in Appendix 10 and are summarised and responded to in Table 1.

Table 1: Comments received following the newspaper adverts, placing of site notice boards and circulation of Background Information Documents.

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	RESPONSE
Mnr. Pieter Botha (Neighbour)	24 January 2011	We are responding to your notice in the "Post" newspaper of 21 January 2011. We operate an exclusive accommodation lodge and game farm on the farm adjoining that of the Applicant. We want to know what the impact in respect of our company's aesthetic value will be. Already we have problems at times with the smell of the existing piggery. The view of our business can be adversely affected by the development of (if) not sensitively designed.	- Noted. Please refer to Section 4.2.1 and 5.3 of this report. Both the Breeding Unit and the Grower Unit are to be designed to be completely enclosed so as to regulate temperature within the houses. This will assist in limiting odour. Furthermore, both effluent dams (i.e. existing and proposed) will be covered with a 'digester' which will capture the Methane Gas (CH_4), eliminating the release of gas and potentially limiting odour. This is to be investigated in further detail in the EIA Phase of this application.
Mnr. Albert Willers (Nieghbour)	25 February 2011	Points of concern that will negatively affect us as neighbours: 1. Waste water from piggery that will end up in the Groot Nyl River. Pollution of river and water resources. 2. The drainage line as indicated in BID runs directly into the river. In times of high rainfall, contaminated water will end up in the river. 3. Nylsvlei Nature reserve that has been declared a RAMSAR site is found downstream of the piggery. Contamination of this water resource will negatively affect wildlife such as birds, fish and amphibians. 4. We are concerned with the added removal of water from the river and from underground water supplies. 5. The smell from the piggery will have a server (severe) impact on us. The piggery is 300m from our boundary, our livelihood will be negatively impacted on. The smell of pig manure is very potent and will be smelt easily. I was a pig farmer in the past, so I have first-hand experience in this. The smell moves in a "mushroom" form" – it rises straight up and affects surrounding landowners. It is also important to consider wind direction.	- Noted. A Stormwater Management Plan will be drafted and submitted as part of the EIA Phase of the application. Furthermore all waste water collected from the pig houses will be channelled into the purpose-built effluent dams for methane capture. - Concern noted. This will investigated in EIA Phase through specialized input from the Wetland and Stormwater specialists. - Concern noted. See comment above. - Concern noted. - Noted. Please refer to Section 4.2.1 and 5.3 of this report. Both the Breeding Unit and the Grower Unit are to be designed to be completely enclosed so as to regulate temperature within the houses. This will assist in limiting odour. Furthermore, both effluent dams (i.e. existing and proposed) will be covered with a 'digester' which will capture the Methane Gas (CH4), eliminating the

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	RESPONSE
			release of gas and potentially limiting odour. This is to be investigated in greater detail however in the EIA Phase of this application.
		6. Fly management and control.	- Noted. Due to the houses being enclosed, it should limit fly nuisance.
		7. Visual impact.	- Noted.
		8. Economic impact to future developments in tourism, also possible future lifestyle developments in an area that currently has very little negative development. We are in an area that markets this unspoilt area and this is evident in the number of B&B's, lodges, guesthouses and game ranches in the area. We are worried that these will be negatively impacted on.	- Noted. Please refer to Section 7.3, Planning Initiatives for a review of the Modimolle IDP and SDF.
		9. We do NOT under any circumstances support the expansion of the piggery and if expansion should go ahead we will seek legal assistance with regards to the potential loss of earnings for surrounding landowners as highlighted above.	- Noted.
Mrs. Nonofho Ndobochani (South African Heritage Resources Agency (SAHRA))	28 January 2011	Thank you for your indication that the development is to take place. In terms of the National Heritage Resources Act, No. 25 of 1999, heritage resources, including archaeological or paleontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that before such sites are disturbed by development it is incumbent on the developer to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required. In your application received by SAHRA there was no indication of such an assessment of the paleontological/archaeological resources. The quickest way forward is to contact a suitably qualified specialist to provide a Phase 1 Paleontological/archaeological Impact Assessment Report.	- Noted. A suitably qualified Heritage Specialist will be appointed to conduct the necessary assessment, the result of which will be included in the EIA Report.

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	RESPONSE
		The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in Section 38) about the process to be followed. For example, they may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites. Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Paleontological Desktop Study must be undertaken to assess whether or not the development will impact upon paleontological resources – or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Paleontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. If the property is very small or disturbed and there is no significant site the specialist may choose to send a letter to the heritage authority to indicate that there is no necessity for any further assessment. Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.	
Mr. Bill Blandy (Neighbour)	06 April 2011	I am the owner of the farm on the western border of Renosterpoort, adjacent to the current piggery. Portion 28 of the Farm Sussenvale. As I understand it is proposed that a part of the expansion will take place between the existing piggery and the western boundary of the farm. If so it will bring the new piggery to within 150 metres of my home. This I find unacceptable and reasonable because: 1. The smell is already at times unbearable;	- Noted. With the addition of enclosed pig houses, and impermeable membranes being placed over both effluent dams, the smell should be reduced. However this will be further investigated in the EIA phase.

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	RESPONSE
		2. The noise level, especially very early in the morning, when the pigs are loaded to take to market at approximately 3am, as well as at night when there is a constant sound of machinery.	- Concern noted. This will be investigated further in the EIA Phase.
		3. The fly population especially in summer, they make it very unpleasant to try and sit outside and enjoy a meal or braai.	- Concern noted. With the addition of enclosed pig houses, and impermeable membranes being placed over both effluent dams, the fly nuisance should be reduced. However this will be further investigated in the EIA phase.
		4. My biggest fear is the possible contamination of our underground water supply. I currently pump water from a borehole that is less than 20 metres deep, the water table is no more than 3 – 5 metres below the ground level and it is this seepage water that we pump for domestic use. The current sludge from the cesspit dam gets sprayed onto the pastures adjacent to my boundary, about 120-130 metres from my borehole, this bacteria loaded water can only filter into the high water table and therefore into our drinking water.	- Concern noted. This will be dealt with through a Specialist Study, a Water Quality Assessment (refer Section 9.3.1) which will be conducted in the EIA Phase. Furthermore a Wetland Delineation will be conducted to ensure that the proposed development does not occur within a wetland area (Section 9.3.2).
		5. I am not sure how they dispose of their dead pig carcases but on several occasions my dogs (who have a habit of roaming) have come home with portions of pig carcases.	- A mortality pit does not exit on-site. Disposal of pig carcases will be further investigated in the EIA Phase.
		6. As I am reaching retirement age, one of my plans was to build a small caravan park or guest house close to the river or at my current homestead. The addition of another 1 000 pigs on my doorstep will certainly put pay to this idea.	- Noted.
		I have been the Greyling's neighbour for 17 years and we have had a good working and friendly relationship, which I do not want to spoil. I do not begrudge them their expansions and I wish them all the success therein. But I feel they are being very insensitive to their immediate neighbours. They have over 400 hectares in which to expand, why bring it so close to our homestead?	- Noted. Various factors were taken into consideration in terms of finding a suitable alternative for the proposed Grower Unit. These included topography; orientation; land suitability ; electricity availability; water availability; accessibility; and biosecurity (Section 5.2).

6.4 Public Meeting

A Public Meeting was held at the NG Kerk, Nylstroom Oos on 13 April 2011 at 14h00. All registered I&APs were notified of the Public Meeting by telephone, fax and e-mail.

Key people involved in the project were present, as follows:

- Lauren Booth – JEC Environmental (Environmental Assessment Practitioner); and
- Deren Coetzer – JEC Environmental (Environmental Assessment Practitioner Translator).

The Public Meeting was chaired and presented by Lauren Booth and Deren Coetzer (translator) and comprised an electronic presentation of information on the location of the property, details on the proposed development and information on the EIA Process. A summary of the main concerns raised to date by I&APs, through written comments received following circulation of the BID, was also presented. A description of the way forward in the EIA Process was provided and an opportunity for the attendants to raise concerns and ask questions was provided at the end of the meeting, although some questions and comments were raised during the presentation. The Attendance Register and the Public Meeting Minutes are attached as Appendix 11.

Comments received after the Public Meeting are presented in Table 2 below:

Table 2: Comments received following the Public Meeting.

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	EAP RESPONSE
Mr. Albert Willers (Neighbour)	04 July 2011	As a neighbour and affected party residing on the Farm Shangrila, we want to enquire what is the new development and progress on the EIA. How far is the Draft Scoping Report? Can you inform us the next meeting date.	I have been liaising with the specialist consultants who are responsible for the design of the bio-digesters and green energy component. They are awaiting information from the client in order to proceed. When I have their plans in hand, I will be able to compile and circulate the Draft Scoping Report. The next meeting will not be held until the Scoping Process is complete and the Specialist Studies have been completed. I am not in a position to predict when that may be at this stage, however all I&APs will be notified. You refer to a new development – please could you clarify what you are referring to, as I have not been to the site since April 2011.

6.5 Circulation of the Draft Scoping Report

The Draft Scoping Report was circulated to the following for review and comment on 29 May 2012:

- Mr T Mjona – Department of Water Affairs;
- Mr P. Siebe – Waterberg District Municipality;
- Mr H Pogole – Modimolle Local Municipality;
- Dr RL Mampane – Limpopo Department of Agriculture: Veterinary Services;
- Mr L Tshabalala – Limpopo Tourism and Parks Board;
- Mr B Greef – Provincial Department of Agriculture;
- Mr H Buys – National Department of Agriculture, Forestry and Fisheries;
- Ms S Tshivhase – Limpopo Department of Transport;

Copies of the Report were also made available at the Modimolle Public Library for public review.

All registered I&APs were notified of the availability of the Draft Scoping Report for review and comment on 29 May 2012, by fax, email and telephonic communication. The deadline for comments was 11 July 2012, allowing for a forty-three (43) day comment period.

Comments received on the Draft Scoping Report are included in Appendix 12 and are summarised and responded to in Table 3 below. Please also find in Appendix 12 the attempt the EAP made in soliciting comments from unresponsive officials.

Table 3: Comments received following the distribution of the Draft Scoping Report

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	EAP RESPONSE
Ms S Tshivhase	25 May 2012	Please can you send us a map or sketch plan regarding the location of the piggery in relation to the access road from the provincial road closer to the piggery to be extended	EAP forwarded map to Ms S Tshivhase on 28 May 2012. Ms Tshivhase received the map and noted that the Scoping Report could be forwarded to her as well for review.
Mr BD de Lange: National Department of Agriculture, Forestry and Fisheries	01 June 2012	This serves as a notice of receipt and confirms that your application has been captured in our electronic AgriLand tracking and management system. It is strongly recommended that you use the on-line AgriLand application facility in future.	Noted.
Mr A Willers: Ngomo Trust and neighbour	03 June 2012	Thank you for your email sent 29 May 2012. As an affected party I notice in your email that a copy of the Draft Scoping Report and Plan of Study for the Application has been made available at the Library. Can you be so kind as to forward a copy to us by email. We will study and comment thereafter.	Noted. A copy of the Draft Scoping Report was emailed to Mr Willers on 04 June 2012.
Mr JAJ Pelser: Geo Projects	04 July 2012	We receive instruction to act on behalf of Ngomo Trust, owners of Portion 5 of the farm Shangrila 459 KR and confirm that Mr. Albert Willers filed an objection on 24 February 2011.	Noted.
		We acknowledge South African citizen's constitutional right to utilise his or her property to make a living but obviously without a nuisance to others. We therefore acknowledge Greyling Vark Boerdery's right to operate there agricultural activities but not at the cost of their neighbours.	Noted.
		Ngomo Trust's property, Portion 5 of the farm Shangrila 459 KR, abuts Greyling Vark Boerdery's property on the eastern boundary. The existing piggery is approximately 3.5 km from the boundary with portion 5 of the farm Shangrila. The preferred site for the proposed grower facility will however be approximately 0, 5 km from the same boundary.	Noted.
		The list of specialist studies includes water quality assessment, Wetland / drainage line delineation, geotechnical assessment and heritage impact assessment. The list does however not include soil pollution assessment, waste management, meteorology, prevailing winds, air move and an assessment of the impact of noxious odours and fly problems from the proposed new grower unit on the southern and eastern neighbours.	Noted.
		The proponent proposed the technology of bio-digesters as a	Noted. This technology is still under investigation in this

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	EAP RESPONSE
		method to "potentially reduce, if not eliminate, odour nuisance from the effluent dams". There is, seems to us, not yet clarity whether the technology will "reduce" or "eliminate" the potential nuisance.	regard and will assessed in the EIA Phase of this Application.
		According to the Draft Scoping Report the design of the new unit will limit the potential odour and fly nuisance. The design makes provision for automatic drop side curtains. Taking the average temperatures of this region in consideration the assumption can be made that the side curtains of the grower units will be, during summer months, open. The assumption is made that the improvement of the existing breeder units will decrease the odour nuisance, which is taken for granted. The fact that the new grower units will be in close proximity to Ngomo Trust's and other tourist facilities is however not acceptable.	Noted. Alternative sites will be assessed in the EIA Phase of this Application. However, factors such as topography, orientation, land suitability, electricity availability, water resource availability and proximity to a water resource, accessibility in terms of delivery and transportation vehicles, and biosecurity will need to be taken into account. The preferred site alternative is located on relatively flat land, with a north-facing aspect. The site was previously cultivated, hence the site is disturbed and is not virgin or pristine land. Existing electricity and water supply can be extended to reach the site easily. An existing farm road is located adjacent to the site, allowing for the easy delivery of feed and collection of pigs when necessary; and the site is located more than 2km away from the Breeding Unit so as not pose a biosecurity threat. However, other locations on the site will be investigated (which met the same criteria as noted above) and they will be assessed in the EIA Phase of the Application.
		The owners of Greyling Vark Boerdery will have to take cognisance of the fact that fresh and odourless air is essential to eco-tourism and an odour nuisance will have a detrimental effect on the existing tourism facilities in close proximity. They will furthermore have to take the 'Polluter Pays' principle in consideration. A RoD will not safeguard them against claims due to a loss of income, business or life style caused by the negative effect of odour and fly nuisance.	Noted. This will addressed in the EIA Phase of the application.
		It is our humble request to investigate alternative sites for the growing units as the development on the proposed site will lead to consequently delay of the process and ultimately lead to litigation.	Noted. Alternative sites will be investigated in the EIA Phase of the Application.
Dr RL Mampane: Dept. of Agriculture: Veterinary Services	11 July 2012	Receipt of a Draft Scoping Report on Expansion of Piggery Operations on Port 21 Hardig and Rem of Farm Rhenosterpoort 455 (Greyling Piggery) is acknowledged.	Noted.

NAME AND ORGANISATION	DATE OF COMMENT	COMMENT	EAP RESPONSE
		As Veterinary Services under the Limpopo Province Department of Agriculture, we have no objection against the proposed expansion as indicated in the Draft Scoping Report.	
Mr P Siebe: Waterbeg District Municipality	11 July 2012	We hereby acknowledge receipt of the proposed expansion of piggery operations on the above property mentioned. The Waterberg District Municipality is supporting the proposed development due to the following reasons: • Subject to the response made in page 42 to 45 of the Draft Scoping Report being implemented; and • The Applicant must lodge a Land Development Application to the Modimolle Local Municipality after the EIA Process. The Waterberg District Municipality has no objection on the proposed development with the provision that Modimolle Local Municipality, Department of Minerals and Department of Environmental Affairs approve the proposed development based on their findings.	Noted.
Mr T Mjona	12 July 2012	The Department of Water Affairs will be conducting a site visit on the property in question on 18 July 2012. Thereafter complete comments will be forwarded onto the EAP.	Noted.

6.6 Summary of Issues Raised

To date, the main concerns raised in response to the proposed development are:

- Nuisance impacts for neighbouring properties, particularly noise, odour and flies;
- Potential impact on water resources in the area, particularly relating to effluent disposal;
- Contamination of river and underground water resources;
- Contamination of fish, birds and other wildlife in the Nylsvlei Nature Reserve through contaminated water;
- Depletion of river and groundwater supplies;
- Economic impacts in terms of tourism operations in the area;
- Requirement that a Phase 1 Paleontological / Archaeological Impact Assessment Report be conducted;
- Disposal methodology of pig carcasses; and
- Proximity of proposed expansion to existing homesteads.

7 POTENTIAL IMPACTS ON THE SOCIAL AND ECONOMIC ENVIRONMENTS

7.1 Local Economy and Employment Opportunities

DESCRIPTION:

The Agricultural Sector was previously the most economically sound employment sector in the Modimolle Local Municipality, but in recent years has been overtaken by the Tourism Sector. This has been accredited to the influx of agriculturally productive farms being converted into game farms and offering lodges and other tourism facilities in the area.

In terms of employment, 29.6% of the working population of the Modimolle Local Municipality are employed in the Community Services Sector (including government services). The Agricultural Sector contributes 23.8%, the Trade Sector contributes 16% and the Manufacturing Sector contributes 10.8%.

The sectors showing an increase in employment from 1996 to 2007 are Community Services, Finance, Trade and Construction. Sectors which had a decline in employment contribution for the same period are Transport, Electricity, Manufacturing, Mining and Agriculture. The Modimolle Municipality, in their Final Integrated Development Plan (IDP) for 2010/2011, state as a matter of concern the decrease in employment opportunities in the Agricultural Sector, as this sector is one of the major contributors to employment opportunities in the municipality.

Figure 4 illustrates a breakdown of the employment sectors in the Modimolle Local Municipality.

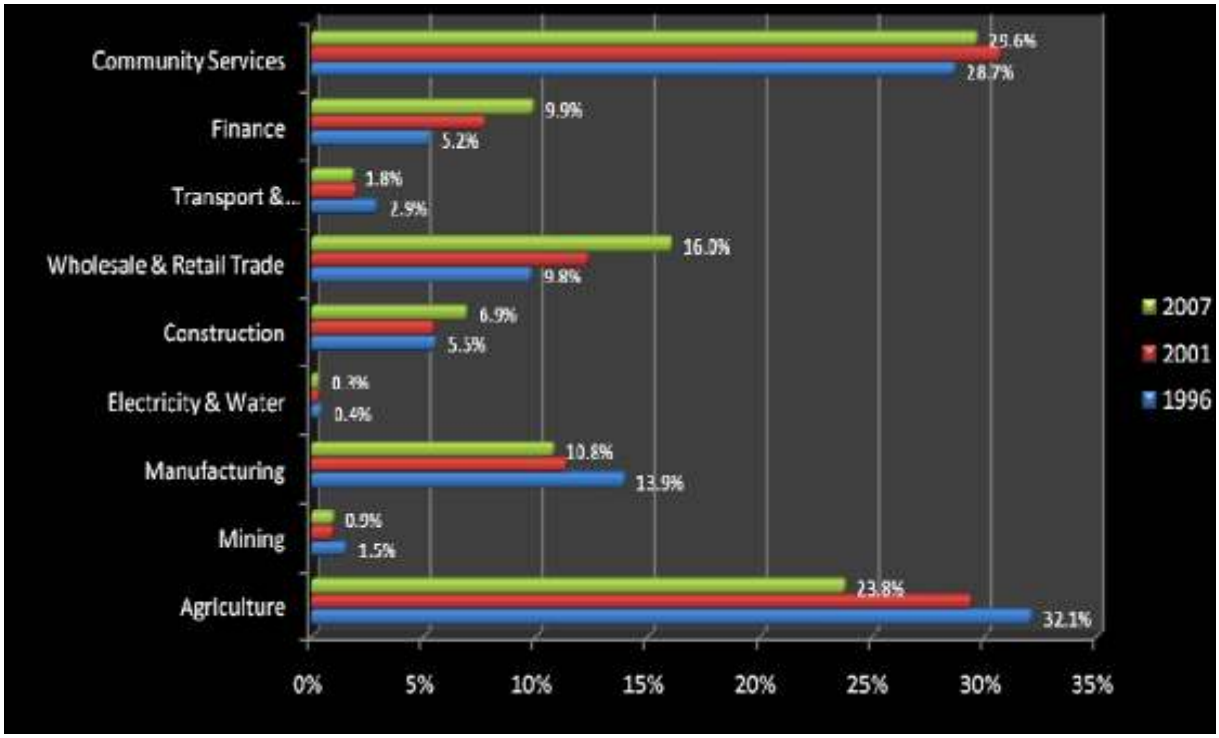


Figure 4: Sectoral Employment, 2007 (Source: Modimolle Local Municipality, 2010).

The proposed development at Greyling Vark Boerdery will contribute to employment generation for people from the surrounding area. It is further anticipated that a number of employment opportunities will be created for un-skilled, semi-skilled and skilled workers. At least 50 labourers would be contracted temporarily on-site during the construction phase (for both the refurbishment activities of the Breeding Unit and for the construction of Grower Unit). Approximately six (6) new positions will be made available at the Breeding Unit and twenty (20) at the Grower Unit.

The economic background to the proposed development is to improve the financial performance of Greyling Vark Boerdery. An increase in pigs will result in an increase in production levels. Furthermore, economies of scale are applicable to this development due to the large scale at which the pigs will be farmed at, thereby reducing the production cost per pig.

IMPLICATIONS:

Potential exists for agricultural related jobs to be created during both the construction and operational phases. Potential jobs include site engineers, building contractors, labourers, livestock handlers, cleaners, tractor drivers and truck drivers, i.e. skilled, semi-skilled and un-skilled workers. Furthermore, the anticipated employment opportunities created by the proposed development will be located in fairly close proximity to residential settlements in Modimolle, ensuring a work force in relatively close proximity to the site.

7.2 Need and Desirability

DESCRIPTION:

The main motivating factors in terms of the Applicant's need and desirability for the proposed development are as follows:

- **Improved bio-security** – separate piggery units to reduce the risk of disease outbreak, e.g. Classic Swine Fever;
- **Improved performance** – replacing old outdated buildings (open sided & solid floors) with new, improved buildings (slatted floors, automatic curtains for temperature control) will lead to improved growth, improved feed conversion and reduced mortality;
- **Improved water usage** – use of modern building designs and drinking systems, e.g. replacement of solid floors which require high volumes of water for cleaning, with fully slatted floors; and
- **Improved feasibility of supply** – the proposed development will ensure that there is an increase in pork supply.

IMPLICATIONS:

The proposed expansion and re-capitalisation of piggery operations will increase the levels of pig production on the farm. This is of great economic importance to the Greyling Vark Boerdery, as well as for pig production in the Province.

Although the construction of a new piggery may not be desirable to neighbours, it is expected to be an improvement on the existing situation as the old buildings would be replaced with newer, modern designs and mechanised equipment. The existing negative aesthetic impacts associated with the existing piggery (i.e. noise, odours) are likely to be significantly reduced due to these proposed improvements.

7.3 Planning Initiatives

7.3.1 Integrated Development Plan (IDP)

In terms of the Municipal Systems Act (Act 32 of 2000), every Municipality in South Africa is obliged to develop an Integrated Development Plan (IDP) to realize the constitutional mandate of local government. The IDP is a strategic management tool, which aims to guide and align all planning, budgeting and operational decisions of the Municipality and other spheres of governments. It is a legally binding document and replaces all other plans that guide development at local government level.

An IDP's core components are the following:

- The Municipal Council's long term development and internal transformation needs;
- Assessment of level of development and needs to determine communities access to basic services;
- The Council's development priorities and objectives for its term of office, including its Local Economic Development (LED) aims;
- The Council's development and operational strategies accordingly aligned with national and/or provincial sector plans and legislated planning requirements;
- Identification of specific projects which will satisfy service delivery needs and general economic development;
- The Spatial Development Framework (SDF), which includes the provision of basic guidelines for a Land Use Management System (LUMS) for the Municipality;
- The applicable disaster management plans;
- A financial plan, including budget projections covering, at least, the next three years; and
- Key performance indicators and performance targets.

The Municipal Council must review and amend its IDP on an annual basis in accordance with an assessment of its performance measurements and in line with changing circumstances. In formulating and reviewing its IDP, the Municipal Council must also follow a pre-determined programme which must allow for community and stakeholder consultation and effective participation.

The **IDP for the Modimolle Municipality** was compiled in March 2010 by Municipal Officials in collaboration with stakeholder consultation. Modimolle is the largest local municipality in the Waterberg District, accounting for 13% of the District's total surface area. Situated in the southeast of the Waterberg District, Modimolle shares borders with Bela-Bela to the south, Mookgophong to the north, Thabazimbi to the south-west, Lephalale to the west, and Mogalakwena to the north-west. Modimolle is at the centre of the Waterberg District Municipality and is therefore the administrative capital of the District Municipality (IDP Modimolle, 2010).

The N1 (National Road 1) passes through the Modimolle Local Municipality connecting Gauteng with Limpopo. The N1 therefore provides a corridor for the distribution of goods and services between provinces (IDP Modimolle, 2010).

The Modimolle Municipality is predominantly rural, with vast areas of land either under cultivation or being utilised for game farming purposes. Modimolle / Phahameng is the nodal growth point of the municipality, while Mabatlane and Mabaleng can be described as service points. The area is characterised by:

- Prominent rivers, such as the Mokolo river and Nylsvlei, which dominates the landscape; and
- Settlement patterns characterised by townships, farms and informal settlements (IDP Modimolle, 2010).

General unemployment levels are estimated to be approximately 33.6%. The majority of households (88.8%) are living below the poverty level i.e. earning less than R38 400 per year. 10.8% of households fall within the middle income group and 0.2% of the municipality's households fall within the high income group, earning more than R1 228 801 per year (IDP Modimolle, 2010).

7.3.2 Spatial Development Framework (SDF)

The Spatial Development Framework objectives of the Modimolle Municipality are as follows:

- To promote sustainable development;
- To promote efficient development;
- To promote equitable development;
- To ensure integrated development; and
- To improve the quality and image of the physical environment.

Spatial challenges faced by the Modimolle Local Municipality in achieving these objectives are listed as follows:

- Lack of application of land use management strategy;
- Unstructured development;
- Land invasion by informal settlements;
- Development of environmentally sensitive areas;
- Unprotected agricultural land; and
- Chopping of trees for fire wood (as a source of energy for cooking).

In terms of the Modimolle Local Municipality's spatial challenges as listed above, "Development of environmentally sensitive areas" and "Unprotected agricultural land" are listed as areas of concern which could hamper the municipality from reaching its SDF objectives. In terms of location, the Greyling Vark Boerdery is located on "Cultivated Land" as illustrated in the Environmental Features Map of the SDF, Figure 5. Therefore, the expansion of the piggery will be kept out of environmentally sensitive areas, incorporating best practice principles to prevent pollution of environmental resources, while maintaining operations on agricultural lands, therefore maintaining the land use for agricultural purposes.

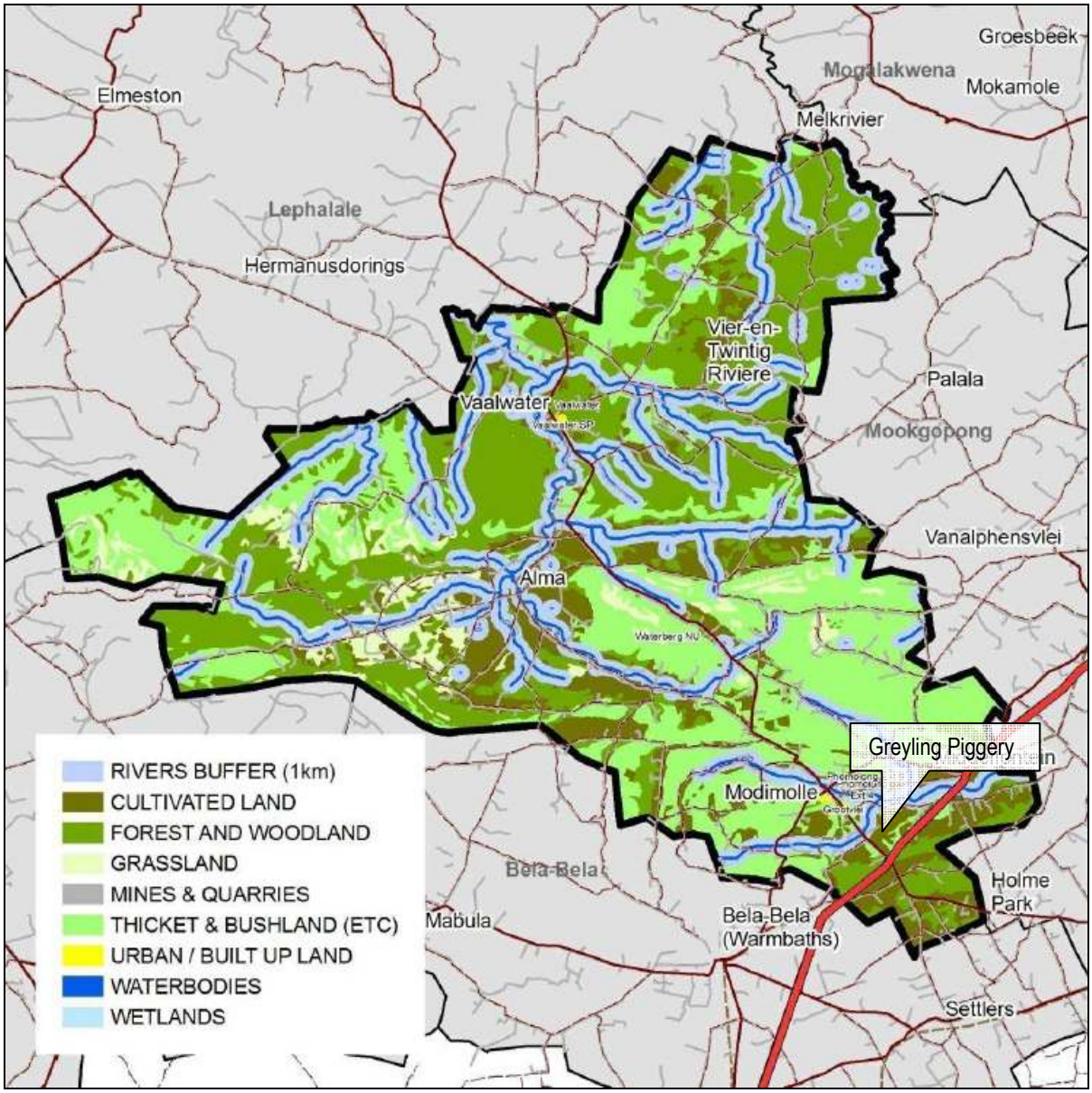


Figure 5: Environmental features (Source: Modimolle Local Municipality, 2010).

IMPLICATIONS:

The proposed new piggery satisfies many aspects of the principles identified in the IDP, as follows:

- It will add to the agricultural potential of the municipality;
- It will contribute to agri-industrial activities, such as the processing of pork products;
- It will not encroach onto wetlands as these sensitive water resources will be delineated, assigned buffers and excluded from the proposed development footprint;
- It will contribute to alternative food production, in the form of pork; and
- It will provide employment opportunities and skills development for local inhabitants of the Modimolle Municipality.

In terms of the principles of sustainability, the proposed development is likely to be sustainable in the following areas:

- In terms of **environmental sustainability**, the proposed development site does not have any significant environmental issues as the site is cultivated with little or no conservation value. The property is, however, located near to important water resources, the pollution of which must be prevented.
- In terms of **institutional sustainability**, the development is situated outside of the serviced Municipal area and will be developed privately with no cost to the Municipality or the ratepayers.
- In terms of **economic sustainability**, the development serves to increase agricultural production while effectively balancing the capital investment of expanding piggery operations.
- In terms of **social sustainability**, the development will generate employment opportunities during the construction and operational phases.
- In terms of **infrastructural sustainability**, the development will utilise existing road, water and electricity infrastructure and will accommodate effluent disposal on-site.

7.4 Cultural, Historical and Archaeological Resources

DESCRIPTION:

The South African Heritage Resources Agency (SAHRA), the authority responsible for South Africa's heritage, was contacted regarding this proposed development and was sent a BID. In their response to the BID, they have requested that an appropriately qualified Heritage Impact Assessor conduct a Phase 1 Paleontological / Archaeological Impact Assessment.

IMPLICATIONS:

Although it is unlikely that any cultural, historical or archaeological resources exist on the site, there is still a possibility that such resources could be buried on-site and therefore these could be uncovered and/or disturbed during earthworks associated with the construction phase. Therefore in order to satisfy the requirements of SAHRA, a Heritage Impact Assessor will conduct an assessment of the site and this will be included in the Draft EIA Report, assuming the Final Scoping Report is accepted by the DEDET.

7.5 Surrounding Landuse and Aesthetics

DESCRIPTION:

The property is bordered by farms and tourism facilities (see Figure 2). Agricultural landuses in the area include citrus, crocodile, cattle and dairy farming. Wildlife and tourism facilities are also prevalent in the area. Tourism facilities within a 7km radius of the site include Klein Paradys Guest Farm, Shangri-La Country Lodge, Protea Hotel Shangri-La and Thaba Kwene Crocodile Farm.

The town of Modimolle is located approximately 8km directly northeast of the Greyling Vark Boerdery. A railway line borders the property to the east and the Groot Nylirivier is less than one kilometre from the property to the north.

IMPLICATIONS:

The proposed piggery refurbishment (i.e. Breeding Unit) and expansion in the form of the Grower Unit, is in keeping with agricultural production in the area, however with the increase in tourism activities in the area, it has the potential to be visually obtrusive for neighbouring lodges and homesteads. Furthermore, the piggery has the potential to create additional noise and odours, with adverse impacts on neighbours.

The design of the proposed buildings (both refurbished and new) will be similar to that shown in Plates 5 and 6 and will be built in accordance with the rural, agricultural sense of place of the surrounding area. By enclosing the proposed pig houses, as well as by placing impermeable membranes over the effluent dams, the noise and odour nuisance should decrease however.

7.6 Traffic, Roads and Access

DESCRIPTION:

The proposed development site is situated approximately 8km from the Modimolle town centre. The R101 is the main service road to Modimolle. The property is accessed by a district road, which is linked to the R101. This access is currently utilised for the existing piggery operations on-site, and will continue to be utilised for the proposed piggery expansion. As the proposed Grower Unit is located 2.5km east of the existing piggery, existing access roads on the property will be utilised for access purposes.

Currently 100 tons of maize and soya is transported to the existing piggery per week. Feed is currently transported to the piggery in the form of 12-ton trucks and 20-ton trucks. With the increase in feed requirements with the proposed piggery, it is likely that the percentage of feed brought in by 20-ton trucks will increase, thereby reducing the total number of trucks per ton of feed.

IMPLICATIONS:

The construction phase will result in large, slow-moving construction vehicles accessing the property via the R101. This may cause traffic delays or accidents. Furthermore, excessive dust is likely to be generated from the district access road with the additional movement of vehicles.

During the operational phase of the Breeding and Grower Units, use will be made of the district access road, adjoining the R101. During the summer months, this district road has the potential to become damaged and muddy, resulting in adverse impacts being inflicted onto other road users/vehicles.

The number of trucks transporting feed and pigs to and from the site will increase during the operational phase.

7.7 Construction Activities, Noise and Dust

DESCRIPTION:

Construction activities on-site, and access to and from the site, will involve earthworks, heavy machinery and construction vehicles in the local area. These operations will generate noise and dust.

Furthermore, there will be an increase in the number of people in the area due to the presence of construction labourers on the site, as well as other potential job seekers.

IMPLICATIONS:

The production of noise and dust from construction activities will negatively impact upon neighbouring landowners as it has the potential to disrupt the rural lifestyle in the area, and potentially impact on the surrounding tourism industries.

Potential exists for construction labourers to trespass onto neighbouring properties during the construction phase.

7.8 Security

DESCRIPTION:

During the construction phase, construction labourers will be transported to the site every day and will not live on site. Access to the development sites during both the construction and operational phases will need to be monitored by security guards at the entrance gates.

IMPLICATIONS:

Management of construction labourers is often problematic. Potential exists for labourers to trespass onto adjoining properties, become involved in criminal activity and poach wildlife.

Crime in the area could increase during the construction phase, as a result of criminals posing as construction workers, or people seeking employment on the site.

8 POTENTIAL IMPACTS ON THE BIOPHYSICAL ENVIRONMENT

8.1 Topography

DESCRIPTION:

The site of the Breeding Unit and the site for the Grower Unit both slope very gradually to the north, towards the Groot Nylrivier. The sites both fall within the Limpopo Catchment.

IMPLICATIONS:

Due to the existing and proposed piggery infrastructure being located within the Limpopo Catchment, and hence in close proximity to the Groot Nylrivier, any activities on the site have the potential to impact on this catchment in terms of immediate and downstream habitats, as well as users. A wetland also exists between the two sites.

Although earthworks will be confined to the building footprint and servitude, potential exists for soil erosion to occur on cleared areas, with resultant sedimentation of nearby drainage lines and/or the wetland.

If any potentially harmful or hazardous substances are used during the construction phase, potential exists for these to contaminate the Groot Nylrivier or wetland. During the operational phase, any irresponsible activities associated with the management of the piggery may result in drainage lines being contaminated with pig effluent. This would have adverse implications for aquatic biodiversity. Furthermore, downstream users who rely on these water resources for drinking, irrigation, stock-watering, tourism and recreation would be negatively affected.

8.2 Climate

DESCRIPTION:

The area is characterised by a rainy summer season and a pronounced dry spell during winter. The area has a mean annual rainfall ranging from 580 millimetres (mm) – 755 mm. Mean Annual Precipitation is illustrated in Figure 6. The area experiences mild winters, with a daily average temperature of 25°C experienced in July and warm summers, with a daily average of 28°C experienced in January (Modimolle Municipality, 2011). Mean annual temperature is illustrated in Figure 7.

IMPLICATIONS:

Potential exists for high intensity rainstorm events to cause severe erosion at the construction sites. Frosts and little / no rain during winter will impede any re-vegetation and rehabilitation efforts. High temperatures during summer may cause fly problems to be more prevalent due to pig effluent on-site.

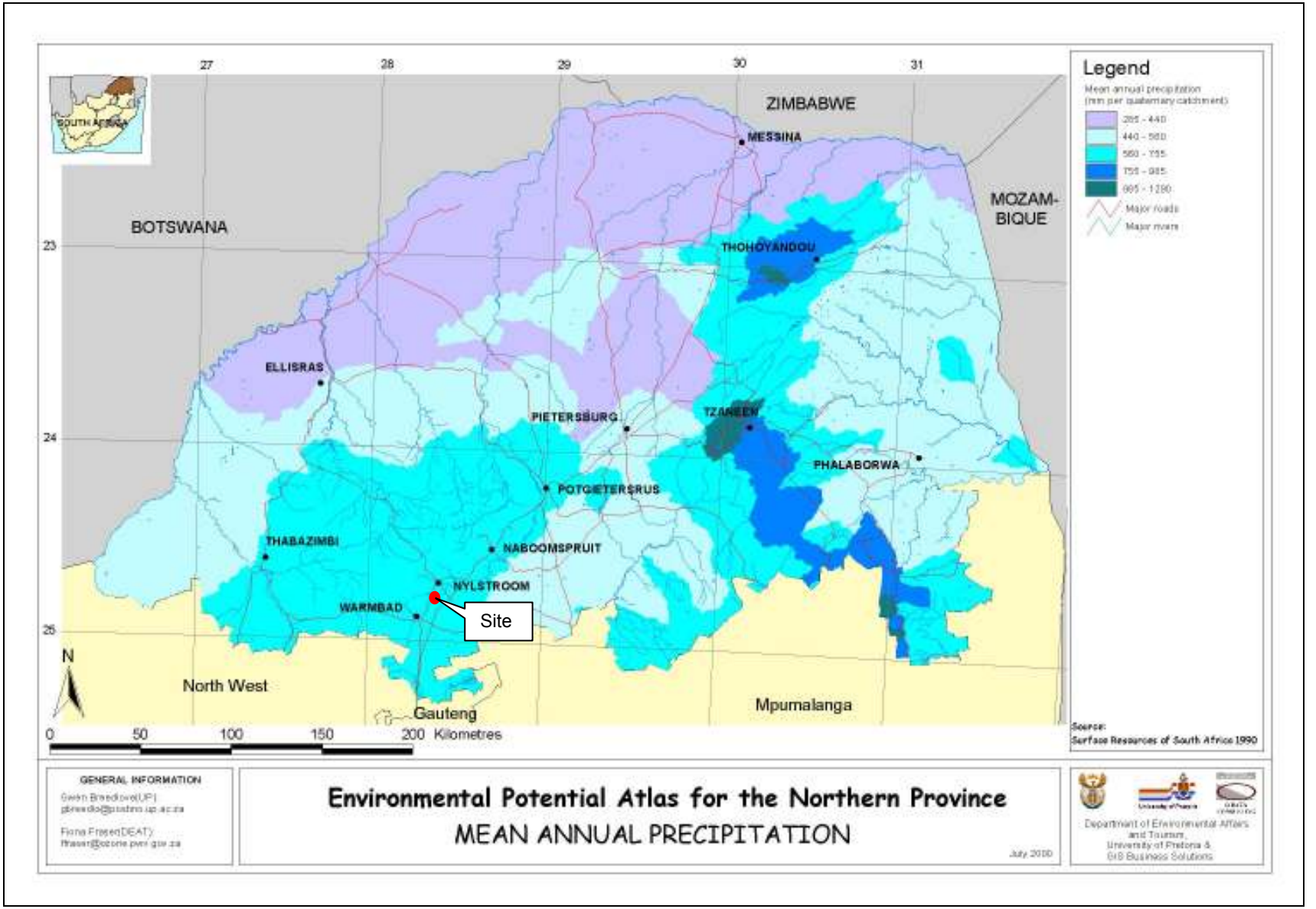


Figure 6: Mean Annual Precipitation for Limpopo (Source: DEAT, 2000).

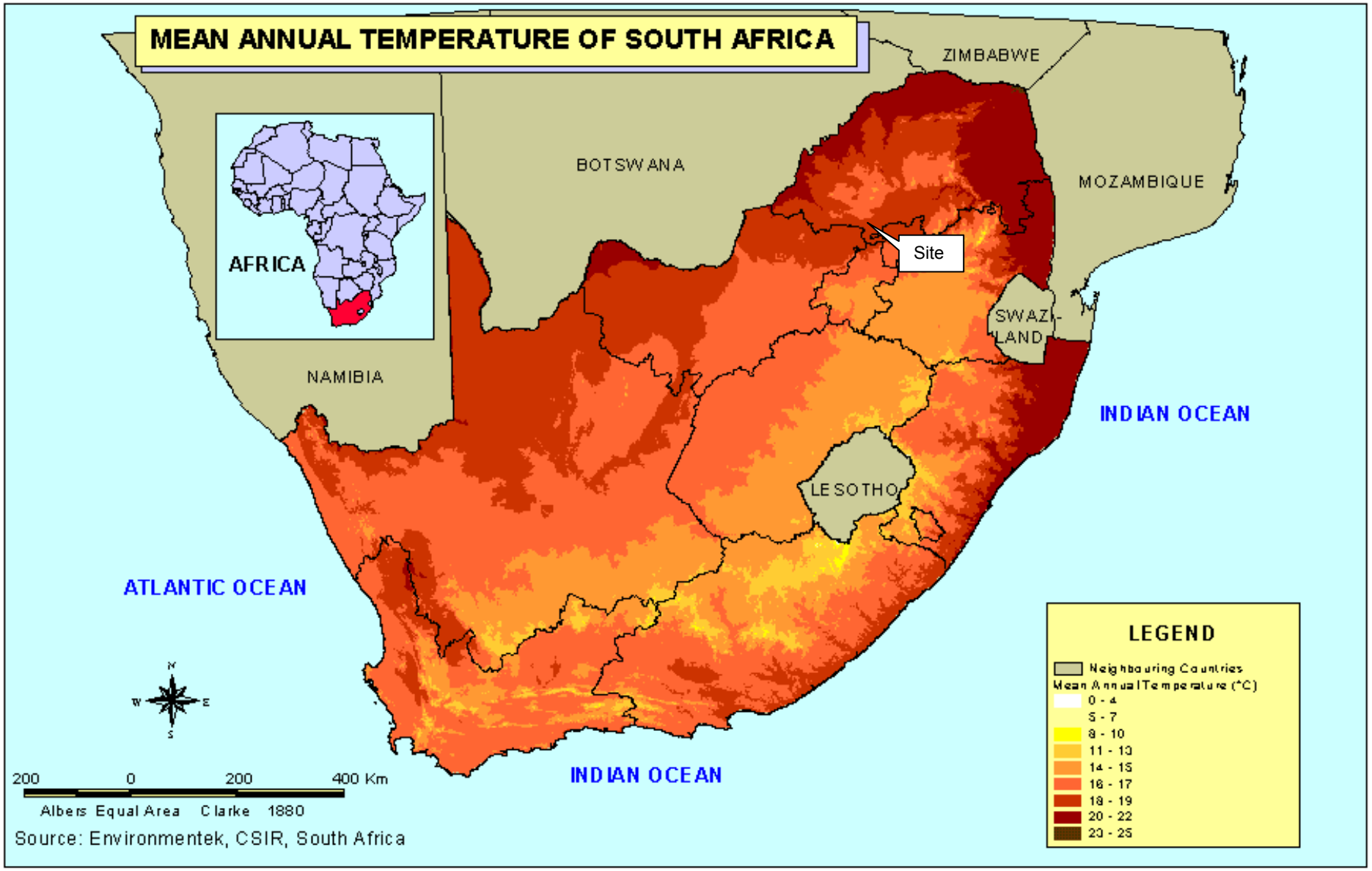


Figure 7: Mean Annual Temperature (Source: CSIR).

8.3 Air Quality and Surface Wind

DESCRIPTION:

Although the site is located in a rural agricultural / tourism area, and the air quality would be expected to be high, the area is negatively impacted upon by unpleasant odours from the existing piggery.

The area can experience strong winds and this can contribute to wind-blown dust and increased fire hazards.

IMPLICATIONS:

It is anticipated that the modern building designs and slatted floors to be used in the proposed buildings will greatly improve the odour problem, as waste produced by pigs will be removed more efficiently. In addition, as houses will be enclosed with mechanised curtains, and both effluent dams will be covered with an impermeable membrane, the impact of the odour nuisance is expected to decrease.

Potential exists for dust to be created on the site during the construction phase, particularly from the cleared construction site and exposed stockpiles of topsoil. The impact of wind-blown dust from the site during the construction phase also has the potential to impact negatively on surrounding landowners.

Wind in this area may also aid in the spread of fires, especially during the dry winter season. This would have serious implications for surrounding properties.

8.4 Geology and Soils

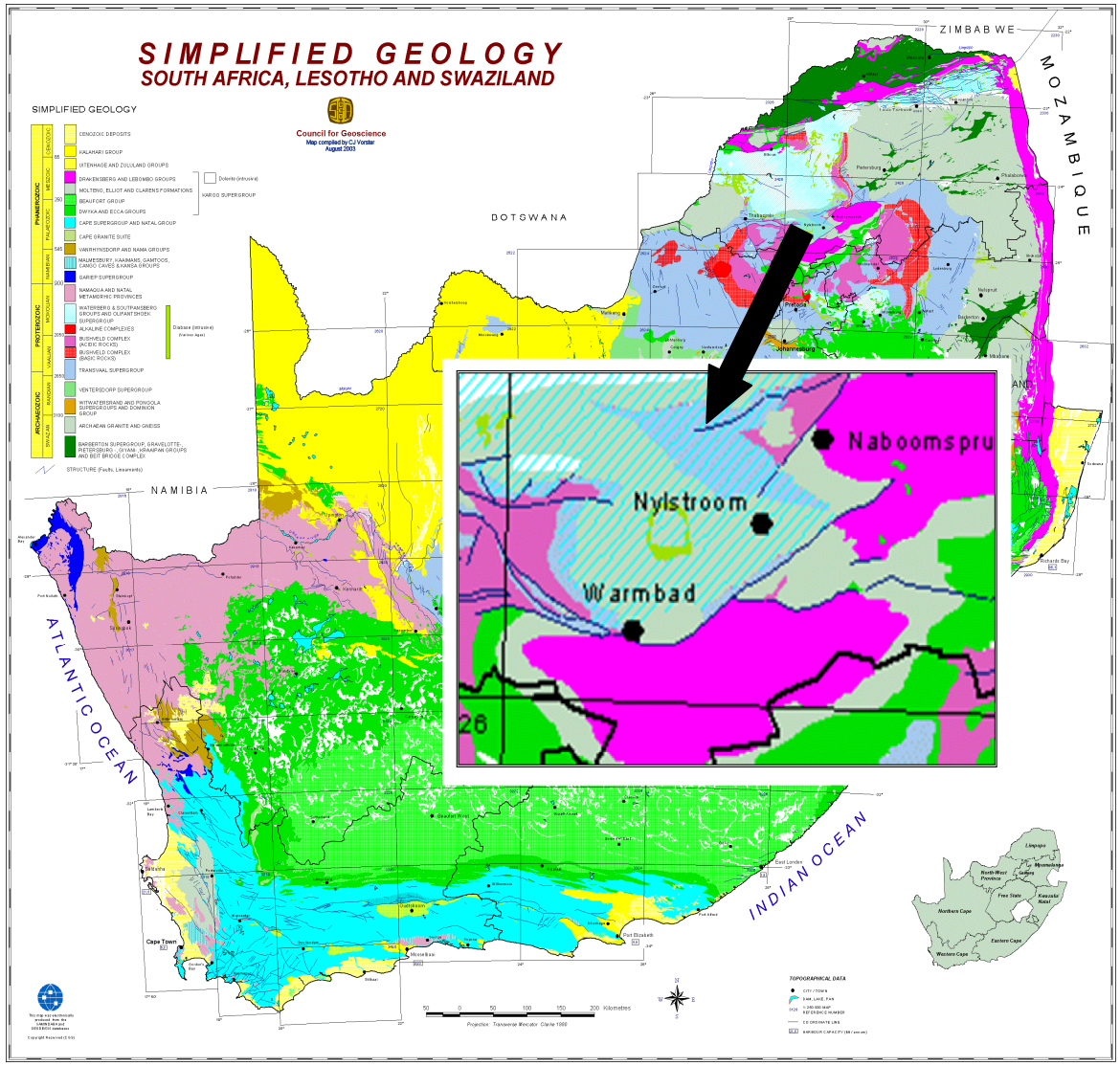
DESCRIPTION:

The soils on the proposed site can be characterised by the Waterberg and Soutpansberg Groups and Olifantshoek Supergroup, underlain with Archaean Granite and Gneiss (Figure 8), (Council for Geoscience, 2003).

A detailed Geotechnical Assessment will be undertaken in the EIA Phase of the project, assuming the acceptance of the Final Scoping Report.

IMPLICATIONS:

Construction in areas of instability, the use of inappropriate materials, and irresponsible design and construction methods could result in the cracking and collapse of buildings, with serious financial consequences.



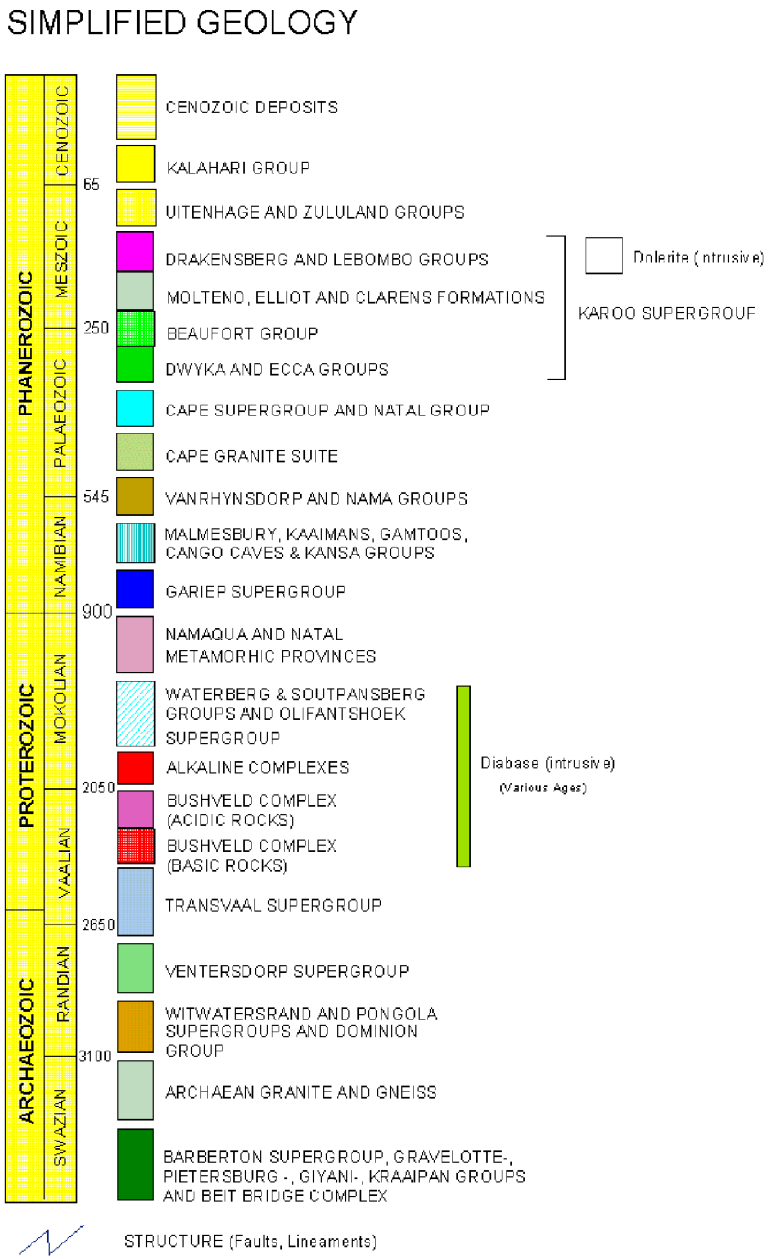


Figure 8: Geology of the Modimolle area (Source: Council of Geosciene, 2003).

8.5 Ground and Surface Water

DESCRIPTION:

The Breeding and Grower Units will be located approximately 0.5km south of the Groot Nylrivier. A wetland lies in-between the two sites.

The possible presence of groundwater on-site will need to be investigated in more detail during the EIA Phase of the process. The likelihood of this being present however is strong, given that the Applicant currently draws water from existing boreholes and the proximity of the site to a relatively large water source, the Groot Nylrivier.

IMPLICATIONS:

Should the proposed development be approved, the increase in hardened surface areas, such as roofs and walkways, will result in increased stormwater flow volume and flow velocity. This could result in increased erosion and sedimentation on-site and in the nearby drainage lines / watercourses, if not adequately mitigated.

Potential exists for construction labourers to make use of the Groot Nylrivier or nearby drainage lines for ablutions and washing, should no suitable ablution facilities be provided. During the construction phase, hazardous substances (such as paints and varnishes) are likely to be used. The subsequent production of hazardous wastes is thus likely to occur. Hazardous wastes could contaminate these water resources, and would have serious implications for aquatic fauna and flora and downstream users.

During the operational phase of the Grower Unit, potential exists for the pig effluent to pollute the surface and groundwater resources on and adjacent to the site if the effluent dam is positioned, designed and maintained irresponsibly.

8.6 Fauna

DESCRIPTION:

The Nylsvley Conservancy, which is an internationally renowned RAMSAR[1] site, stretches over 70km from Modimolle to Mkopane. It is approximately 4 000ha in extent and forms part of South Africa's largest flood-plain, the 16 000ha Nyl Rivier Flood-plain. The site for the proposed Greyling Vark Boerdery is located approximately 35km to the west of the conservancy (Tarboton, 2011).

[1] The conservation of wetlands, signed in Ramsar, Iran, in 1971 is a treaty between governments which provides the framework for national action and international co-operation for protecting wetlands and their resources.

The Nylsvley Conservancy provides sanctuary for some 72 mammal species, including a breeding herd of rare Roan Antelope. In years of high rainfall, as many as eighty thousand migratory water birds converge on the flood-plains, where up to 420 species have been identified. Of this number, 365 species have been identified within the reserve. In addition, the reserve provides habitat to 37 Red-Data species (Tarboton, 2011). Figure 9 represents a schematic of the Nylsvley Nature Reserve.

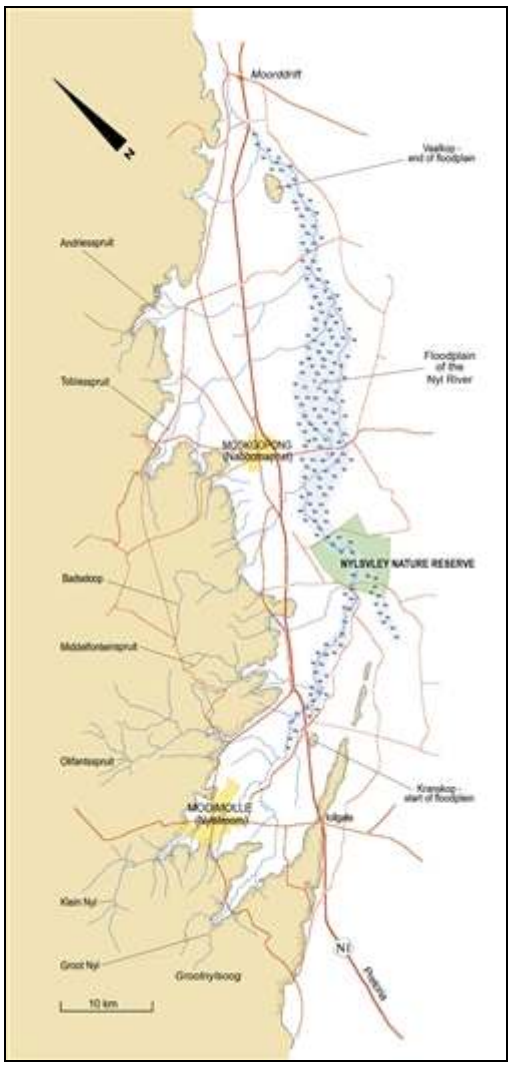


Figure 9: Nylsvley Nature Reserve (Source: Friends of Nylsvley, 2008).

As the Greyling Vark Boerdery is already an operational agricultural enterprise, is not expected that mammals of conservation significance will be found on the property. However, given the proximity of the farm to the Nylsvley Reserve and the presence of two water sources, namely the Groot Nylrivier and the existing wetland on the property, the likelihood of avifaunal activity on-site is high.

IMPLICATIONS:

The most significant potential negative impact on fauna and avifauna will be the disturbances caused during the construction phase, e.g. earthworks, noise and increased human activity. This impact is however considered to be negligible, as the site is currently part of a greater working farm which includes existing noise and disturbance from farm labourers, vehicle traffic such as lorries and tractors. During the construction of the new piggery, animals are likely to move away from the site however they are likely to make use of the surrounding area.

Potential exists for aquatic faunal habitat within the Groot Nylrivier and wetland to be adversely affected by the proposed development, should construction, operation and on-going management of the development be irresponsible or inadequate. Of particular importance is the responsible design, location and on-going management and monitoring of the effluent dam, due to the close proximity to sensitive aquatic habitats.

8.7 Vegetation

DESCRIPTION:

The property falls into the Savanna biome of South Africa, more specifically the Central Sandy Bushveld biome (Mucina and Rutherford, 2006). This vegetation type is normally characterised by low undulating areas, sometimes between mountains and sandy plains (Figure 10).

The conservation status of this biome is classified as Vulnerable, with a target of 19%. Less than 3% of the vegetation is statutorily conserved, and it is spread thinly across many nature reserves including the Doorndraai Dam and Skuinsdraai Nature Reserves. An additional 2% is conserved in other reserves including the Wallmansthal SANDF Property and a grouping of private reserves, which include most of the Nylsvlei freshwater wetlands (Mucina and Rutherford, 2006).

About 24% of the vegetation in the area is considered to be transformed, with 19% being attributed to cultivated lands and 4% being contributed to urban and built-up areas. Much of the vegetation unit in the broad arc south of the Springbokvlakte is heavily populated by rural communities. Several alien plants are widely scattered but often at low densities; these include *Cereus jamacaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea* (Mucina and Rutherford, 2006).

Erosion potential ranges from very low to high, especially in some places northeast of Groblersdal (Mucina and Rutherford, 2006).

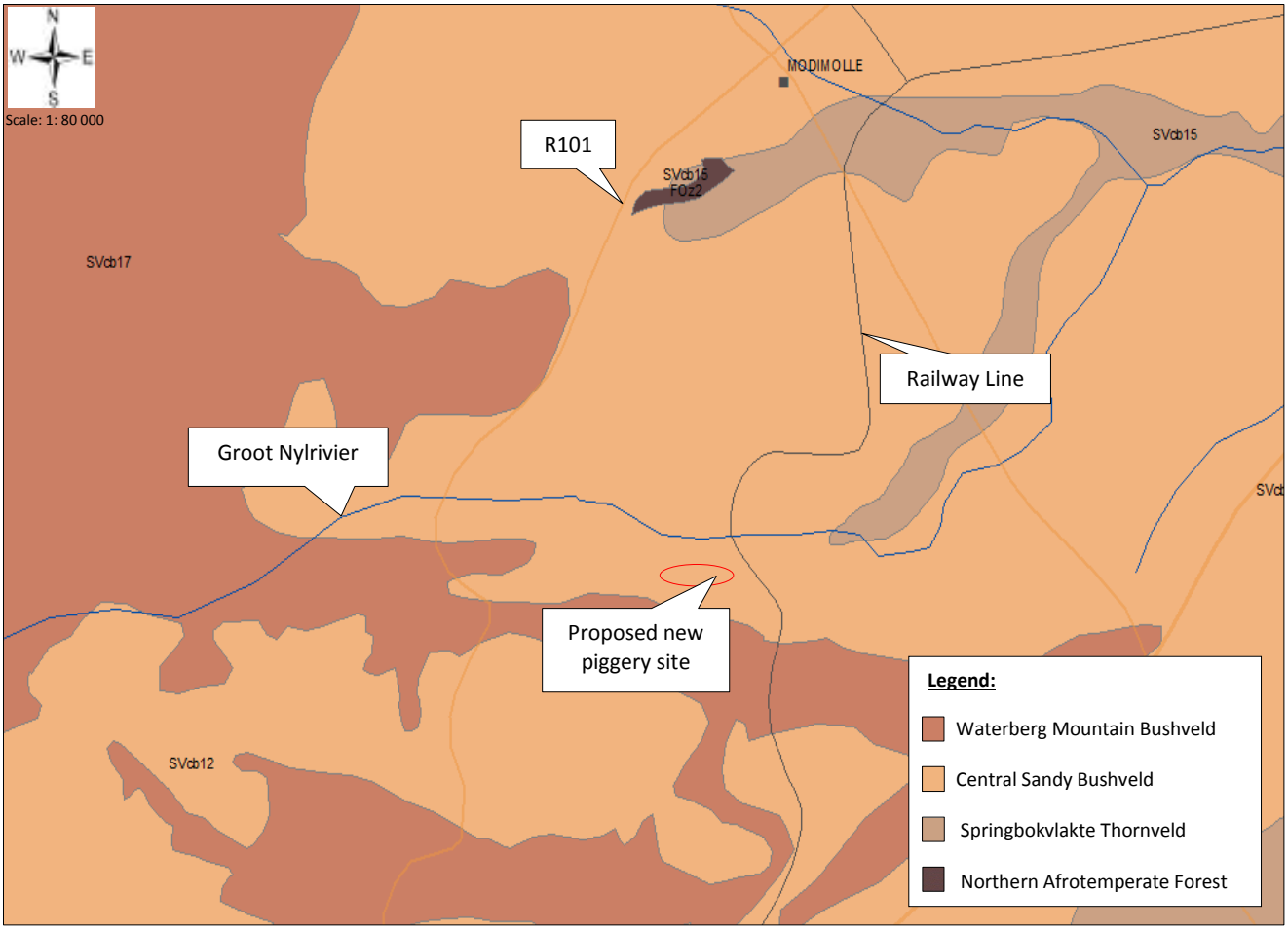


Figure 10: Vegetation type for the Greyling Vark Boerdery (Source: Mucina and Rutherford, 2006).

The proposed piggery site is not likely to support any indigenous plant species due to its transformed and cultivated state i.e. the Grower Unit is proposed to be constructed on a previously cultivated site and the Breeding Unit is proposed to be refurbished on already highly disturbed land.

IMPLICATIONS:

The proposed development will not result in the loss of any indigenous vegetation however it will result in the loss of arable agricultural land.

Invasive alien plants may become established during the construction phase, as a result of soil disturbance during earthworks. If left unattended, these are likely to spread and displace any nearby indigenous vegetation. An alien vegetation management programme will need to be created and implemented in order to prevent the spread of alien plant species on the farm.

8.8 Fire Management

DESCRIPTION:

As this site is in an area which experiences moderate rainfall, occasional droughts, strong winds and long dry winter months, the threat of fire is of significance.

The Breeding Unit and the Grower Unit will be fenced and surrounded by mown lawn grass. This will act as a fire break to prevent the spread of fire into or from the pig houses. Furthermore, fire hydrants / extinguishers will be strategically positioned in the pig houses in accordance with fire prevention regulations.

IMPLICATIONS:

Accidental fires could cause severe damage to the buildings on-site as well as to neighbouring properties. The prevention of fire is therefore of critical importance as a fire could have serious environmental and financial implications for the owners of this property and adjacent properties.

9 PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

9.1 Introduction

As required in terms of Section 29 (i) of NEMA, this section provides details of the methodology for the EIA Phase of this Application.

9.2 Public Participation

The register of I&APs from the Scoping Phase will be carried over and expanded during the EIA Phase. Registered I&APs will receive notification at the start of the EIA Phase, comprising a brief description of the EIA Process and their possible involvement.

Focus-group meetings and site visits will be held with Government Authorities, Municipal Departments, community leaders and conservation bodies, if and when required. After the completion of the Specialist Studies, an EIA Report and EMPr will be compiled (see below) and a Public Meeting / Information Session will be held with registered I&APs. The purpose of this meeting will be to present the EIA Report, its findings and recommendations. Following this session, the EIA Report and EMPr will be made available to all I&APs for review and comment (between 2 and 3 weeks).

9.3 Specialist Studies

Details of the Specialist Studies which will be undertaken as part of the full EIA are provided below.

9.3.1 Water Quality Assessment

An assessment of the existing water quality in the Groot Nylrivier will be done. This will entail sampling of water from this water resource and conducting an analysis for a variety of indicators including:

- pH;
- Dissolved Oxygen;
- Conductivity;
- Water Clarity;
- Compounds of Nitrogen;
- Compounds of Phosphate;
- Compounds of Potassium;
- E. coli / coliforms;
- Aquatic biodiversity (SASS 5 sampling); and
- Benthic diatoms (very efficient indicators and integrators of aquatic nutrient enrichment).

Water samples will be taken upstream and downstream of the proposed development site on all major drainage lines and will be undertaken during both the wet and dry seasons, in order to achieve a comprehensive background of the existing water quality conditions. Water quality results will be compared with DWA's standards, as outlined in the DWA Water Quality Guideline Documents for Aquatic Ecosystems.

An assessment of the phosphate absorption potential of the surrounding soils will be undertaken in order to determine the timeframe and likelihood of complete saturation of the soil profile by phosphate from the treated, irrigated piggery effluent. South African soils are typically "phosphate poor", but with continued and excessive loading of these soils from piggery effluent, there may eventually be saturation and breakthrough of these nutrients into the surrounding aquatic ecosystem. This has implications for water quality of the nearby drainage lines as excessive levels of phosphates may results in toxic algal blooms. In addition, the nutrient loading on the surrounding aquatic resources will be modeled to determine likely scenarios from this development.

A report will be compiled to explain the findings of the water sampling and will also include a monitoring framework for ongoing water sampling – this will be necessary to ensure that any adverse impacts during construction or operation of the proposed development are easily detected, to ensure protection of these water resources. Recommendations will also be provided to mitigate the impacts of this development on the surrounding aquatic ecosystems.

9.3.2 Wetland / Drainage Line Delineation

The edges of the aquatic ecosystems and / or associated wetland habitat of the Groot Nylrivier and existing wetland on the property will need to be delineated to ensure that the proposed grower unit does not encroach on these sensitive habitats. This will require fieldwork which will involve an inspection of the soils for current and historical signs of wetness (i.e Wetland Delineation).

The results will be presented visually in a map showing the edge of the drainage line / wetland habitat, with a suitable buffer applied to afford these systems additional protection.

9.3.3 Geotechnical Assessment

A detailed, on-site geotechnical assessment will be undertaken to determine the suitability of the underlying soil and geology for development of the new piggery unit.

This will involve the excavation of inspection pits in order to describe the underlying soil profile and geology and also to obtain soil material for further laboratory testing. Materials testing and Dynamic Cone Penetrometer (DCP) tests will also be included. Furthermore, the founding requirements and an assessment of groundwater resources will be conducted.

Percolation testing will also be carried out to determine the suitability of the soils for the infiltration of stormwater.

9.3.4 Heritage Impact Assessment

Although it is unlikely that any cultural, historical or archaeological resources exist on the site, there is still a possibility that such resources could be buried on-site and therefore these could be uncovered and/or disturbed from earthworks associated with the construction phase. Therefore, in order to satisfy the requirements of SAHRA, a Heritage Impact Assessor will conduct an assessment of the site. The results of the Heritage Impact Assessment will be included in the Draft EIA Report, assuming the Final Scoping Report is accepted by the DEDET.

9.4 Environmental Impact Assessment Report

The EIA Report will contain a summary of the findings of the Specialist Studies and their recommendations for mitigation and management. It will also detail the public participation process undertaken as part of the EIA Phase and will include records of notices, comments and meetings with I&APs. Essentially, the EIA Report will investigate environmental impacts and alternatives in more detail and mitigation measures and recommendations will be provided to address these issues.

9.4.1 Assessment of Environmental Issues

In order to assess potential environmental issues associated with the proposed development, the impacts addressed in Section 7 and 8 will be given a qualitative rating based on certain aspects of each environmental impact. The aspects have been divided into a number of different classes, each of which has been assigned various criteria (see Table 4).

Where relevant, the following methods will be used to predict the characteristics of identified impacts:

- Professional judgement;
- Quantitative mathematical models;
- Experiments and physical models;
- Physical or visual simulations or maps (including GIS tools);
- Case studies; and

- Past experience.

Table 4: Summary of aspects used for assessing environmental impacts

(1=low, 2=medium, 3=high)

ASPECT	CLASS	CRITERIA
NATURE OF IMPACT	Positive	The impact on the environment will be positive.
	Negative	The impact on the environment will be negative.
	Direct	The impact is caused directly by the activity and generally occurs at the same time and at the place of the activity.
	Indirect	The impact induces changes that occur as a result of the activity.
	Cumulative	The impact is a result of the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities.
OCCURRENCE OF IMPACT	Construction	The impact will happen during construction.
	Operation	The impact will happen during operation.
	Decommissioning	The impact will happen during decommissioning.
	Immediate	The impact will happen immediately
	Delayed	There will be a delay in the impact occurring.
PROBABILITY OF IMPACT OCCURRING (with mitigation)	Definitely	The impact will definitely occur even with mitigation (100%).
	Likely	It is likely that the impact will occur (60%-99%).
	Fair	There is a fair chance that the impact will occur (30% -59%).
	Unlikely	It is unlikely that the impact will occur (0% - 29%)
REVERSIBILITY (with mitigation)	Possible	It is possible to reverse the impact.
	Partly	It is partly possible to reverse the impact.
	Not possible	It is not possible to reverse the impact.
EXTENT OF IMPACT (with mitigation)	Site	The impact will be limited to the site.
	Local	The impact will affect the local area (within a radius of 40km).
	Provincial	The impact will affect areas beyond the site but within the boundaries of KwaZulu-Natal.
	National	The impact will affect areas beyond the Province but within the boundaries of South Africa.
DURATION (with mitigation)	Short-term	0-5 years (construction phase).
	Medium-term	5-40 years (construction and operation).
	Long-term	(>40 years).
	Permanent	Permanent damage to the environment.
SIGNIFICANCE OF IMPACT WITHOUT MITIGATION	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.
SIGNIFICANCE OF IMPACT POST-MITIGATION	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.

9.4.2 Assessment of Alternatives

The EIA Regulations require that alternatives to a proposed activity must be considered, including the No-Go or Do-Nothing alternative. The Do-Nothing alternative is the option of not undertaking the proposed activity or any of its alternatives. The Do-Nothing alternative also provides the baseline against which the impacts of other alternatives should be compared.

For this project, the following different types of alternatives have been identified:

1. **Do-nothing** – assessment of environmental impacts if the proposed development, or any of its alternatives, does not proceed.

2. **Alternative Locations for Grower Unit** – several different alternative locations where investigated on the Farm Rhenosterpoort by the Applicant, before deciding on the preferred site alternative on the farm. Factors taken into consideration in this decision-making process included:
   - Topography;
   - Orientation;
   - Land suitability (i.e. disturbed land versus pristine land);
   - Electricity availability;
   - Water resource availability and proximity to a water resource;
   - Accessibility in terms of delivery and transportation vehicles; and
   - Biosecurity.

However, due to motivation as provided by Geo Projects (see Table 3), alternative sites on the property will be investigated to prevent and / or limit a disturbance.

3. **Alternative Effluent Disposal Infrastructure** – investigation of various options of effluent disposal including:
   - Bio-digester (preferred option);
   - Effluent settling ponds; and
   - Utilising a holding tank.

4. **Alternative Water Supplies** – assessment of a variety of water sources for water supply:
   - Utilise existing water use permits;
   - Extraction from new boreholes; and
   - Extraction from the Groot Nylrivier.

As part of the full EIA report, each of the different identified alternatives will be investigated and assessed, and reasons for the elimination of alternatives will be provided. Where relevant, assessment will be based on:

- Capital investment and establishment costs;
- Direct, indirect and cumulative ecological impacts;
- Mitigation measures;
- Physical, legal or institutional constraints; and
- Compliance with policy and legal requirements.

If through public participation, additional reasonable and feasible alternatives are identified by I&APs, these new alternatives will be assessed as part of the full EIA Report.

9.5 Environmental Management Programme

An Environmental Management Programme (EMPr) will be compiled and will contain guidelines to ensure that all activities associated with the proposed development are carried out in an environmentally responsible and acceptable manner.

An EMPr is a legally-binding document that contains guidelines with which Contractors must comply, and which must be strictly implemented and regularly monitored. If this is done, it is likely that the majority of the potentially adverse impacts associated with construction activities can be minimised or prevented. An Environmental Control Officer (ECO) should be appointed by the developer to ensure compliance with the EMPr during the construction phase. Should non-compliance occur, this must be brought to the attention of the DEDET, who will conduct the required prosecution procedure.

Specific management objectives and mitigation measures will be specified in the EMPr for the entire duration of the development, including the following stages:

- Planning and design;
- Pre-construction and construction activities;
- Operation or undertaking of the activity;
- Rehabilitation of the environment; and
- Closure (where relevant).

The EMPr will be based on the principles of the NEMA as well as the recommendations made in the Scoping Report and EIA Report, and will identify roles and responsibilities of management personnel on-site. The EMPr will be used as a framework for environmental compliance monitoring and reporting.

9.6 Submission and Consideration of Documentation by the Competent Authority

Comments received in response to the EIA Report will be attached to, summarised and responded to in a final version of the EIA Report, which will be submitted to the Competent Authority for consideration in terms of issuing Environmental Authorisation.

10 REFERENCES

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11 APPENDICES

APPENDIX 1:

Curriculum Vitae of Environmental Assessment Practitioner

APPENDIX 2:

Revised Application Form & Acknowledgment of receipt from DEDET

APPENDIX 3:

Layout Plan: Breeding Unit

APPENDIX 4:

Layout Plan: Farrowing Houses, Dry Sow Houses, Gilt Houses

APPENDIX 5:

Layout Plan: Grower Unit

APPENDIX 6:

Registration Certificate: Department of Water Affairs and Forestry

APPENDIX 7:

Newspaper Adverts and Photos of Environmental Notice Boards

APPENDIX 8:

List of Interested and Affected Parties (I&APs)

APPENDIX 9:

Background Information Document (BID)

APPENDIX 10:

Comments received following circulation of BID

APPENDIX 11:

Public Meeting Attendance Register and Meeting Minutes

APPENDIX 12:

Draft Scoping Report Comments