

**PROPOSED UPGRADE OF THE HANS HOHEISEN WILDLIFE RESEARCH
STATION, MPUMALANGA**

*NEAS Ref: DEA/EIA/0001347/2012
Reference: 14/12/16/3/3/3/48*

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
DRAFT SCOPING REPORT**

Prepared for:

The Department of Environmental Affairs

Prepared by:



On behalf of:

The University of Pretoria

January 2013

APPLICATION INFORMATION

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Reference	14/12/16/3/3/3/48
Title	Proposed Upgrade of the Hans Hoheisen Wildlife Research Station, Mpumalanga
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Client	University of Pretoria
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INVITATION TO COMMENT ON THE DRAFT SCOPING REPORT

This Document, the Draft Scoping Report for the proposed Upgrade of the Hans Hoheisen Wildlife research station has been made available for public review from 14 January 2013 – 11 February 2013.

Soft copies have been made available for download off the internet. Notifications and a link to the download has been emailed to all registered I&AP's and Stakeholders. In addition, a hard copy has been made available at the Orpen Rest Camp.

Digital copies of the report on CD are available upon request.

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Comments may be sent by fax or via email by no later than 11 February 2013.

EXECUTIVE SUMMARY

Introduction:

The Hans Hoheisen Wildlife Research Station (HHWRS) is situated on portion 2 of the Farm Kempiana 90 KU, Mpumalanga. Regionally the site is located adjacent to the Kruger National Park, and is situated on the western boundary thereof in the vicinity of Orpen Gate and Orpen Rest Camp. The Manyeleti Nature Reserve lies to the south east and the Timbavati Nature Reserve to the south west. The Timbavati River bypasses the site less than 1km to the west.

The site currently comprises 37 ha of land, various buildings, and services. The property has been used by the University of Pretoria as an animal research facility since the 1970's. Due to a lack of funding, however, the facility fell into a state of disrepair during the 1990's.

The intention of the project is to refurbish, launch, and manage the Hans Hoheisen Wildlife Research Station as a research platform to support research involving the diseases of wildlife, humans, and livestock at an interface between a transfrontier conservation area (TFCA), the Greater Limpopo Trans Frontier Park and local communities.

Project Description:

The proposed project, for which Environmental Authorisation is required, includes the following basic activities:

- Footprint expansion, consisting of:
 - Expansion of offices;
 - New staff accommodation, guest housing and camp site;
 - New student accommodation;
 - New bomas, cages and enclosures;
 - Upgraded roads and services.
- Establishment of Waste Facilities, including:
 - Waste storage;
 - Waste treatment and
 - Incineration.

The Research Station will be developed and will ultimately operate according to the following five zones:

- Public Access zone;
- Accommodation zone;
- Restricted Access – Animal Enclosure Zone;
- Restricted Access - Bio-safety Zone
- Restricted Access - Industrial Zone

Service Infrastructure will be upgraded to accommodate the facility upgrades. The following is of relevance:

- The site is currently linked to Eskom power, which is brought to site via overhead cables. Where required the bulk reticulation infrastructure and the wiring in the existing buildings will be maintained, replaced and / or upgraded.
- Bulk water for the existing facility is abstracted from a borehole on site. The existing borehole will continue to be used to supply water for the upgraded facility, and

reticulation infrastructure will be extended to the new sections of the HHWRS as required. A second borehole will be maintained as a backup source. As the water requirement will be in excess of this permitted quantity, the proponent will require a Water Use License.

- The access point in the far south of the facility will serve as the main access control point to the property. The gate immediately to the north of this will give controlled access to students and residents into residential zone. The northern two access points will be strictly controlled access into the Restricted Access/Bio-safety Zone.
- Storm water from building roofs and other hard surfaces will be managed on site and dispersed into the surrounding landscape as quickly as possible. Concentrated flow and point discharge of storm water will be avoided. All storm water will be managed according to principles of sustainability.
- General and domestic liquid waste includes both grey water and sewage emanating from offices, labs and accommodation, but excludes hazardous waste streams. The general and domestic liquid waste will be kept separate from the hazardous waste water.
- In terms of domestic sewage, a septic tank and soak away system currently services the facility. The existing septic tanks be expanded and upgraded to accommodate all domestic sewage produced at the facility. Liquid effluent emanating from the septic tanks will be treated either via soak-aways (existing system) or a reed bed system. The discharge of purified effluent into the environment will require a Water Use License.
- Recyclable solid waste will be sorted and stored on site. Recyclables will either be taken to a buy back centre or collected under contract by a reputable salvage / recycling company. Other (non-recyclable) waste will be disposed of under contract at a registered waste disposal site.
- Hazardous waste emanating from the facility includes water and medical waste from the laboratories, animal bedding from cages and enclosures, runoff water from bomas, enclosures and cages and animal tissue and carcasses from the necropsy room. Solid waste will either be incinerated by means of an on site incinerator (organic), or transported off site for disposal (medical).
- Liquid waste will be collected and treated in a closed blackwater system to remove pathogens. The treated effluent will then be discharged into evaporation ponds. An Atmospheric Emissions License will be required to allow for the operational requirements of the incinerator.

The construction phase of the proposed upgrades is expected to last approximately 3-5 years, depending on the availability of funding.

The operation phase will commence upon completion of construction and the occupation of the facility by the operator. The facility is currently operational. It is anticipated that certain section will be shut down to allow for construction, while others remain operational.

It is anticipated that a combination of full time and part time staff will occupy the facility, in addition to visiting academics and researchers. Only approved research staff will be housed on the premises. Visitors to the facility will be subject to a system of temporary access permits.

Project Alternatives:

No site, design or layout alternatives will be assessed, but alternatives will be investigated in terms of waste treatment technology. It is anticipated that a Waste Engineering Specialist will be appointed to evaluate these alternatives, and recommend appropriate technologies for appropriate waste streams.

The No Development alternative will result in the maintenance of the status quo, and thus the retention of the existing facility remaining as it is.

Requirements for Environmental Authorisation:

This application is for an Integrated Environmental Authorisation and Waste Management License in terms of:

- The National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010 and
- The National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008) and Government Notice 718 of 2009.

With respect to the listed activities identified for this project, a full Scoping and EIA process is required.

Public Participation:

Of note is that a prior Application for Environmental Authorisation for this project was submitted under the previous EIA regulations in 2010. The identification of I&AP's and stakeholders the advertising of the project and even a public meeting was undertaken as part of that process. In the interim, however, this application lapsed, and the file was closed by the DEA in August 2011.

Because the nature of the project as well as the identified authorities and stakeholders are the same as for the lapsed application, it may be argued that some of the 2010 process would be valid for this process.

In this regard, an application for exemption from certain aspects of public participation was submitted to DEA on 17 October 2012. Ms Pumeza Skepe of DEA gave verbal approval of this request telephonically. At the time of submission of the Draft Scoping Report (January 2013), no formal written approval had yet been received. Record of this written approval will be included in the EIA documentation record once it is received.

The following broad steps were followed as part of the Public Participation process:

- Relevant authorities for a project of this nature, and in this location include National, Provincial and Local Authorities who exercise control through statutory and non statutory instruments. These authorities were contacted and invited to register and participate in the process.
- Identified Stakeholders and potentially Interested and Affected Parties were invited to register and participate in the process.
- Site Notices informing of the process (in terms of the previous EIA Regulations, and Previous lapsed Application) were placed at the main entrance to the facility.
- An advertisement informing of the process (in terms of the previous EIA Regulations, and Previous lapsed Application) was placed in the legal section of the Lowvelder newspaper.

- A Public Meeting was held on the 12th April 2010 at the Hans Hoheisen Wildlife Research Station.
- An Issues and Responses document has been drawn up, in which all comments and inputs received from both Authorities and from I&AP's have been recorded. This document, which is included in Appendix A includes comments stemming from both the lapsed and the current application to date.

The Receiving Environment:

The following is of relevance in terms of the receiving environment:

- Historic use of the site has resulted in disturbance to the soil horizons and structure of some sections of the site.
- The major hydrological feature is the Timbavati River, which meanders across the study area. This river bypasses the site less than 1km to the north west. The site straddles a local watershed between tributaries, which runs roughly from north to south mid way across the property. A small tributary of the Timbavati River appears to originate within the site and drain due west. This drainage line lies beyond any existing or proposed development.
- The study area falls within the Gabbro Grassy Bushveld vegetation type as defined in Vegetation of Southern Africa, Lesotho and Swaziland. This veld type is rated least vulnerable in terms of its general conservation status.
- The vegetation of site mostly ranges from totally transformed to disturbed, but some sections may be considered undisturbed natural bush clusters. Where buildings and infrastructure have been developed, vegetation is generally disturbed, with denuded patches. In outer lying areas, where no buildings or infrastructure are present, the vegetation is mostly intact.
- The Hans Hoheisen Wildlife Research Station is effectively part of the Kruger National Park, and therefore theoretically supports those species occurring naturally within the region. No resident faunal communities have been observed within the site, but the possibility exists that certain protected species may occur. These include sedentary fauna such as the Plated Lizard and Golden Baboon Spider.
- It is anticipated that the agricultural potential of the both region and of the site is high. It should be noted, however, that such agricultural potential is theoretical only, as this land is not available for agricultural use, being located in such close proximity to the KNP and occupied historically and currently as a research facility.
- The facility was built and commissioned in the 1970's, meaning that none of the buildings or structures present on the site are older than 60 years. No graves were observed on the site, nor have any been documented during the operational lifespan of the facility. Similarly, no archaeological, paleontological or historical finds have been observed or documented on the site during the past 40 years.
- A number of renowned hospitality and tourism facilities operate in the vicinity, with the Orpen Rest Camp located less than 1km to the north east, while Ngala Tented Camp and Mr Pirow lie to the Southwest of the facility.
- The site lies within the greater Kruger National Park area, and therefore falls under the local jurisdiction of Mpumalanga Tourism and Parks Authority. Within this context, there is no local resident population or populated place other than within the above mentioned tourist operations surrounding the facility.

- The visual quality of the study area is high, generally as a result of the lack of development and the large areas given over to conservation within the region. Those parts of the site that have remained undisturbed and undeveloped, have a higher aesthetic quality, in line with that of the conservation areas of the region.
- A number of large trees have been preserved within the site footprint, and these contribute to the quality of the visual environment somewhat. While it is anticipated that the dense existing vegetation will to a large degree screen visual impacts, there is a concern of impact from peripheral development.

Potential Issues and Impacts:

A number of potential impacts are likely to result from both the construction and operational phase of the proposed upgraded facility. These include Direct, Indirect and Cumulative Impacts on the following:

- Ground water;
- Surface water;
- Soils;
- Air;
- Biodiversity (flora);
- Biodiversity (fauna);
- Agricultural potential;
- Land use and infrastructure;
- Heritage;
- Socio economics;
- Aesthetics.

Conclusions and recommendations:

The Draft Scoping Report for the proposed upgrade of the Hans Hoheisen Wildlife Research Station has been undertaken in accordance with the EIA Regulations published in Government Notice 33306 of 18 June 2012 (as amended).

The aim of the report has been to understand the nature of both the facility and the receiving environment, to identify potential issues associated with the proposed project and to define the extend of further studies recommended as part of the EIA phase of the process.

The scope of work was accomplished through site visits, in house desktop analyses, extensive interaction with the proponent, and consultation with identified Stakeholders and Interested and Affected Parties, including Authorities.

Based on the Scoping phase undertaken thus far, the EAP is of the opinion that the proposed upgrade of the Hans Hoheisen Wildlife Research Station presents no fatal flaws from an environmental perspective. The issues identified are quantifiable, subject to the recommended specialist studies.

Lastly, the EAP is confident that sufficient information has been made available to fully understand the potential issues likely to arise as a result of the proposed facility, and recommends that the Scoping Report be accepted, and permission granted to proceed with the EIA phase in accordance with the Plan of Study for EIA as detailed below.

The following studies are recommended as part of the process, and for inclusion in the EIA Report:

- Ecological Sensitivity Mapping: This exercise is recommended as a desktop study by the EAP, supported by on site observations, client input and spatial data acquired from SANParks.
- Ground water baseline study: This exercise is recommended as a desktop study by the EAP, supported by client input and spatial data acquired from SANParks.
- Engineering Services and Waste Treatment Report: This study will be carried by a specialist engineer / designer in this field.
- An Independent Opinion on the issue of potential Disease Risk to adjacent wildlife and to Humans: This will be a statement by an independent specialist in the veterinary field, such as the State Veterinarian.
- A Phase 1 Archaeological Assessment OR a letter by an Archaeological specialist indicating that there is no necessity for further assessment.
- A Phase 1 Paleontological Assessment OR a letter by a Paleontological specialist indicating that there is no necessity for further assessment.
- *The site is situated more than 1km away from the main channel and more than 100m away from the closest tributary. In this respect, the determination of a floodline is considered unnecessary. What is necessary, however, is to determine the extent of riverine vegetation along the drainage line. This is recommended as part of the Ecological Sensitivity Mapping.*

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APPENDICES

Appendix A: Public Participation Process

- A.1 Authority Correspondence
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DEFINITIONS AND TERMINOLOGY

Environmental Management Programme	An environmental management programme in relation to identified or specified activities envisaged in Chapter 5 of the Act and described in regulation 34
Environmental Impact Assessment	An application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application”
Environmental Control Officer	A person appointed by the project manager, developer, engineer or contractor to oversee compliance to the EMP. This person can be an internal appointment or an external consultant/specialist depending on the authorities’ requirements.
Project Manager / Engineer	Designated project manager / engineer for the construction project
Proponent / Client / Developer	Person or company responsible for proposing the project
Contractor	Person and/or company appointed to complete project
I&AP	An interested and affected party contemplated in section 24(4)(d) of the Act, and which in terms of that section includes – (a) any person, group of persons or organisation interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity;
The Act	The National Environmental Management Act, 1998 (Act No. 107 of 1998)”

ABBREVIATIONS AND ACRONYMS

EA	Environmental Authorisation
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
DEA	Department of Environmental Affairs
DWAF	Department of Water Affairs and Forestry
DME	Department of Minerals and Energy
SAHRA	South African Heritage Resources Agency
ECO	Environmental Control Officer
I&AP	Interested and Affected Party
RoD	Record of Decision
EAP	Environmental Assessment Practitioner as defined in section 1 of the Act Environmental Assessment Practitioner

1. INTRODUCTION

1.1 Project Description

1.1.1 PROJECT LOCATION

The Hans Hoheisen Wildlife Research Station (HHWRS) is situated on portion 2 of the Farm Kempiana 90 KU, Mpumalanga. Regionally the site is located adjacent to the Kruger National Park, and is situated on the western boundary thereof in the vicinity of Orpen Gate and Orpen Rest Camp.

The Manyeleti Nature Reserve lies to the south east and the Timbavati Nature Reserve to the south west. The Timbavati River bypasses the site less than 1km to the west. Refer to **Map 1**.

1.1.2 PROJECT COMPONENTS AND ACTIVITIES

The Hans Hoheisen Wildlife Research Station currently comprises 37 ha of land, various buildings, and services on the property.

The property has been used by the University of Pretoria as an animal research facility since the 1970's. Due to a lack of funding, however, the facility fell into a state of disrepair during the 1990's. The proposed project includes the following basic activities:

- Footprint expansion, consisting of:
 - Expansion of offices;
 - New staff accommodation, guest housing and camp site;
 - New student accommodation;
 - New bomas, cages and enclosures;
 - Upgraded roads and services.

- Establishment of Waste Facilities, including:
 - Waste storage;
 - Waste treatment and
 - Incineration.

The Research Station will ultimately consist of the following five zones, which will cover approximately 37 ha (refer to **Map 3**):

a) *Public Access Zone*

The public access zone acts as a primary buffer for the restricted access zone and will be accessed immediately from the entrance gate. While it is the lowest security level zone, it will still have strictly regulated access control. The following infrastructure is to be included within this zone:

- An access road controlled by access gate (existing infrastructure);
- 6 visitors accommodation units for VIP use (new infrastructure);
- General Office Space, clean lab and auditorium (existing infrastructure)
- A canteen / cafeteria (new infrastructure);
- Landscaping features such as berms for visual buffering (new infrastructure)
- New / upgraded parking area (new infrastructure);

- Helicopter landing pad (existing infrastructure) and associated buildings (new infrastructure).

b) Accommodation Zone

The Accommodation zone is restricted to personnel and visiting scientists and includes all accommodation facilities on the property. The following infrastructure is to be included within this zone:

- An access road (existing and new infrastructure) controlled by access gate (new infrastructure);
- Student / Scientist Accommodation (2 existing and 2 new buildings);
- Visiting Scientist's permanent tented and park home facility (new infrastructure);
- Permanent Staff Accommodation (3 existing and 1 new structure).

c) Restricted Access – Animal Enclosure Zone

The following infrastructure is to be included within this zone:

- Animal holding pens, cages and bomas (new infrastructure).

d) Restricted Access - Bio-safety Zone

This zone will operate as a quarantine facility and will operate as a Biosecurity Level 2 or 3 Facility (Refer to Appendix B.2). There are international rules and protocols, which govern the design and operation of such facilities, and these will apply both in design and during operation. The following infrastructure is to be included within this zone:

- An access road (existing and new infrastructure) controlled by access gate (new infrastructure);
- Laboratories (existing infrastructure);
- Necropsy room (new infrastructure);
- Offices (existing and new infrastructure);
- Predator cages and bomas (new and existing infrastructure);
- Solid waste temporary storage room (new infrastructure);
- Liquid Waste reticulation and treatment tanks (new infrastructure);
- Animal holding pens and cages (new and existing infrastructure).

e) Restricted Access - Industrial Zone

The following infrastructure is to be included within this zone:

- Incinerator or other hazardous solid waste disposal technology (new infrastructure);
- Water treatment works (new infrastructure);
- Transformer and storage (existing and new infrastructure).

1.1.3 SERVICES AND INFRASTRUCTURE

The design team will reference various documents during the planning and design of basic services for the proposed upgrades to the HHWRS. The following documents will be used as prescribed:

- Guidelines for the provision of Engineering Services and Amenities.
- Guidelines for human settlements, Planning and Design – CSIR (Red Book).
- South African Bureau of Standards (SABS 1200/SANS 1200).

a) *Electricity*

The site is currently linked to Eskom power, which is brought to site via overhead cables. Existing monthly electricity consumption averages at around 8300kWh¹. It is anticipated that the existing infrastructure will be sufficient to cope with the new requirement, which is not expected to much exceed the existing use.

Where required the bulk reticulation infrastructure and the wiring in the existing buildings will be maintained, replaced and / or upgraded.

A Standby Generator with change-over panel will be installed, as voltage fluctuation is a major problem and protection equipment must be installed.

In line with the principles of environmental sustainability, the development will be designed to take cognisance of restrictions in power supply through National Demand Management. To this end the following principles will be considered:

- Energy efficient architecture and building design for new and renovated structures;
- The consideration of alternative (renewable) sources of electricity for certain applications and
- The management of demand and usage through design and operations.

b) *Water*

Bulk water for the existing facility is abstracted from a borehole on site. A second borehole is maintained as a backup source. The following statistics are of relevance:

- Borehole depth: 75,4m
- Static water level: 36,3m
- Dynamic water level: 46,3m
- Pump inlet: 68m
- Required delivery rate: 4 000 litres per hour
- Maximum yield allowed: 4 000 litres for 8 hours = 32 000 litres per day².

The existing borehole will continue to be used to supply water for the upgraded facility, and reticulation infrastructure will be extended to the new sections of the HHWRS as required. Existing water tanks and reticulation will be expanded and upgraded to incorporate demands of new infrastructure.

Borehole yield capacities will be tested to ensure existing boreholes can meet the expected water needs of the facility, and make sure that the borehole equipment does not exceed the capacity of the boreholes.

Water will be pumped from the boreholes to a central storage facility comprising six 10 000 litre tanks. Water storage will allow for enough holding capacity for approximately 48 hours.

A fire pump system with fire hydrants will be installed in the technical / experimental area and a booster pump will be installed on the water supply to the necropsy room

Where necessary, the bulk reticulation infrastructure and the piping in the existing buildings will be maintained, replaced or upgraded. Existing water pipelines (steel and other) will be tested and replaced with uPVC pipes as required.

¹ Emailed correspondence: Dr Paul van Dam, Faculty Manager Hans Hoheisen Wildlife Research Station (13 November 2012)

² Emailed correspondence: Dirk Booyse, Hans Hoheisen Wildlife Research Station (13 November 2012)

The quality of water from the boreholes is poor, and results in excessive calcification of geysers and pipes. This water is also corrosive. Potable water (i.e. that which is to be used for domestic purposes such as human consumption and laboratory use) is therefore purified by use of a reverse osmosis plant installed at the central storage facility. Potable water subscribes to all necessary health standards. All water for irrigation, livestock, cleaning purposes and fire fighting remains untreated. This existing reverse osmosis plant will remain in place, and no upgrades are required.

In line with the principles of sustainability, water efficiency will be encouraged. To this end the following principles will be considered:

- Water efficient mechanisms, fittings and fixtures for new and renovated buildings, such as aerated faucets and shower heads, dual flush cisterns etc.;
- Sustainable and water-wise solutions for the irrigation of landscape and gardens, thus reducing the demand for irrigation;
- Sustainable and water-wise solutions for storm water management;
- Sustainable and water wise solutions for the disposal of waste water;
- The consideration of recycled grey water and purified black water for re use in certain applications
- The harvesting of storm water for re use in certain applications and
- The management of demand and usage through design and operations.

Current abstraction rates for the facility are approximately 30 000 litres per day (or 30m³ per day), of which about 50% is allocated for potable use, and 50% for irrigation. This equates to about 11 000m³ per annum for irrigation and potable purposes (assuming the facility operates 7 days a week, 365 days per year).

It is not anticipated that the proposed further development of the facility will necessitate much of an increase in abstraction. In fact, with the implementation of the water wise strategies detailed above, the consumption may well decrease.

Notwithstanding the above, the facility falls into the Quaternary drainage area B73F. Under the General Authorisation for water use (amended 2004), 75m³/ha/annum may be abstracted for this property. Any usage above this quantity will require a Water Use License.

In terms of the permissible water rights, this 37 Ha of land therefore have the rights to abstract 2 775 m³ per annum. As the requirement will be in excess of this permitted quantity, the proponent will require a Water Use License.

c) Roads

There are four proposed access control points to the facility as indicated on **Map 3**.

The access point in the far south of the facility will serve as the main access control point to the property. The gate immediately to the north of this will give controlled access to students and residents into residential zone. The northern two access points will be strictly controlled access into the Restricted Access/Bio-safety Zone.

Internal road structures as well as roads used for access into the development will be properly articulated. The roads will have stabilised surfaces and will be designed to accommodate and manage storm water runoff according to sustainable principles (see below).

d) *Storm Water*

Storm water from building roofs and other hard surfaces will be managed on site and dispersed into the surrounding landscape as quickly as possible. Concentrated flow and point discharge of storm water will be avoided. All storm water will be managed according to principles of sustainability, including (but not limited to) the following:

- Limit the extent of hard impermeable surfaces as much as possible;
- Consider the use of permeable paving wherever possible;
- Where hard surfaces are unavoidable (i.e. such as roads), ensure that there is no large accumulation of runoff, but that it is channelled off the road at regular intervals so that it can infiltrate into the ground. Equip discharge points with velocity dissipation mechanisms where required and
- Implement measures that will encourage the spreading, slowing and infiltration of storm water rather than the accumulation thereof. These include landscaped attenuation areas, rain gardens etc.

e) *Liquid waste*

General and domestic liquid waste includes both grey water and sewage emanating from offices, labs and accommodation, but excludes hazardous waste streams. The general and domestic liquid waste will be kept separate from the hazardous waste water, as the latter system will have to deal with animal pathogens and will thus be purpose-designed to ensure effective treatment.

All general and domestic liquid waste and sewage will be treated on a continuous basis as it is produced. It will not be stored.

At present, a septic tank and soak away system services the facility. The capacity of the existing system will have to be confirmed, and upgrades and expansions implemented as required. Preliminary indications show that it is capable of dealing with the additional volumes.

It is proposed that the existing septic tanks be expanded and upgraded to accommodate all domestic sewage produced at the facility. Liquid effluent emanating from the septic tanks will be treated either via soak-aways (existing system) or a reed bed system. The design of the sewage system will ensure that no odours are emitted and that any liquid entering the environment complies with minimum quality standards as specified by DWA. The discharge of purified effluent into the environment will require a Water Use License.

In support of the principles of sustainability, consideration will also be given to the separation and accumulation of grey water (i.e. from showers, sinks etc.), and the re-use thereof for selected purposes, such as irrigation.

f) *Solid Waste*

General and domestic solid waste from offices, labs and accommodation will be accumulated on a regular basis. A sort-at-source approach to recycling will be adopted, and residents and employees encouraged to collect recyclables separately.

Recyclable solid waste will be managed by the Southern African Wildlife College, where it will be sorted and recyclables sorted and stored. Recyclables will either be taken to a buy back centre or collected under contract by a reputable salvage / recycling company. Other (non-recyclable) waste will be disposed of under contract at a registered waste disposal site.

General and domestic waste may be temporarily stored until sufficient quantities are generated to allow for recycling or disposal. In this regard a dedicated temporary storage facility is proposed on the HHWRS site, where solid waste can be safely stored. This will be a purpose designed secure storeroom.

Construction waste (generated during the construction period) will be stored and sorted in a demarcated area on site and when waste quantities are sufficient it will be trucked off site and disposed of at a registered waste disposal site.

The nearest registered waste disposal site is the Khensani Dumping Site in Welverdiend, and falls under the jurisdiction of the Bushbuckridge Municipality.

g) *Hazardous Waste*

Sources:

- Multi-disciplinary laboratories exist at the facility where various laboratory activities will take place.

These activities include the determination of the efficacy of scheduled drugs, microbiological procedures, serological procedures and PCR. Empty containers and other solid medical waste form a hazardous waste stream.

Water from the laboratories forms a hazardous liquid waste stream, as this may contain pathogens, chemicals and body fluids.

- Animals will be held within defined biosafety zones at HHWRS. Predators will be housed in predator cages, while ungulates will be housed in bomas and pens. Since research on specific diseases will form a core function of the station, it is assumed that animal bedding and enclosures may be contaminated with pathogens.

The soiled bedding from cages and enclosures may be considered a solid hazardous waste stream.

All water emanating from bomas, enclosures and cages will form a liquid hazardous waste stream.

- Veterinary research will also be undertaken in a defined necropsy room within the biosafety zone. Animal tissues containing potential pathogens will be handled in this facility.

Animal tissue that is no longer required for veterinary research will form a solid hazardous waste stream, and may be potentially contaminated with pathogens. Animal carcasses are also considered to be a hazardous solid waste stream.

Washing of equipment and the necropsy room will also generate a potentially hazardous liquid waste stream.

- Any hazardous waste produced during the construction phase will be disposed of at a properly registered hazardous waste site. Permission will be sought from the local municipality in this regard.

Treatment:

Waste treatment will be determined by the type of waste generated, for example:

- Chemicals;

- Biological material such as carcasses, tissues and fluids;
- Sharps;
- Reagents;
- Pathogens;
- Laboratory disposables.

Management of waste will be in accordance of the practices determined by bio-security level two (2) operations (BSL2).

The following waste treatment technologies are being investigated for waste streams emanating from the upgraded facility:

Solid Wastes:

- Incineration in an on-site incinerator (and then off site disposal of residue);
- Alkaline hydrolysis of organic matter;
- Temporary storage and offsite disposal*;
- Combinations of the above technologies.

*Certain solid waste (general, domestic and other) may be temporarily stored until sufficient quantities are generated to allow for disposal. In this regard a dedicated temporary storage facility is proposed where solid waste can be safely stored. This will be a purpose designed secure storeroom fitted with appropriate waste containment measures to ensure that no pollution of the surrounding environment (i.e. specifically soil, ground water and surface water) occurs during storage or loading.

Liquid Wastes:

- Chemical treatment in a series of tanks;
- Biological treatment in a series of tanks;
- Thermal treatment – incineration;
- Combinations of the above technologies.

Pathogen containing wastewater from laboratories and washwater from certain areas will be collected and treated in a closed blackwater system to remove pathogens. The treated effluent will then be discharged into evaporation ponds.

The system will be designed to be a closed system with no output to the environment. This is done since the physical parameters of effluent water may not be suitable for immediate discharge. Furthermore effluent released to evaporation ponds will have been treated to a level where it is free from pathogens and odours.

It is important to note that both the animals and diseases being researched at the facility are endemic to the area. In this regard, no new pathogens are likely to be introduced to the system.

The laboratories and quarantine facilities will only deal with pathogens that are classified to a maximum level prescribed by Bio Safety Level 3. All facilities will be designed to ensure that the provisions of the relevant Bio Safety Level with regards to containment are adhered to.

All hazardous liquid waste will be treated on a continuous basis as it is produced. It will not be stored.

Disposal:

This will be undertaken in accordance with BSL2 standards and will include incineration of organic waste on the premises, the disposal of treated (pathogen free) liquid effluent to an evaporation pond and the off site disposal of drug and chemical containers. No discharge of liquid effluent to the environment is anticipated.

The incinerator will have both primary and secondary combustion chamber. The purpose of the secondary combustion chamber is to ensure complete combustion and eliminate smoke and odours at full operating temperatures. Limited amounts of smoke (and odour) may occur before the incinerator reaches full operating temperature, however this will be for a very short time period.

In terms of Government Notice No 248 (March 2010), facilities where general and hazardous waste are incinerated with an incinerator with a processing capacity of 10 kg of waste per hour (or larger) would require an Atmospheric Emissions License.

The requirement for the proposed incinerator at the HHWRS is expected to include the following:

- Animal bedding: max 1 ton / day; 30 ton / month
- Animal tissue, fluids and solids: max 3 ton / day; 90 ton / month
- Total: max 4 ton / day; 120 ton / month

In order to incinerate a maximum of 4 tons per day, and assuming an 8 hour per day operation, the incinerator would need to process 500 kg of waste per hour. As this requirement is above the threshold listed in GN 33064 (March 2010), an Atmospheric Emissions License will be required in terms of the National Environmental Management Air Quality Act 39 of 2004.

Incinerator design and operation will conform to minimum standards as defined in appropriate legislation. DWAF Process 39: Waste incineration provides minimum design and operating standards.

Drug and chemical containers (including sharps) will not be incinerated. This waste will be collected and disposed of, as is currently done. The waste will be temporarily stored on site, until sufficient quantities have been collected for disposal. Once sufficient quantities are available for disposal, *Oricol Environmental Services* is contacted for the transportation of the waste to the Onderstepoort Facility in Pretoria. At Onderstepoort, the waste is incinerated.

The University of Pretoria has strict operating procedures in place for the safe handling and disposal of chemicals, medical and biological waste. This Safety Manual, which is applicable to all University of Pretoria laboratory facilities, has been included as Appendix B.3. In short, all biological waste is autoclaved before it leaves the lab area. The waste is sealed bio-hazard bags, placed in marked bio-hazard boxes sealed with tape.

In addition to the above in-house safety procedures, *Oricol Environmental Services* also specifies strict procedures for the storage and transportation of chemical and medical waste. The disposal procedures for both Laboratory Chemicals and Medical Waste have been included as Appendix B.5 and B.6 respectively.

The flow chart below illustrates the anticipated quantities, and the flow of liquid waste, solid waste and hazardous waste anticipated for the proposed upgraded HHWRs:



Figure 1: Flow chart of anticipated Waste Streams

1.1.4 THE CONSTRUCTION PHASE

The construction phase of the proposed upgrades is expected to last approximately 3-5 years, depending on the availability of funding. The construction phase will consist of the following broad activities:

- Surveys and final planning;
- Handover to contractor;
- Site establishment;
- Construction of structures and infrastructure;
- Site Rehabilitation;
- Handover to operator and
- Post completion / rehabilitation monitoring.

1.1.5 THE OPERATIONAL PHASE

The facility is currently operational. It is anticipated that certain section will be shut down to allow for construction, while others remain operational. Operations in these areas will recommence upon completion of construction and the occupation of the facility by the operator.

Occupation:

It is anticipated that a combination of full time and part time staff will occupy the facility, in addition to visiting academics and researchers.

Only approved research staff will be housed on the premises. All day staff will reside outside the Greater Kruger National Park. All staff will require permits both from SANParks and from the Hans Hoheisen Wildlife Research Facility. Staff without either of these permits will not be allowed access.

Visitors to the facility will be subject to a similar system of temporary access permits.

Inputs:

Feed such as Lucerne will be brought in for herbivorous animals. Carnivore feed brought in from outside will be managed in conjunction with the State Veterinarian. Predator feed is likely to be sourced from the community in the form of donkeys. Alternatively, the option of surplus meat from elephant may be considered if KNP proceeds with elephant management in the form of culling.

Waste:

Animal faeces (from bomas and cages) will be collected on a daily basis so as to minimise the impacts of odours and flies.

Herbivore faeces will be composted and then returned to the soil, while carnivore faeces will be disposed of either through incineration or through incorporation into the hazardous liquid waste system.

Research activities:

The facility is intrinsically linked to the Transfrontier Conservation Area in which it is situated. The facility is also situated within the veterinary cordon.

Predominantly pathogens falling into Bio Safety Level 1 & 2 will be researched. Although these pathogens are endemic, they are not necessarily prevalent in adjacent areas. It is noteworthy, however, that they also have a very low risk of transmission without direct contact.

A maximum of Bio Safety Level 2 pathogens will be dealt with under normal operating circumstances. Bio Safety Level 3 pathogens will only be dealt with in the laboratory under very special circumstances. All facilities and the operation thereof will be fully compliant with the provisions of the relevant Bio Safety Levels.

All staff will be fully trained on the operating procedures for a Bio Safety Level 3 facility. All visitors will be fully briefed on the operating procedures for a Bio Safety Level 3 facility.

Security:

The Hans Hoheisen Wildlife Research Centre will operate with a high level of security and access control. Since the facility operates as a quarantine station the entire facility is fenced and electrified. Access will be controlled through a single gate, which employs state of the art access control. An alternative exit gate is available for large vehicles, but this will only be utilised by special arrangement.

Security and maintenance of the facility will be ongoing for the duration of its operational life.

1.1.6 THE DECOMMISSIONING PHASE

At this stage the decommissioning of the facility is not anticipated.

1.2 Purpose of the Project

The Hans Hoheisen Wildlife Research Station comprises the land (a 37 ha portion of land), the various buildings, and services on the property.

The intention of the project is to refurbish, launch, and manage the Hans Hoheisen Wildlife Research Station as a research platform to support research involving the diseases of wildlife, humans, and livestock at an interface between a transfrontier conservation area (TFCA), the Greater Limpopo Trans Frontier Park and local communities.

Refurbishing and upgrading the facilities at the Hans Hoheisen Wildlife Research Station (including the accommodation currently on the premises) are being undertaken with the intention of:

- Establishing the Station as a research platform to be utilized by the University of Pretoria in association with local and international partners, and other interested parties
- To facilitate the development of research programmes and projects that will provide information to:
 - Support the management of diseases at the interface (wildlife / livestock / humans) that have a negative effect on the development of trans frontier parks and conservation areas, given the impact of these diseases and their control on land-use options for development and poverty reduction, particularly of the rural poor
 - Assist with the development of human resources, infrastructure and technology with emphasis on Detection, Identification and Monitoring (DIM) of diseases
 - Provide information that will facilitate harmonisation of policies, and the improvement of varying standards and competencies of participating countries within the context of DIM

The project is to be undertaken in a phased approach. The first phase involving the renovation of existing structures and infrastructure was completed in July 2010. The nature of this refurbishment was such that it fell outside the ambit of the EIA regulations.

1.3 Project alternatives

The role of alternatives is to find the most effective way of meeting the **need** and **purpose** of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts.

The following alternatives have been identified and a short description is included:

1.3.1 SITE / LOCATION ALTERNATIVES

Due to the fact that the original facility already exists, no site or location alternatives are being considered.

1.3.2 DESIGN / LAYOUT ALTERNATIVES

The proposed design and layout of the HHWRS as indicated on **Map 3** is largely informed by the presence of existing buildings and infrastructure which comprise the original facility. The proposed new buildings are positioned to respond to existing building functions and configurations.

In this respect, no design or layout alternatives are being considered. Minor changes in response to environmental, budgetary and social issues may be accommodated as the design is finalised and constructed, but the overall layout will not change.

1.3.3 TECHNOLOGY ALTERNATIVES

A Waste Engineering Specialist will be appointed to undertake planning of waste treatment systems.

The following table indicates the broad alternatives in terms of potentially hazardous waste streams that have been identified for further investigation. This table represents a preliminary list and is not exhaustive. Additional alternatives may be added as the design phase of the project progresses.

Technology	Waste Streams considered for Treatment by this Technology						
	Manure	Medical waste – containers, slides & sharps	Animal Tissue	Laboratory liquid waste & body fluids	Animal bedding & carnivore faeces	Boma wash water	Sterilised liquid effluent
Incinerator		√	√	√	√		
Alkaline Hydrolysis		√	√				
Chemical Sterilisation				√			
Biological treatment				√		√	
Composting	√		√				
Bio-digester (biogas)	√				√		
Evaporation dams							√
Release to environment						√	√
Removal off site to registered facility		√	√	√	√		

It is anticipated that a Waste Engineering Specialist will be appointed to evaluate these alternatives, and recommend appropriate technologies for appropriate waste streams. The aim will be to ensure practical, cost effective and proper development of the project, while ensuring that environmental impacts are minimised.

1.3.4 NO DEVELOPMENT ALTERNATIVE

The No Development alternative will result in the maintenance of the status quo, and thus the retention of the existing facility remaining as it is. The potential negative impacts likely to occur as a result of the construction and operation of the proposed development would be avoided, but at the same time, the potential positive impacts will also fail to manifest.

The site currently consists of areas where infrastructure has been in existence for a number of years as well as sections of open natural bush. The facility as it stands is in need of upgrade as much of the infrastructure is in a general state of disrepair. The No Development Alternative would result in the maintenance of the Status Quo, and the possible further deterioration of the facility over time.

At present, it is far from the world class wildlife-disease research station envisaged. It is, however, ideally situated placed to carryout research involving the diseases of wildlife, humans, and livestock at an interface between a Trans Frontier Conservation Area, the Greater Limpopo Trans Frontier Park and local communities.

In this respect, the No Development option would also result in a lost opportunity in terms of the above research.

1.4 Requirements for Environmental Authorisation

This application is for an Integrated Environmental Authorisation and Waste Management License in terms of:

- the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010 and
- the National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008) and Government Notice 718 of 2009.

Chapter 5 of the National Environmental Management Act, 1998 (NEMA) identifies a list of activities (Government Gazette R386 and R387) for which an EIA must be conducted. The listed activities, which trigger the requirement for Environmental Authorisation, include the following:

Gazette No:	Activity Ref:	Description of the listing:
No R544 of 2010	22(iii)	The construction of a road outside of an urban area where no reserve exists, and where the road is wider than 8m.
No R544 of 2010	28	The expansion of existing facilities for any process or activity which requires a permit or license in terms of national or provincial legislation governing the general release of emissions.
No R545 of 2010	5	The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the general release of emissions.
No R545 of 2010	15	The physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.
No R546 of 2010	4(ii)(aa)	In Mpumalanga, the construction of a road wider than 4m with a reserve of less than 13,5m outside of an urban area, within a protected area.

No R546 of 2010	4(ii)(bb)	In Mpumalanga, the construction of a road wider than 4m with a reserve of less than 13,5m outside of an urban area, within an NPAES focus area.
No R546 of 2010	4(ii)(gg)	In Mpumalanga, the construction of a road wider than 4m with a reserve of less than 13,5m outside of an urban area, within 10km of a National Park or within 5km of a protected area.
No R546 of 2010	6(ii)(aa)	In Mpumalanga, the construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more outside of an urban area, within a protected area.
No R546 of 2010	6(ii)(bb)	In Mpumalanga, the construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more outside of an urban area, within an NPAES focus area.
No R546 of 2010	6(ii)(gg)	In Mpumalanga, the construction of resorts, lodges or other tourism accommodation facilities that sleep 15 people or more outside of an urban area, within 10km of a National Park or within 5km of a protected area.
No R546 of 2010	7(ii)(aa)	In Mpumalanga, the conversion of existing structures to resorts, lodges or tourism accommodation facilities that sleep 15 people or more outside of an urban area, within a protected area.
No R546 of 2010	7(ii)(bb)	In Mpumalanga, the conversion of existing structures to resorts, lodges or tourism accommodation facilities that sleep 15 people or more outside of an urban area, within an NPAES focus area.
No R546 of 2010	7(ii)(hh)	In Mpumalanga, the conversion of existing structures to resorts, lodges or tourism accommodation facilities that sleep 15 people or more outside of an urban area, within 10km of a National Park or within 5km of a protected area.
No R546 of 2010	13(c)(ii)(gg)	In Mpumalanga, the clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, outside of an urban area, within 10km of a National Park or within 5km of a protected area.
No R546 of 2010	14	In Mpumalanga, the clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, outside of an urban area.
No R546 of 2010	18(ii)(aa)	In Mpumalanga, the expansion of a resort, lodge, hotel or other tourism hospitality facility where the development footprint will be expanded, outside of an urban area, within a protected area.
No R546 of 2010	18(ii)(bb)	In Mpumalanga, the expansion of a resort, lodge, hotel or other tourism hospitality facility where the development footprint will be expanded, outside of an urban area, within an NPAES focus area.
No R546 of 2010	18(ii)(gg)	In Mpumalanga, the expansion of a resort, lodge, hotel or other tourism hospitality facility where the development footprint will be expanded, outside of an urban area, within 10km of a National Park or within 5km of a protected area.
No R546 of 2010	19(ii)(aa)	In Mpumalanga, the widening of a road by more than 4m or the lengthening of a road by more than 1km, outside of an urban area, within a protected area.
No R546 of 2010	19(ii)(bb)	In Mpumalanga, the widening of a road by more than 4m or the lengthening of a road by more than 1km, outside of an urban area, within an NPAES focus area.
No R546 of 2010	19(ii)(gg)	In Mpumalanga, the widening of a road by more than 4m or the lengthening of a road by more than 1km, outside of an urban area, within 10km of a National Park or within 5km of a protected area.

The National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008) identifies a list of activities (Government Notice 718) for which a Waste Management License must be obtained. These listed activities include the following:

Gazette No:	Activity Ref:	Description of the listing:
No 718 of 2009	3(2)	The storage including the temporary storage of hazardous waste

		at a facility that has the capacity to store in excess of 35m ³ of hazardous waste at any one time.
No 718 of 2009	3(3)	The storage including the temporary storage of general waste in lagoons (evaporation ponds)
No 718 of 2009	3(11)	The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.
No 718 of 2009	3(18)	The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity)
No 718 of 2009	3(19)	The expansion of facilities of or 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.
No 718 of 2009	4(1)	The storage including the temporary storage of hazardous waste in lagoons (evaporation ponds).
718 of 2009	4(4)	The biological, physical or physico-chemical treatment of hazardous waste at a facility that has the capacity to receive in excess of 500 kg of hazardous waste per day.
No 718 of 2009	4(5)	The treatment of hazardous waste using any form of treatment regardless of the size or capacity of such a facility to treat such waste.
No 718 of 2009	4(6)	The treatment of hazardous waste in lagoons (evaporation ponds).
No 718 of 2009	4(8)	The incineration of waste regardless of the capacity of such a facility.
No 718 of 2009	4(11)	The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity).

With respect to the above listed activities, a Scoping and EIA process are required to be undertaken for the proposed project:

- The Scoping Phase includes a description of the proposed project and its associated activities, facilities and infrastructure. It also includes an analysis of the receiving biophysical, socio economic and cultural historic environments. With an understanding of the project and its context as a platform, and in consultation with potential interested and affected parties, key stakeholders and relevant authorities, potential issues associated with the proposed project are identified.

These issues are explored for possible fatal flaws, sensitivities etc. and it is determined where further study and more detailed assessment is required. In this respect, a Plan of Study for EIA is proposed, which forms the scope of work for the EIA phase of the project. Recommendations in terms of Specialist input are also made. A Draft Scoping Report is circulated for public review and comment, where after a Final Scoping Report is submitted to DEA for consideration and decision making.

- The EIA Phase involves the determination of the significance of the potential issues (i.e. positive and negative impacts) identified during the Scoping Phase. Specialist Investigations are undertaken, and the direct, indirect and cumulative impacts likely to result from the proposed development are assessed.

Practical and appropriate mitigation is proposed, and detailed in an Environmental Management Programme, which will be appended to the EIA. A public review of the Draft Environmental Impact Report is followed by the submission of the Final EIR to the DEA for consideration and decision making.

This document represents the Scoping Phase of the Environmental Impact Assessment Process, and has been drawn up in terms of Section 24(5) of the National Environmental Management Act (Act No 107 of 1998).

1.5 Details of the Environmental Assessment Practitioner

Environmental Assessment Practitioner	V&L Landscape Architects CC		
Postal Address:	P O Box 36723 Menlo Park Pretoria	Post Code:	0102
Tel. No.:	(012) 346 1289	Fax. No.:	(012) 346 1292
Cell. No:	083 556 7307	e-mail:	mandy@vrl.co.za
Professional Affiliations:	Professional Landscape Architect (South African Council for the Landscape Architectural Profession)		
Credentials:	BL (Landscape Architecture) 1996		

V&L Landscape Architects, as Independent Environmental Consultants and Impact Assessors, have been appointed by the University of Pretoria, to undertake the Application for Integrated Environmental Authorisation and Waste Management License for the proposed upgrade to the Hans Hoheisen Wildlife research Station on portion 2 of the Farm Kempiana 90 KU.

Mandy van der Westhuizen, the lead practitioner undertaking the assessment, has been involved in a range of projects relating to Environmental Planning, Environmental Management and Environmental Impact Assessment since 1997. She is a registered Professional Landscape Architect with the South African Council of the Landscape Architectural Profession.

V&L Landscape Architects is a long standing and reputable firm dating back to 1975, offering a range of landscape and environmental consulting services including Landscape Planning and Design, Environmental Planning, Environmental Management and Tourism Planning. The quality of service provided has always been, and remains to date, of the highest standard in the industry.

Neither the author, V&L Landscape Architects nor any specialists contracted in for the purpose of this study will benefit from the outcome of the project decision-making.

1.6 Regulatory and Legal Context

1.6.1 RELEVANT LEGISLATION AND GUIDELINES

The following legislation and guideline documents are specifically applicable to this application, and have informed the scope of this document:

- National Environment Management Act (ACT No 107 of 1998);
- National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008);
- National Parks Act (Act No 57 of 1976);
- National Environmental Management: Protected Areas Act (Act 57 of 2003);
- Animal Diseases Act (Act No 35 of 1984);
- National Water Act (Act No 36 of 1998);
- National Environmental Management: Air Quality Act (Act No 39 of 2004);
- National Heritage Resources Act (Act No 25 of 1999);
- EIA regulations published under Chapter 5 of NEMA;
- Guidelines published in terms of the NEMA EIA Regulations;

- Government Notices 544, 545 and 546, listing activities which trigger the requirement for environmental authorisation
- Government Notice 718, listing activities or which a Waste Management License must be obtained
- Government Notice No 248, listing activities which result in atmospheric emissions, and which may have a significant detrimental effect on the environment

In addition to the above, the following legislation, policies and guidelines are also applicable:

- Constitution of the Republic of South Africa (Act No 108 and 1996);
- Environment Conservation Act (Act No 73 of 1989);
- National Environmental Management: Biodiversity Act (Act No 10 of 2004) and
- Conservation of Agricultural Resources Act (Act No 43 of 1983).

1.6.2 CORRESPONDENCE WITH AUTHORITIES

The first step of the EIA process involves consultation with the relevant authorities involved with the decision making process concerning the authorisation of the proposed project. The main purpose of this is to clarify the requirements of the regulations and procedures to be followed.

Relevant authorities for a project of this nature, and in this location include National, Provincial and Local Authorities who exercise control through statutory and non statutory instruments, and include the following:

- National Department of Environmental Affairs (DEA): Environmental;
- National Department of Environmental Affairs (DEA): Waste Management;
- National Department of Environmental Affairs (DEA): Air Quality
- National Department of Water Affairs (DWA);
- National Department of Health (DoH);
- South African National Parks (SANParks);
- Department of Agriculture Forestry and Fisheries (DAFF)
- State Veterinary Department;
- Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET);
- The South African Heritage Resources Agency (SAHRA);
- Mpumalanga Tourism and Parks Authority (MTPA): Veterinary Services and
- Bushbuckridge Local Municipality (BLM).

A full list of the Authority representatives and copies of the invitations distributed are included in Appendix A.

Of note is that a prior application was submitted under the previous EIA regulations in 2010. A project application was submitted to DEA (Environmental) as well as to DEA (Waste Management) in February 2012. The application was acknowledged and accepted in in March 2010, and issued with the following reference numbers:

- DEA Environmental 12/12/20/1820;
- DEA Waste Management 12/9/11/L319/3.

A Departmental site meeting was held on the 12th April 2010 at the Hans Hoheisen Wildlife Research Station. *Copies of the Proceedings have been included in Appendix A.*

A DSR was subsequently circulated to relevant for comment. Due to a number of factors, however, this application subsequently lapsed, and the file was closed by the DEA in August 2011.

In July 2012, a new Application for Integrated Environmental Authorisation and Waste Management License was submitted under the current regulations. This application was acknowledged and accepted in September 2012.

A draft of the Scoping Report (this document) was circulated to all relevant Authorities on (14 January 2013) for comment prior to the finalisation of the report and submission to DEA for consideration.

Authorities were contacted directly regarding the availability of the report, which was distributed in digital and / or printed format.

Copies of Authority comments and correspondence stemming from both the lapsed and the current applications are included in Appendix A.

1.7 Public Participation

Of note is that a prior Application for Environmental Authorisation for this project was submitted under the previous EIA regulations in 2010. The identification of I&AP's and stakeholders the advertising of the project and even a public meeting was undertaken as part of that process. In the interim, however, this application lapsed, and the file was closed by the DEA in August 2011.

Because the nature of the project as well as the identified authorities and stakeholders are the same as for the lapsed application, it may be argued that some of the 2010 process would be valid for this process.

In this regard, an application for exemption from certain aspects of public participation was submitted to DEA on 17 October 2012. Ms Pumeza Skepe of DEA gave verbal approval of this request telephonically. At the time of submission of the Draft Scoping Report (January 2013), no formal written approval had yet been received. Record of this written approval will be included in the EIA documentation record once it is received.

1.7.1 I&AP IDENTIFICATION AND REGISTRATION

The identification of potential Interested and Affected Parties (I&AP's) was undertaken through a combination of advertising the process in various forms, and through existing contacts and databases. Input from the client was also sought in this regard.

Identified Stakeholders and potentially Interested and Affected Parties were invited to register and participate in the process. Relevant Stakeholder and I&AP information has been recorded within a Stakeholder Database (included in Appendix A), which will be updated on an ongoing basis throughout the EIA process to allow for additional stakeholders who would like to register.

In order to provide information about the proposed project and the EIA process, a Background Information Document (BID) was compiled and distributed to registered stakeholders and I&AP's.

Copies of the invitations and the BID distributed are included in Appendix A.

1.7.2 NOTIFICATION OF THE EIA PROCESS

It is a requirement of the Public Participation Process that the EIA process be advertised. In this respect, the following was undertaken:

- Site Notices informing of the process (in terms of the previous EIA Regulations, and Previous lapsed Application) were placed at the main entrance to the facility on 8 March 2010. These site notices also invited potential I&AP's to attend the public meeting scheduled for the 12th of April 2010.
- An advertisement informing of the process (in terms of the previous EIA Regulations, and Previous lapsed Application) was placed in the legal section of the Lowvelder newspaper on the 30th of March 2010.

In addition to the above advertisements and notices, identified key stakeholders and I&AP's were notified in writing of the proposed development, and invited to attend the public meeting. These included, *inter alia*, the following:

- Adjacent land owners;
- Local Reserve Owners / Managers and
- Local camp managers (KNP and others).

A full list of identified stakeholders and copies of the advertisements placed and the invitations distributed are included in Appendix A.

1.7.3 PUBLIC INVOLVEMENT AND CONSULTATION

A Public Meeting was held on the 12th April 2010 at the Hans Hoheisen Wildlife Research Station.

Copies of the invitations sent and of the Proceedings have been included in Appendix A.

An Issues and Responses document has been drawn up, in which all comments and inputs received from both Authorities and from I&AP's have been recorded. This document, which is included in *Appendix A* includes comments stemming from both the lapsed and the current application to date.

A draft of the Scoping Report (this document) was circulated on (14 January 2013) to all registered stakeholders and I&AP's for comment prior to the finalisation of the report and submission to DEA for consideration.

Registered I&AP's were contacted directly regarding the availability of the report for public comment.

Soft copies were made available for download off the internet. Notifications and a link to the download were emailed to all registered I&AP's and Stakeholders. In addition, a hard copy was made available at the Orpen Rest Camp.

Digital copies of the report on CD were made available upon request.

A 30 day comment period was allowed, where after all comments received were considered, and amendments made to the Scoping Report (where relevant).

2. DESCRIPTION OF THE RECEIVING ENVIRONMENT

2.1 Context and Locality

The Hans Hoheisen Wildlife Research Station (HHWRS) is situated on portion 2 of the Farm Kempiana 90 KU, Mpumalanga. The site lies within the quarter degree grid 2431AD.

Regionally the site is located adjacent to the Kruger National Park, and is situated on the western boundary thereof in the vicinity of Orpen Gate and Orpen rest Camp.

The Manyeleti Nature Reserve lies to the south east and the Timbavati Nature Reserve to the south west. The Timbavati River bypasses the site less than 1km to the west.

2.2 Biophysical Environment

2.2.1 CLIMATE

The study area falls within a summer rainfall area, and experiences dry winters. Mean Annual Precipitation (MAP) ranges from about 500-650 mm per annum. This is generally a frost-free region.

2.2.2 GEOLOGY AND SOILS

Undisturbed State

The Gabbro Grassy Bushveld veld type closely follows the sinuous intrusions of the Timbavati gabbro (Mokolian Erathem). The unit is also mapped on surrounding potassic granite and gneiss of Archaen basement and the gneiss and migmatite of the Nelspruit Suite (also Archaen).

Dark vertic clay soils (20 – 50% clay) often swell and shrink. Loose rock is often present on the surface. Some shallow lithosols occur in places. Where gabbro is in contact with the adjacent granite, a mixed soil sometimes develops with a gabbro-derived A-horizon overlying a granite-derived B-horizon.

Current Status

The site constitutes sections where Gabbroid based geology gives rise to vertic clay soils that may exhibit signs of low erodibility and poor drainage.

Historic use of the site has resulted in disturbance to the soil horizons and structure of some sections of the site. The presence of hardened surfaces, infrastructure and human habitation within the site has resulted in a disturbance of soil structure in certain areas.

There are some sections of the site that exhibit characteristics of an undisturbed geology and soils state.

2.2.3 TOPOGRAPHY AND HYDROLOGY

Undisturbed State

The study area lies at an altitude of between 400m and 480m above sea level, and the landscape is gently undulating throughout.

The major hydrological feature is the Timbavati River, which meanders across the study area. This river bypasses the site less than 1km to the north west. A high concentration of

non perennial drainage lines are also present within the study area, draining in different directions as they make their way towards the Timbavati River.

The site itself is relatively flat with an average gradient of approximately 1:15. This is a moderate gradient that is discernable on a landscape level. To the immediate west of the site, the gradient steepens to 1:6 along the river. It would appear that the site straddles a local watershed between tributaries, which runs roughly from north to south mid way across the property.

Current Status

The proposed upgrade will take place within the existing footprint of the current Hans Hoheisen Research Institute and no significant earthworks are anticipated.

A small tributary of the Timbavati River appears to originate within the site and drain due west. This drainage line lies beyond any existing or proposed development, however. Refer to **Map 2**.



Figure 2: Relatively flat topography of the study area

2.2.4 FLORA

Undisturbed State

The study area falls within the Gabbro Grassy Bushveld vegetation type as defined in *Vegetation of Southern Africa, Lesotho and Swaziland*³. The vegetation of the area is evaluated against the blueprint for this vegetation type, meaning that the characteristics are generic for the entire vegetation unit rather than site specific.

Gabbro Grassy Bushveld constitutes open savannah with a dense grass cover (with dominants including *Themeda triandra*) with few scattered trees and shrubs. Sparser grass cover is encountered on shallow soils.

³ L. MUCINA, M.C. RUTHERFORD, 2006.

Conservation Status of the Vegetation Type

According to the Mpumalanga Biodiversity Conservation Plan for the area, the development site falls within the Lowveld Bio-region; Savannah Biome and the Gabbro Grassy Bushveld veld type. This veld type is rated least vulnerable in terms of its general conservation status.

The conservation target of this vegetation type is 19%. 96% of that which is conserved has been statutorily conserved in the Kruger National Park and the remainder is conserved in private reserves (such as Timbavati and Manyeleti). Very little vegetation within this type is transformed and erosion is low.

Current Status of the Site

The vegetation of site mostly ranges from *totally transformed* to *disturbed*, but some sections may be considered *undisturbed* natural bush clusters. Where buildings and infrastructure have been developed, vegetation is generally disturbed, with denuded patches. In outer lying areas, where no buildings or infrastructure are present, the vegetation is mostly intact.

Conservation Status of the Site

It is anticipated that the disturbed parts of the site will have a low sensitivity, while those area, which are intact, may have a medium or even high rating. The occurrence of potentially endangered (red data) species within the footprint may, however, raise the ecological sensitivity rating.



Figure 3: Disturbed vegetation around buildings and infrastructure



Figure 4: Intact vegetation in undeveloped parts of the site

2.2.5 FAUNA

Undisturbed State

The Hans Hoheisen Wildlife Research Station is effectively part of the Kruger National Park, and therefore theoretically supports those species occurring naturally within the region.

In addition to the Big 5, at least 51 small mammal species have been listed in the region. Priority game species include White Rhino, Buffalo, Cheetah, Lion, Leopard and Wild Dog. Several other threatened mammal species occur, including African wild cat, Antbear, African civet, Aardwolf and even Serval.

Over 20 mammal predator species have been listed in the area, including some threatened species like Wild Dog, African wild cat, Small-spotted Cat, Aardwolf, Pangolin, a healthy population of Serval as well as lion, cheetah and leopard.

Rare/Endangered game species include White rhino; Sable; Buffalo; Wild Dog; Cheetah; African Wild Cat; Serval, Pangolin.

A total of 367 bird species have been recorded within the area. These include important bird species such as Cape vulture, Martial eagle, African finfoot, Bald ibis, Southern Ground Hornbill and Red-billed oxpecker.

A total of 114 reptile species have been recorded in the Kruger National Park, and of these approximately 42 reptile species have been recorded in the area. The species composition is diverse and includes snakes, lizards, tortoises, terrapins and crocodiles. Pythons are also observed.

Of a total 35 amphibian species (frogs and toads) recorded in South Africa, it is estimated that about 34 species occur in within the area. Of a total of 49 fish species to have been recorded in the Greater Kruger area, a number occur within the region.

No detailed survey has been done on the invertebrate populations, but a spider interest group recorded a total of 49 genera of spiders within the region.

Current Status of the Site

In general, it may be expected that certain species occurring naturally within the region will occur on the site periodically. Fauna is free to move across the site from and into the KNP to the east, as well as the other adjacent conservation areas.

No resident faunal communities have been observed within the site, but the possibility exists that certain protected species may occur. These include sedentary fauna such as the Plated Lizard and Golden Baboon Spider.

2.2.6 AGRICULTURAL POTENTIAL

It is anticipated that the agricultural potential of the both region and of the site is high. The climate, soils, vegetation and topography offer no factors that would adversely affect or reduce agricultural potential.

It should be noted, however, that such agricultural potential is theoretical only, as this land is not available for agricultural use, being located in such close proximity to the KNP and occupied historically and currently as a research facility.

2.2.7 LAND USE

At present the site forms part of the Kempiana Contractual Park. It is bounded by the Kruger National Park on its eastern side and lies within close proximity to the Manyeleti and Timbavati Nature Reserves.

The property has been used as an animal research facility since the 1970's. Due to a lack of funding, much of the infrastructure fell into a state of disrepair, and has been in a degraded state since the 1990's.

2.2.8 INFRASTRUCTURE

Existing buildings and infrastructure include the following:

- Various laboratories, offices, cages and animal pens in the north of the site;
- Three accommodation units in the west of the site;
- Group accommodation in the south of the site;
- Various roads, gates and fences;
- A helicopter landing pad;
- Limited bulk service infrastructure and reticulation (electrical, water and sewage).

The proposed use of the facility as a wildlife research station is in line with the existing land use. Refer to **Map 2**.



Figure 5: Access control gate to the HHWRS



Figure 6: Recently renovated buildings on the site



Figure 7: Other structures on the site

2.3 Cultural Historic Environment

The facility was built and commissioned in the 1970's, meaning that none of the buildings or structures present on the site are older than 60 years. No graves were observed on the site, nor have any been documented during the operational lifespan of the facility. Similarly, no archaeological, paleontological or historical finds have been observed or documented on the site during the past 40 years. Any surface artefacts that may have existed within the development footprint would have long since disappeared.

Sections of the site have been disturbed as a result of buildings, structures and infrastructure, and most of the upgrades will take place within these disturbed areas. There are parts of the site that have not been disturbed, however. Within these areas, there is a possibility that archaeological, paleontological or historical artefacts may exist buried underground.

2.4 Socio Economic Environment

2.4.1 TOURISM

Hans Hoheisen is situated close to Orpen gate along the R531 that runs from Klaserie Town to Orpen Gate. The area surrounding the site is used for conservation purposes as well as tourism based operations integrally linked to conservation.

A number of renowned hospitality and tourism facilities operate in the vicinity, with the Orpen Rest Camp located less than 1km to the north east, while Ngala Tented Camp and Mr Pirow lie to the Southwest of the facility.

There are no urban settlements, towns or villages within the study area. The closest permanent residential area in close proximity to the site is the staff accommodation for Orpen Rest Camp.

2.4.2 LOCAL ECONOMY

The site lies within the greater Kruger National Park area, and therefore falls under the local jurisdiction of Mpumalanga Tourism and Parks Authority.

Within this context, there is no local resident population or populated place other than within the above mentioned tourist operations surrounding the facility. The only residents within the study area are land owners, managers and staff within these tourist operations.

2.4.3 AESTHETICS

The visual quality of the study area is high, generally as a result of the lack of development and the large areas given over to conservation within the region. The nature reserves and the Kruger National Park, which border the site, are generally well managed, and the Bushveld vegetation is in good condition. The height and density of the vegetation also possesses a high Visual Absorption Capacity, and as such, easily conceals visual disturbance beyond.

The buildings and structures on the site are generally single storey red brick structures with no remarkable architectural characteristics or aesthetic merit. Lack of maintenance of both the buildings and the grounds at Hans Hoheisen lends an overall derelict and low aesthetic quality to the facility. A number of large trees have been preserved within the site footprint, and these contribute to the quality of the visual environment somewhat.

That having been said, those parts of the site that have remained undisturbed and undeveloped, have a higher aesthetic quality, in line with that of the conservation areas of the region.

Orpen Rest camp lies at a similar elevation to the highest parts of the Hans Hoheisen research station and Ngala Tented Camp and Mr Pirow lie at a lower elevation than the research station. While it is anticipated that the dense existing vegetation will to a large degree screen visual impacts, there is a concern of impact from peripheral development.



Figure 8: Visual quality at the entrance to the facility
Note the large trees, which contribute positively to the aesthetics.



Figure 9: Visual quality along the western edge of the facility
Note the high Visual Absorption Capacity of the bushveld beyond the developed area.

3. POTENTIAL ISSUES AND IMPACTS

This section of the report is aimed at providing a description and brief evaluation of issues and impacts associated with the construction and operational phases of the proposed facility. A preliminary list of impacts anticipated during the construction and operational phases is as follows:

3.1. Potential Impacts resulting from the Planning Phase

None.

3.2. Potential Impacts resulting from the Construction Phase

3.2.1 DIRECT IMPACTS:

In terms of the Biophysical Environment, the following impacts are anticipated during the Construction Phase:

GROUND WATER:

- Depletion of ground water due to over use and waste
- Contamination of ground water due to:
 - Disposal or discharge of sewage
 - Toxins and hydrocarbons emanating from roads, construction and storage areas

SURFACE WATER:

- Disturbance to the hydrological function of the drainage line due to stormwater runoff
- Sediment discharge into the drainage line due to storm water runoff from denuded / construction areas
- Contamination of the surface water resource due to:
 - Uncontrolled disposal or discharge of sewage
 - Uncontrolled disposal of construction waste and litter
 - Uncontrolled disposal of hazardous substances and hydrocarbons
 - Uncontrolled stormwater runoff
 - Uncontrolled grey water discharge

SOILS:

- Soil pollution due to:
 - Disposal or discharge of sewage
 - Toxins and hydrocarbons emanating from roads, construction and storage areas
 - Uncontrolled grey water discharge
- Soil erosion due to the removal of stabilising vegetation during construction
- Soil compaction due to the movement of heavy machinery and vehicles across the site. This in turn could lead to habitat modification and erosion.

AIR:

- Air pollution by emissions from construction vehicles and equipment
- Dust liberated by general construction activities and movement of construction vehicles to the site and over the site
- Smoke from fires used for cooking and heating

BIODIVERSITY (FLORA):

- Removal of exotic and invasive species (positive impact)

- Removal and destruction of vegetation – Gabbro Grassy Bushveld
- Removal and destruction of riverine vegetation (along the drainage line)
- Removal of protected plant species
- Bush encroachment and invasion of denuded areas

BIODIVERSITY (FAUNA):

- Loss of habitat and habitat fragmentation due to vegetation clearing
- Disturbance / displacement of fauna due to construction noise and activities of construction personnel on site
- Disturbance / displacement of protected species due to construction noise and activities of construction personnel on site
- Persecution and hunting of fauna by construction personnel

AGRICULTURAL POTENTIAL:

- Loss of potentially arable land due to construction activities

HERITAGE:

- Damage to and / or destruction of archaeological, paleontological or historical artefacts unearthed during construction

SOCIO ECONOMICS:

- Short term employment opportunities in construction (positive impact)
- Opportunity for skills development and on-site training (positive impact)
- Increase in opportunistic crime as a result of an increase in the number of people in the area (i.e. construction personnel)
- Threat to security of neighbouring residents / land owners as a result of an increase in the number of people in the area (no fences exist at between conservation areas and the National Park)
- Increased incidence of fires and the potential resulting loss of property, life and biodiversity
- Noise, dust and safety impacts for other road users in the area

AESTHETICS:

- Potential visual impact of construction activities on tourists in close proximity to the site (i.e. specifically on nearby tourism operations and access roads)
- Potential lighting impact on tourists in close proximity to the site (i.e. specifically on nearby tourism operations and access roads)

3.2.2 INDIRECT IMPACTS

SOCIO ECONOMICS:

- Impact on tourism income due to construction related disturbances (Orpen, Ngala Tented Camp and Mr Pirow)

3.2.3 CUMULATIVE IMPACTS

GROUND WATER:

- Depletion of ground water resources due to accumulated use by increasing numbers of users

BIODIVERSITY (FLORA AND FAUNA):

- Cumulative loss of Gabbro Grassy Bushveld habitat and habitat fragmentation due to vegetation clearing and alteration of habitat

SOCIO ECONOMICS:

- Unrepaired damage to roads could result in a long term issue for road users in the area

3.3. Potential Impacts resulting from the Operational Phase

3.3.1 DIRECT IMPACTS

GROUND WATER:

- Depletion of ground water due to over use and waste
- Contamination of ground water due to:
 - Animal faeces and urine (bomas and open air facilities)
 - Sewage spills and leaks
 - Treated effluent in evaporation dams
 - Leaks and spills from hazardous waste streams
 - Runoff from roads and hard surfaces
 - Pesticides and herbicides (grounds maintenance)

SURFACE WATER:

- Disturbance to the hydrological function of the drainage line due to stormwater runoff
- Sediment discharge into the drainage line due to storm water runoff from unrehabilitated areas
- Contamination of the surface water resource due to:
 - Sewage spills and leaks
 - Grey water leaks and spills
 - Leaks and spills from hazardous waste streams
- Uncontrolled stormwater runoff from boma and open air facilities, where animal faeces and urine may be washed into the surface water system

SOILS:

- Soil pollution due to:
 - Sewage spills and leaks
 - Leaks and spills from hazardous waste streams
 - Grey water leaks and spills
- Soil erosion due to uncontrolled stormwater runoff
- Soil compaction due to trampling by animals within the enclosures. This in turn could lead to loss of vegetation and erosion.

AIR:

- Air pollution by emissions from the incinerator

BIODIVERSITY (FLORA):

- Bush encroachment and invasion of poorly rehabilitated areas
- Structural changes in the vegetation due to bulk feeders being held in the enclosures
- Introduction of foreign vegetation species into the protected area through the importing of feedstocks (such as lucerne)

BIODIVERSITY (FAUNA):

- Disturbance / displacement of fauna due to operational activities and personnel present on site
- Disturbance / displacement of protected species due to operational activities and personnel present on site
- Potential spread of pathogens under investigation within and beyond the facility
- Risk to fauna in adjacent areas

LAND USE AND INFRASTRUCTURE:

- Upgrade of the facility and infrastructure of the HHWRS (positive impact)

SOCIO ECONOMICS:

- Long term employment opportunities at the facility (limited positive impact)
- Threat to security of neighbouring residents / land owners as a result of an increase in the number of people in the area (no fences exist at between conservation areas and the National Park)
- Olfactory impact, especially on nearby tourism operations, as a result of:
 - Incineration of animal waste in the incinerator
 - Animal faeces
 - The water treatment / evaporation ponds
- Noise impact, especially on nearby tourism operations, as a result of:
 - concentrations of animals in bomas
 - staff operating the facility and on site vehicles
 - loud music and voices from off duty staff at the staff accommodation
 - barking dogs
- Disease risk to humans

AESTHETICS:

- Visual impact of the facility upgrades, specifically peripheral development on nearby tourism operations and access roads
- Visual impact of the smokestack on nearby tourism operations and access roads
- Visual impact of the lighting of the facility at night (i.e. specifically on nearby tourism operations and access roads)

3.3.2 INDIRECT IMPACTS

SOCIO ECONOMICS:

- Impact on tourism income (Orpen, Ngala Tented Camp and Mr Pirow) due to visual impacts (including lighting) of the facility
- Impact on tourism income (Orpen, Ngala Tented Camp and Mr Pirow) due to odours emanating from the facility due to:
 - Waste accumulation (manure and other)
 - Incineration of animal bedding and necropsy waste
 - Incineration of medical waste (plastic containers etc)
 - The water treatment / evaporation ponds
- An increase in blowflies as a result of the concentration of animals and the accumulation of faeces. Linked to this is the spread of pathogens and bacteria by these flies

AESTHETICS:

- Potential visual impact on the visual character and sense of place of the landscape, specifically in context of the adjacent conservation areas

3.3.3 CUMULATIVE IMPACTS

GROUND WATER:

- Depletion of ground water resources due to accumulated use by increasing numbers of users

AESTHETICS:

- Cumulative visual impact of lighting as a result of additional development within a greater conservation area (i.e. specifically on nearby tourism operations and access roads)

3.4. Potential Impacts resulting from the Decommissioning Phase

None.

4. CONCLUSIONS AND RECOMMENDATIONS

The Draft Scoping Report for the proposed upgrade of the Hans Hoheisen Wildlife Research Station has been undertaken in accordance with the EIA Regulations published in Government Notice 33306 of 18 June 2012 (as amended).

The aim of the report has been to understand the nature of both the facility and the receiving environment, to identify potential issues associated with the proposed project and to define the extent of further studies recommended as part of the EIA phase of the process.

Potentially sensitive environments have been identified, and include a drainage line to the west of the facility, and the possibility exists that protected species (both fauna and flora) occur on the site. In addition, adjacent tourism operations (i.e. Orpen Camp to the north west and Ngala Tented Camp and Mr Pirow in the south west) will be sensitive to certain construction and operational activities anticipated as part of this project.

Also in accordance with the requirements of the EIA regulations, feasible project alternatives and the 'no-project' alternative have been identified, which will be further evaluated during the EIA phase.

The above scope of work was accomplished through site visits, in house desktop analyses, extensive interaction with the proponent, and consultation with identified Stakeholders and Interested and Affected Parties, including Authorities.

Based on the Scoping phase undertaken thus far, the EAP is of the opinion that the proposed upgrade of the Hans Hoheisen Wildlife Research Station presents no fatal flaws from an environmental perspective. The issues identified are quantifiable, subject to the recommended specialist studies (see Plan of Study below).

Lastly, the EAP is confident that sufficient information has been made available to fully understand the potential issues likely to arise as a result of the proposed facility, and recommends that the Scoping Report be accepted, and permission granted to proceed with the EIA phase in accordance with the Plan of Study for EIA as detailed below.

5. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

The Plan of Study for Environmental Impact Assessment (EIA) describes how the EIA phase will proceed, and includes a schedule of tasks anticipated as well as the recommended Terms of Reference for the Specialist Studies.

The aim of the EIA will be as follows:

- Provide additional, detailed information about the proposed development and the receiving environment (as recommended)
- Provide an overall assessment of the receiving environment
- Assess the potentially significant environmental impacts (direct, indirect and cumulative) anticipated as a result of the proposed development. This will include impacts associated with the Construction and Operational phases of the proposed development
- Identify and recommend appropriate mitigation for potentially significant environmental impacts
- Undertake a fully inclusive public participation process to ensure that stakeholders and I&AP's are afforded the opportunity to participate, and to ensure that their issues and concerns are accurately recorded and addressed

Authority consultation will continue throughout the EIA process, and the identified project alternatives (including the 'no-project' alternative) will be assessed.

5.1 Methodology for Assessing Impacts

The methodology for the assessment of potential environmental impacts states the **nature** of the potential impact (i.e. a description of the cause of the impact, the affect and how it will be affected) and includes a table quantifying the impact according to the following criteria:

- **Extent** - site only (very low = 1), local (low = 2), regional (medium = 3), national (high = 4) or international (very high = 5).
- **Duration** - very short (0-1 yrs = 1), short (2-5 yrs = 2), medium (5-15 yrs = 3), long (>15 yrs = 4), and permanent (= 5).
- **Magnitude** - None (= 0), minor (= 2), low (= 4), medium/moderate (= 6), high (= 8) and very high (= 10)⁴.
- **Probability** – very improbable (= 1), improbable (= 2), probable (= 3), highly probable (= 4) and definite (= 5).
- **Status** (positive, negative or neutral).
- **Reversibility** - reversible (= 1), recoverable (= 3) and irreversible (= 5).
- **Significance** - low, medium or high.

The **significance** of the potential environmental impact is equal to the **consequence** multiplied by the **probability** of the impact occurring, where the consequence is determined by the sum of the individual scores for magnitude, duration and extent (i.e. **significance = consequence (magnitude + duration + extent) x probability**).

The significance weighting for each potential visual impact (as calculated above) is as follows:

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 31-60 points: Medium/moderate (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

The significance of direct, indirect and cumulative impacts of the identified issues (refer to section 3) will be assessed.

Lastly, the proponent has the responsibility to avoid and / or minimise environmental impacts wherever possible and feasible. In this respect, the potential to mitigate the identified environmental impacts will be discussed, and the mitigated impact will be assessed to demonstrate to potential effectiveness of the proposed measure.

5.2 Content of the EIA Report

The results of the recommended specialist studies and other information will be integrated into the EIA Report, which will include the following:

- A description of assumptions, uncertainties and gaps in knowledge
- A detailed description of the proposed facility
- A description of the need and desirability of the proposed facility
- A description of Alternatives investigated, and a comparative assessment thereof

⁴This value is read from the visual impact index. Where more than one value is applicable, the higher of these will be used as a worst case scenario.

- A description of the receiving environment (biophysical, socio economic and cultural historic)
- Details of the public participation process, including:
 - Steps undertaken in accordance with the Plan of Study for EIA
 - A list of Stakeholders and Interested and Affected Parties, including Authorities
 - An Comments and Responses report detailing comments received from Stakeholders, I&AP's and Authorities throughout the process
 - Copies of comments received from Stakeholders, I&AP's and Authorities throughout the process
- A description of the methodology used in determining the significance of identified environmental impacts
- A description of all environmental issues identified during the process, and the assessment of the significance of each (including the assessment of mitigated impacts, indirect impacts and cumulative impacts)
- An Environmental impact Statement which contains the key findings of the EIA, and a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives
- A Draft Environmental Management Programme
- Copies of all specialist reports

5.3 Specialist Studies and Other Required Information

The following studies are recommended as part of the process, and for inclusion in the EIA Report:

- Ecological Sensitivity Mapping:

This exercise is recommended as a desktop study by the EAP, supported by on site observations, client input and spatial data acquired from SANParks. A desktop study is deemed sufficient as the proposed upgrades are proposed within the existing Facility footprint, and as a result, no greenfields sites are to be disturbed. The Terms of Reference for this exercise will be as follows:

- Minimum requirements as prescribed by MTPA / SANParks for activities which may have a detrimental effect on the environment will be fulfilled.
- Ecological units will be delineated based on the soils and vegetation. Sensitive environments will be identified, including riverine vegetation along the tributary to the west of the site.
- Species lists will be compiled for mammals, avifauna and reptiles with particular focus on threatened species. Sensitive faunal communities will be identified and mapped, if possible.
- Potential impacts of the proposed facility (construction and operational phases) will be identified and assessed.
- Mitigation will be recommended.

- Ground water baseline study:

This exercise is recommended as a desktop study by the EAP, supported by client input and spatial data acquired from SANParks. The Terms of Reference for this exercise will be as follows:

- The regional ground water situation and the local aquifer will be documented, if possible.
- The ground water quality and yield at ground water abstraction points on and within a 2km radius of the facility will be documented, if possible.
- Mitigation will be recommended (where relevant)

The establishment of the above data will serve as a baseline for monitoring ground water quality and quantity during the construction and operational phases of the development.

- Engineering Services and Waste Treatment Report:

This study will be carried by a specialist engineer / designer in this field. The Terms of Reference for this study will be as follows:

- An strategic level assessment of bulk services (water, electricity, sewage) required for the proposed upgrades, and the verification of anticipated quantities and processes, and technologies recommended.
 - A comparative study into the alternative waste treatment technologies under consideration, with specific reference to the proposed evaporation ponds and the incinerator.
 - A comparative assessment of identified technologies, specifically in terms of air pollution, odour and disease risk.
 - A recommendation and detailed description of the most appropriate technology for the application, with specific reference to the proposed evaporation ponds and the incinerator.
 - Potential impacts of the preferred technology (construction and operational phases) will be identified and assessed
 - Mitigation will be recommended
 - An Impact Statement will be submitted regarding the environmental feasibility of the proposed technology
- An Independent Opinion on the issue of potential Disease Risk to adjacent wildlife and to Humans:

This will be a statement by an independent specialist in the veterinary field, such as the State Veterinarian. The statement should include the following:

- The anticipated risk of disease spreading from the facility as a result of research undertaken there.
 - The anticipated risk of pathogen transmission to adjacent wildlife, with specific reference to the possibility of increased disease prevalence.
 - The anticipated risk of disease spreading to humans.
- A Phase 1 Archaeological Assessment OR a letter by an Archaeological specialist indicating that there is no necessity for further assessment.
 - A Phase 1 Paleontological Assessment OR a letter by a Paleontological specialist indicating that there is no necessity for further assessment.
 - *Of note is that although the site lies near to the Timbavati River and its tributaries, it is in fact situated more than 1km away from the main channel and more than 100m away from the closest tributary. In addition, no development is proposed west of the existing footprint (i.e. in the direction of the river). In this respect, the determination of a floodline is considered unnecessary. What is necessary, however, is to determine the extent of riverine vegetation along the drainage line (as a sensitive environment). This is recommended as part of the Ecological Sensitivity Mapping.*

In addition to the above, the following must be clarified through further investigation and / or liaison with the proponent:

- Policies for the importation of feedstocks into the KNP.
- Requirement for WULA must be confirmed. Existing water use rights must be confirmed and the permitting process must be initiated if required.
- Incinerator design to be confirmed and the need for Air Emissions Licensing to be confirmed based on capacity and operation.

5.4 Schedule of Tasks for EIA

Key Milestone	Proposed Timeframe
Public review of Draft Scoping Report	January 2013- February 2013
Finalisation of Scoping Report and submission to DEA	February 2013
Review by DEA and acceptance of Final Scoping Report and Plan of Study for EIA	March 2013
Undertake Specialist Studies	March 2013
Compile Draft EIA Report	April 2013
Public review of Draft EIA Report	May 2013 – June 2013
Public Meeting (if required)	June 2013
Finalisation of EIA Report and submission to DEA	July 2013
Review by DEA and Decision Making	August 2013 – September 2013

6. REFERENCES

L. MUCINA, M.C. RUTHERFORD. *The Vegetation of Southern Africa, Lesotho and Swaziland*. 2006.

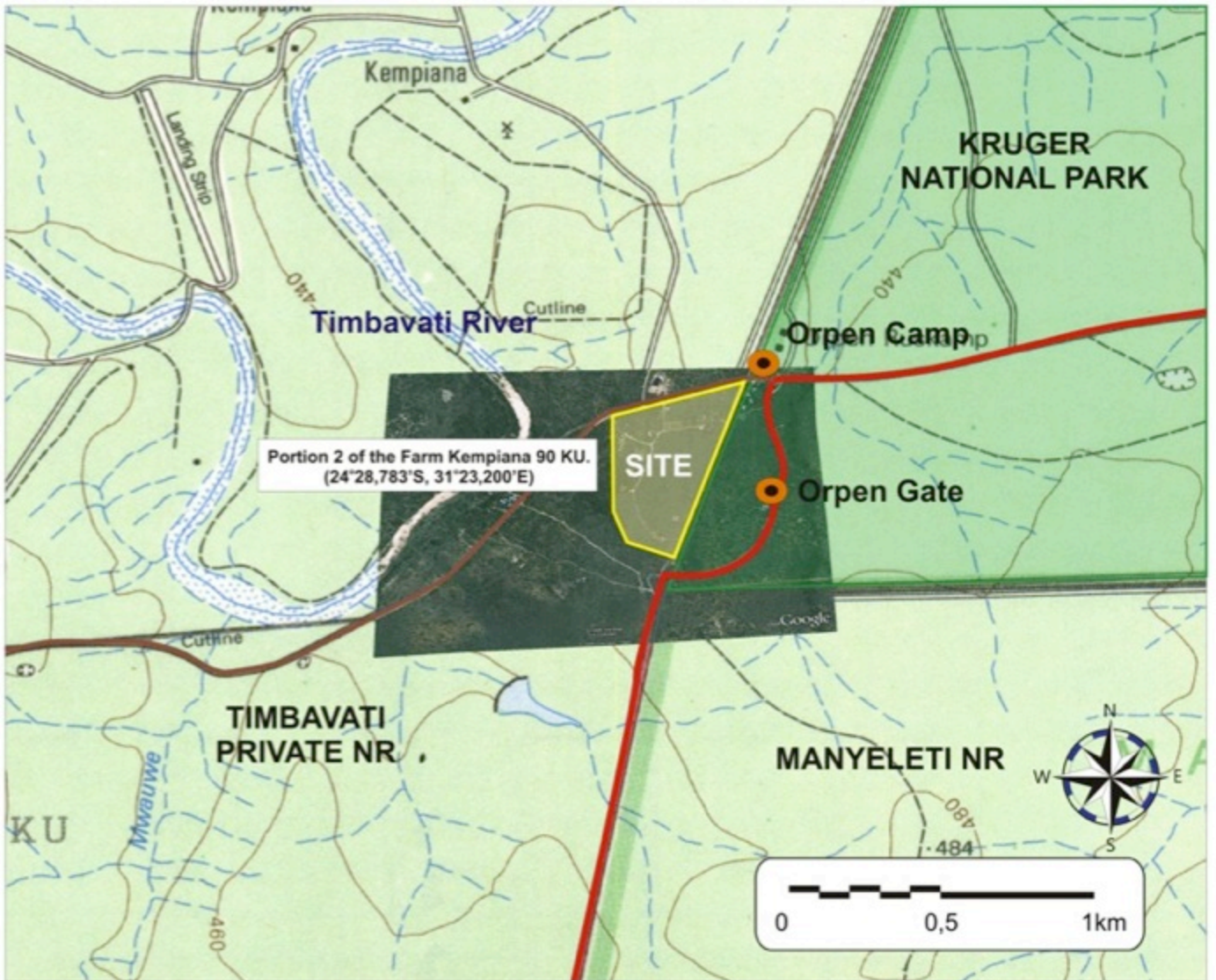
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MAPS

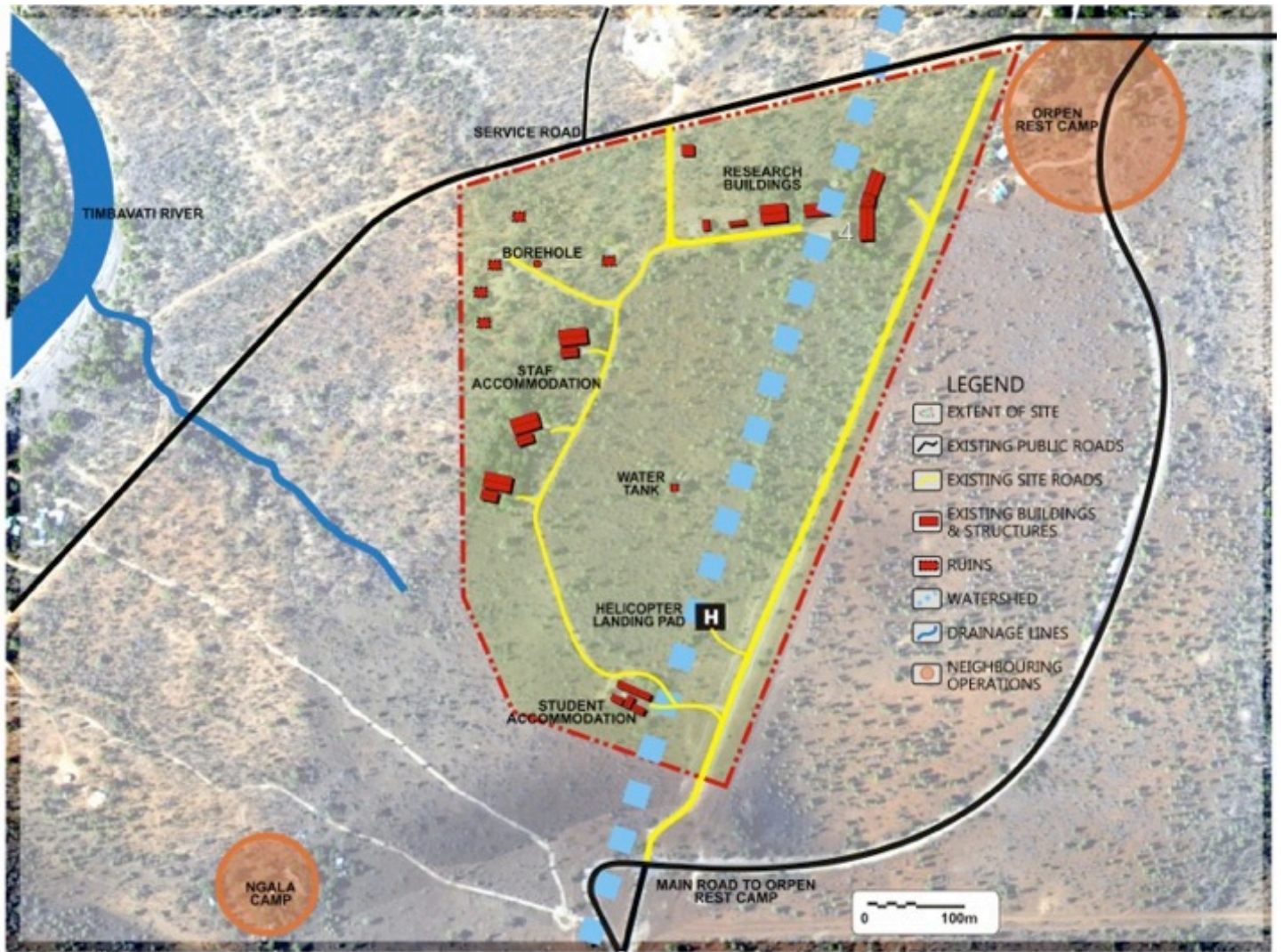
Map 1: Locality

Map 2: Status quo of the site

Map 3: Proposed Layout of the Facility



Map 1: Locality



Map 2: Status quo of the site



Map 3: Proposed Layout of the Facility