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## INITIAL ENVIRONMENTAL RISK ASSESSMENT - BEC/217/BA

# THE PROPOSED UPGRADE OF THE NAMPO AGRICULTURAL SECONDARY SCHOOL IN THE NALA MUNICIPALITY, LEJWELEPUTSWA DISTRICT MUNICIPALITY, FREE STATE PROVINCE

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## Abbreviations

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<b>DETEA</b>	Department of Economic Development, Tourism and Environmental Affairs
<b>DAFF</b>	Department of Agriculture, Forestry and Fisheries
<b>DWA</b>	Department of Water Affairs
<b>EMP</b>	Environmental Management Plan/Programme
<b>EMS</b>	Environmental Management System
<b>EAP</b>	Environmental Assessment Practitioner
<b>I&amp;AP</b>	Interested and Affected Party
<b>IMP</b>	Integrated Management Plan
<b>NEMA</b>	National Environmental Management Act
<b>NHRA</b>	National Heritage Resources Act
<b>NWA</b>	National Water Act
<b>SANS</b>	South African National Standard
<b>SAHRA</b>	South Africa Heritage Resource Agency

## Glossary

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- Biodiversity** : The variety of life and its processes; including the variety of living organisms the genetic differences among them, the communities and ecosystems in which they occur, and the ecological and evolutionary processes that keep them functioning, yet ever changing and adapting.
- Clearing** : The clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified.
- Contractor** : The person or company appointed by the service provider to carry out stipulated activities (i.e. vegetation clearance and rehabilitation).
- Environment** : The surroundings within which humans exist and that is made up of:
- a) The land, water and atmosphere of the earth;
  - b) Micro-organisms, plant and animal life;
  - c) Any part or combination of a) and b) and the interrelationships among and between them; and
  - b) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being (i.e. the social environment).
- Environmental Impact** : An action or series of actions that have an effect on the environment.
- Habitat** : A dynamic system of plant, animals and micro-organism communities and their non-living environment interacting as a functional unit.
- Hazardous Substances** : Substance governed by the Hazardous Substances Act as well as the Hazardous Chemical and Substances Regulations.
- Indigenous species** : Any species of flora or fauna that naturally occurs in a specific area.
- Natural vegetation** : The existing vegetation species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site

- General Waste** : The waste that does not pose an immediate hazard or threat to health or to the environment, and includes:
- a) domestic waste;
  - b) Building and demolition waste;
  - c) Business waste; and
  - d) Inert waste.
- Hazardous Substances** : Substance governed by the Hazardous Substances Act as well as the Hazardous Chemical and Substances Regulations.
- Pollution** : Any change in the environment caused by –
- (a) substances; or
  - (b) noise, odours, dust or heat, emitted from any activity associated with the clearance or rehabilitation phases, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.
- Risk** : The chance of something happening that will have an undesired impact.
- Sensitive area** : An area that is denoted as sensitive by the ecologist or ECO due to its particular attributes, which could include the presence of rare, endangered or red data vegetation, the presence of heritage resources, the presence of a unique natural feature or the presence of a watercourse or water body.
- Site** : The piece of land and any other place on, under, over, in or through which the specific activity are to be executed or carried out. The site shall include the activity area or route and access route.
- Solid waste** : All solid waste, chemical waste, wrapping materials, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).



- Water Quality** : Means the physical, chemical, toxicological, biological (including microbiological (a) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended) or microorganisms, (b) physic-chemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physic-chemical attributes.
- Water Resource** : A water resource includes any watercourse, surface water, estuary or aquifer. Watercourses include rivers, springs, and natural perennial and non-perennial channels. Wetlands, lakes, dams, or any collection identified as such by the Minister in the Government Gazette.

# 1 Introduction

Bophelo Environmental Consultants was appointed by Crane Registered Quantity Surveyors to conduct an environmental risk assessment/fatal flaw assessment at Nampo Agricultural Secondary School located on a portion ( $\pm 10$  ha) of the farm Nampo No. 1203 in the Bothaville administrative region in the Free State Province.

The site is currently used for educational purposes (i.e. school) with existing structures and infrastructure. The western section of the site is currently used as a sports field. There is a small earth dam located to the north of the sport field. The majority of the structures at the built-up area are not permanent (e.g. pre-fabricated classrooms). It is the intention through the Free State Accelerated School Infrastructure Delivery Initiative (ASIDI) to remove the non-permanent structures and replace them with permanent structures and infrastructure.

The current proposal also indicated that a dry sanitation system (i.e. Enviro Loo toilets) will be established on site. The grey water generated on site will be disposed of in a septic tank system. The total amount of water that will be used on site during operation is estimated at 10 l/day.

The proposed upgrade will be located within the parameters of the existing school boundary, thereby minimising the associated impact on the environment. The fact that the site has already been altered as a result of the existing school activities will minimise the potential impact of the proposed activities on the environment. It will also limit the possibility of the proposed activities triggering a listing activity in terms of NEMA requiring an EIA/BA to be conducted.

## 1.1 Project objective and scope

The investigation had the following aims:

- Determine the status quo of the site namely the current situation, physiographic profile, natural resources, topography and infrastructure;
- The graphic depiction of environmental sensitivities, which will include the following:
- The occurrence of Heritage and Archaeological Remains;
- The presence of ecological sensitive habitats and eco-systems (i.e. drainage channels, floodplains, rocky outcrops);
- Recommendations with regard to the proposed development site in terms of the relevant environmental legislation.

## 2 Proposed Activity

### 2.1 Locality

The study area falls within the jurisdiction of the Nala Local Municipality, Lejweleputswa District in the Bothaville administrative region, Free State Province. The proposed development site is situated on a portion ( $\pm 10$  ha) of the farm Nampo No. 1203. Access to the site is obtained from a gravel road (from the R30 Road) located to the north of the site.

**The general coordinates of the site:**

S 27°25'13"; E 26°6'57"

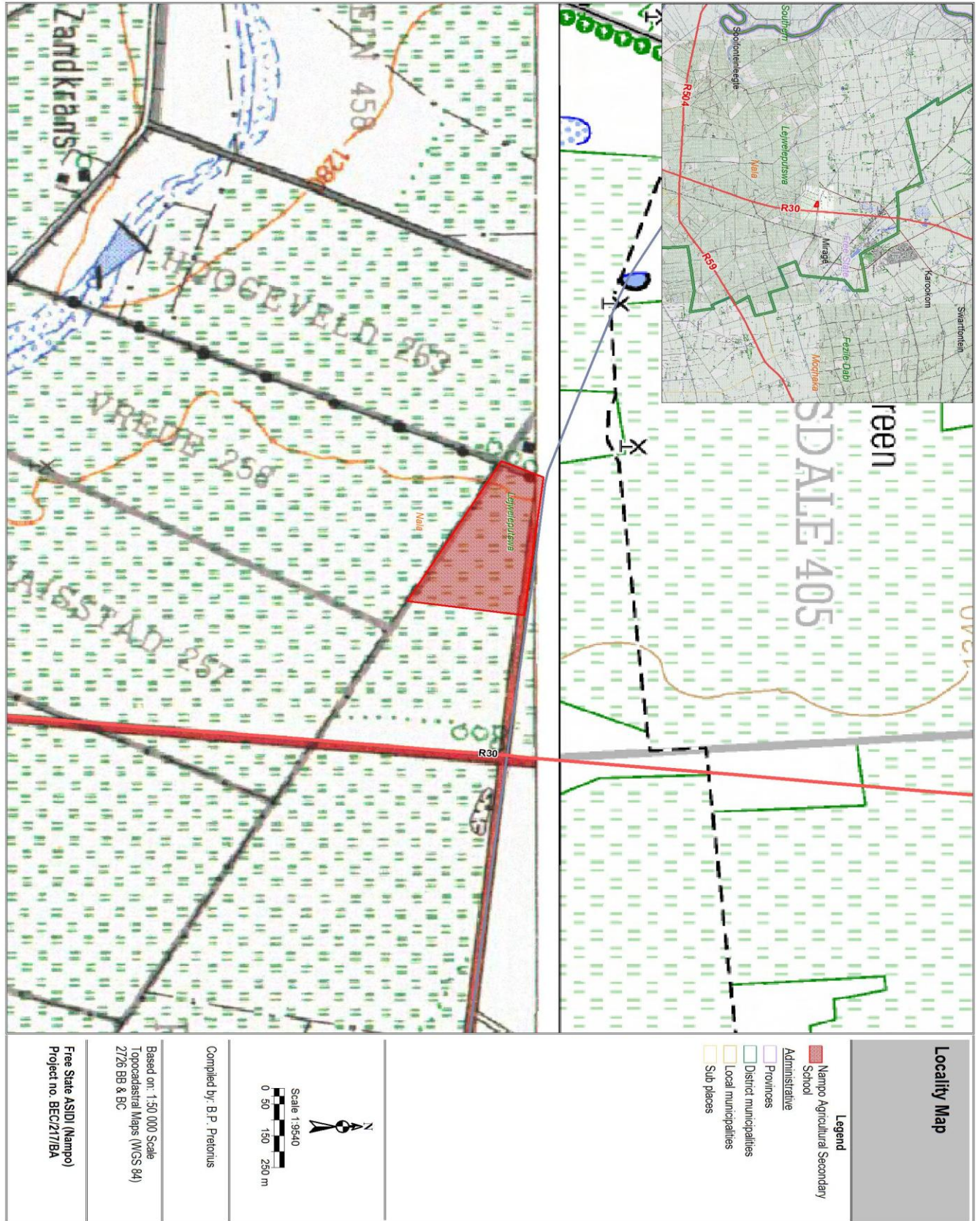


Figure 1: Locality Map

## 3 Description of Affected Environment

### 3.1 Land Uses

The site is currently used for educational purposes (i.e. school). The neighbouring erven is used for agricultural purposes.

### 3.2 Vegetation

The study area forms part of the Grassland Biome. The vegetation according to Acocks, 1988, is *Cymbopogon-Themeda Veld (Sandy)*. According to Bredenkamp and Van Rooyen, 1996, the site is classified as *Moist Cool Highveld Grassland*. The natural vegetation on site has been altered to large extent as a result of the structures, infrastructure and activities associated with the existing school.

### 3.3 Topography

The regional topographical setting of the study area is classified as *Plains and Pans*. The site is located in a relatively flat/plain area with a slight rise in slope towards the east. The highest point is located in the eastern section of the site at an elevation of approximately 1290 m above mean sea level (mamsl), with the lowest point occurring in the west at an elevation of approximately 1287 mamsl.

### 3.4 Surface Water

The site is located within the Quaternary Catchment Area (QCA) **C24J**, situated within the Middle Vaal Catchment Management Area (CMA). The site drains mainly by means of surface run-off (i.e.: sheetwash), with surface water flowing in a south-westerly direction. The flat topography of the site could result in localised ponding during heavy precipitation events.

**It must be noted that no wetlands, pans, river or streams were identified on site.**

### 3.5 Sub-surface Water

No sub-surface seepage was observed on site. A narrow calcrete horizon was observed along the eastern section of the site, which are usually associated with perched water tables. A borehole has been established to supply the water needs of the school. The total amount of water required per day at the school is currently estimated at 10 litres.

### 3.6 Geology and Soils

According to available geological information the study area is underlain by arenite. The study area does not reflect any risk for the formation of sinkholes or subsidence caused by the presence of water-soluble rocks

(dolomite or limestone). This must still be confirmed by the engineering geologist/civil engineer.

The site is covered by plinthic catena eutrophic soils. Red soils are not widespread, while upland duplex and marginalitic soils are rare.

### **3.7 Existing Services and Infrastructure**

The proposed site is using a borehole to supply its water needs. The site is currently making use of an on-site septic tank system and the effluent used for irrigation purposes. The solid waste is burned on site on a weekly basis. The electricity is supplied by ESKOM.

Pipelines, power cables or any other underground services may however be present. The planners should refer to services reports and databases of the local authorities to identify any such structures that may affect the suitability of the site or result in costly relocation of services.

## **4 Ecological Sensitivity Status**

Aspects of sensitivity function at different levels of environmental management. In this assessment three important components in line with the Biodiversity Act No. 10 of 2004 are taken into account:

- 1) Presence or absence of threatened species or other species of particular conservation concern
- 2) Presence or absence of threatened ecosystems or other ecosystems of particular conservation concern
- 3) State of indigenous biodiversity and endemism

A simple five class system is constructed with the three most important components, threatened species, threatened ecosystems and state of biodiversity used for ranking in a hierarchical manner. The emphasis of this sensitivity ranking is on the Biodiversity Act No. 10 of 2004 which addresses both sensitive species and sensitive ecosystems. This system prioritizes for species and ecosystems more prone to extinction and therefore prioritise for loss of irreplaceable biodiversity and ecosystem complexity. Other aspects of sensitivity of ecosystems such as rangeland condition, carrying capacity and agricultural potential are also very important to take into account, but function for purposes which they were designed for. Wetlands, though these may contain large overlap to other ecosystems in terms of sensitivity, are dealt with separately because these have a unique place in terms of ecosystem functioning and legislation.

In this case no wetlands were identified on the site. Also agricultural potential or rangeland condition is dealt with separately. In the case of this study such assessment is not necessary for the sensitivity ranking.

Five sensitivity rankings, which take into account species of particular conservation concern, ecosystems of particular conservation concern and an assessment of indigenous biodiversity at a site, are distinguished. Ranking of possible impact, an assessment of species, ecosystems and biodiversity in terms of conservation concern as well as an indication of appropriate types of management decisions, are given.

Table 1: Ranking of the sensitivity of ecosystems at site, which is based on the Biodiversity Act No. 10 of 2004.

Ranking of anticipated impact	Assessment of species, ecosystems and biodiversity of conservation concern	Indication of appropriate decisions: avoidance, mitigation, remediation.
<b>Very low</b>	No species of particular conservation concern is present No ecosystem of particular conservation concern is present. Severely degraded ecosystem for which little scope of restoration exists. Conspicuous low diversity of indigenous plant and animal species, these often pioneers with a wide distribution.	Opportunity to improve parts or aspects of ecosystem by remediation* of available areas of the site, and enhancement of indigenous biodiversity during and after development, if approved.
<b>Low</b>	No species of particular conservation concern present. No ecosystem of particular conservation concern present. Ecosystem disturbed or modified. Moderate or low diversity of indigenous species, mostly widespread species.	Mitigation measures aim at proper management of current lost habitat or anticipated lost habitat and available areas post development. This proper management should be directed at maintenance and where possible enhancement of indigenous biodiversity and ecosystem function as well as minimizing edge effects of possible new development.
<b>Medium</b>	No species of particular conservation concern present. If some declining species or protected species are present for which special mitigation measures apply, these measures are applicable and will lead to limited impacts. No ecosystem of particular conservation concern. Ecosystem in fair or moderately modified condition. Overall functioning of ecosystem still good. Moderate indigenous biodiversity, but mostly widespread species and few endemics.	Possible development should be carefully considered in terms of conservation priorities in the area and long term sustainable management of available areas and overall in terms of ecosystem functioning and conserving indigenous biodiversity. If, a few declining or protected species, which are widespread, are present, special mitigation measures which comply with legislation should be taken.
<b>High</b>	Regionally threatened species, globally near threatened species or particularly rare species are present. Or: Threatened ecosystem or particularly biodiversity rich ecosystem with highly endemic species is present.	No-go zone(s) for development identified. Biodiversity offsets not recommended. Special conservation measures of irreplaceable species or ecosystems, which are already at risk in a region, are necessary. Obligatory to comply with law.
<b>Very high</b>	Important habitat where viable and important population or subpopulation of a globally threatened species is present. Or: Highly threatened ecosystem or distinctly unique ecosystem in pristine condition is present.	No-go zones for development identified. No scope for biodiversity offsets at these zones. Special conservation measures needed to secure population(s) and habitat(s) of particular conservation importance. Obligatory to comply with legislation.

\* Remediation can be reclamation, rehabilitation or restoration depending on the ideals and objectives of the remediation action.

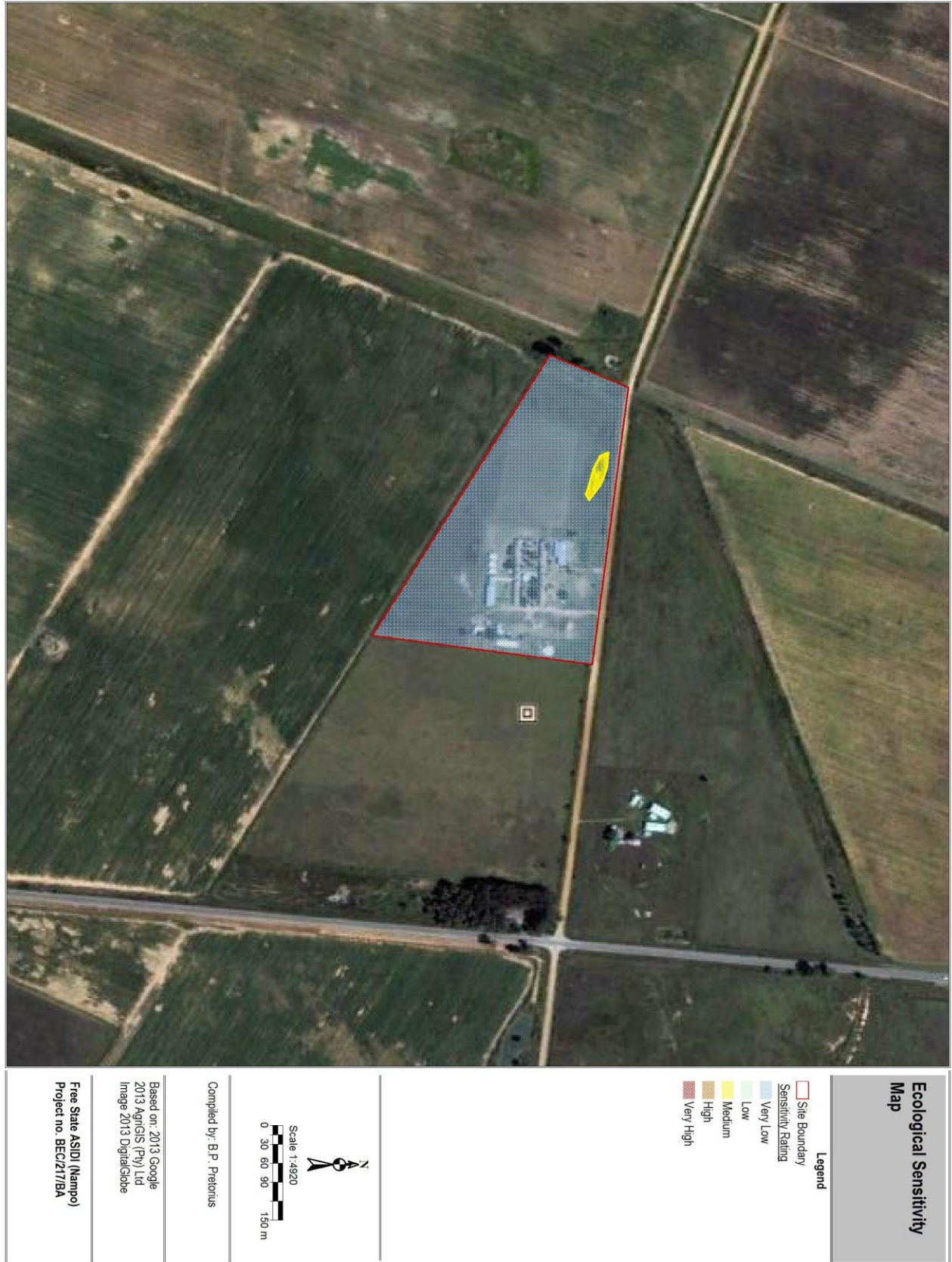


Figure 2: Sensitivity Map



## 5 General View of the Site



## 6 Legislation

The following is a brief description of some of the main environmental legislation and its applicability to this development:

### 6.1 National Environmental Management Act & EIA Regulations

The National Environmental Management Act 107 of 1998 (NEMA) establishes a set of principles, which all authorities (organs of State) have to consider when exercising their powers, for example during the granting of permits.

These include the following:

- Development must be sustainable;
- Pollution must be avoided or minimised and remedied;
- Waste must be avoided or minimised, reused or recycled;
- Negative environmental and social impacts must be minimised;
- Responsibility for the environmental consequences of a policy, project, product or service applies throughout its life cycle.

Section 28(1) states that “*every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring*”. If such degradation/pollution cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution.

These measures may include:

- Assessing the impact on the environment;
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution; and
- Remedying the effects of the pollution.

**The upgrading of a school and associated activities with a building footprint of less than 1 ha, outside urban areas is not listed in terms of Government Notice No. R.544, R.545 and R.546 of the EIA Regulations, 2010. The proposed development will therefore not require a Basic Assessment (BA) or Full Environmental Impact Assessment (EIA) to be conducted and authorization obtained from the relevant environmental authority, before any development may take place.**

## **6.2 National Environmental Management Waste Act**

A waste license application will not be required for the proposed on-site sewerage treatment facility in accordance with the National Environmental Management: Waste Act (NEM:WA, 2008), which commenced on 3 July 2009.

The proposed dry sanitation system and the grey water which will have a throughput capacity of less than 2 000 cubic metres and not listed in the Government Notice No. 718 of 3 July 2009 of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and therefore does not require a **BA/EIA** to be conducted and authorization obtained from the National Department of Environment Affairs (DEA), before any development may take place.

## **6.3 National Water Act**

The National Water Act aims to manage the national water resources to achieve sustainable use of water for the benefit of all water users. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, and managed in sustainable ways.

Any person wishing to exercise a water use other than those defines in Schedule 1 of the NWA, or an existing lawful use, or a use promulgated by a GA, requires a water use licence. A water use licence attaches to the properties on which the water is used. There are certain activities defined in Section 21 of the NWA that need authorisation, these activities include:

- a. *Taking water from a water resource.*
- b. *Storing of water*
- c. *Impeding or diverting the flow of water in a watercourse*
- d. *Engaging in a stream flow reduction activity*
- e. *Engaging in a controlled activity (e.g. irrigation of any land with waste or water containing waste generated through any industrial activity or by waterworks.*

- f. Discharging waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit.*
- g. Disposing of waste in a manner which may detrimentally impact on a water resource.*
- h. Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.*
- i. Altering the bed, banks, course or characteristics of a watercourse.*
- j. Removing, discharging or disposing of water found underground for the continuation of an activity of for the safety of persons.*
- k. Using water for recreational purposes (e.g. swimming, boating etc.).*

Water taken from a groundwater must be registered if 10 cubic metres or more is taken per property on any given day. Should any of the parameters be exceeded then the water use needs to be registered/licensed with the DWA.

## **6.4 National Forest Act**

In terms of the National Forests Act of 1998 forest trees or protected tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by the Department of Agriculture, Forestry and Fisheries (DAFF). None of the listed protected or forest trees were observed on site.

## **6.5 Natural Heritage Resources Act**

The National Heritage Resource Act (Act no. 25 of 1999) was introduced to ensure protection of South Africa's important heritage features.

The act covers the following areas of heritage value:

- Archaeology
- Palaeontology
- Meteorites.

All the above-mentioned materials that are discovered are thus Property of the state. The Act sanctioned the establishment of the South African Heritage Resources Agency (SAHRA) in 1999. SAHRA is tasked with protecting heritage resources of national significance. Under Section 38 of the NHRA, all new developments which will change the character of a site and which exceed an area of 5 000 m<sup>2</sup>, must at the very preliminary stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

**It is foreseen that the proposed development will require a Heritage Impact Assessment (HIA) to be carried out and authorisation obtained from SAHRA. It must be ensured that the HIA complies with SAHRA's requirements, and that any comments and recommendations from SAHRA have been taken into account prior to development. This still needs to be confirmed.**

## **7 Conclusions**

The results of this environmental risk assessment revealed that the current site is suitable for the proposed upgrade, seeing that the majority of the site has been disturbed by the structures and infrastructures associated with the existing school. There are no sensitivity habitats on site which will be impacted upon by the proposed development.

The flat topography of the site could result in localised ponding during heavy precipitation events. A perched water table could be present along the eastern section of the site.

## **8 Recommendations**

In the light of the results of this investigation, the development of the additional school structures and infrastructures can be supported. The proposed development does not require an EIA/BA to be conducted in terms of NEMA or NEM:WA.

A Heritage Impact Assessment (HIA) needs to be carried out and authorisation obtained from SAHRA prior to development. This still needs to be confirmed.

The water use (i.e. abstraction) occurring on site needs to be registered with the DWA, if the parameters are to be exceeded.