

**DRAFT ENVIRONMENTAL IMPACT ASSESEMENT REPORT  
FOR THE PROPOSED ESTABLISHMENT OF AN INTEGRATED HUMAN SETTLEMENT  
AND  
RELATED INFRASTRUCTURE ON ELANDSKUIL FARM NO.205 & 206 IP,  
IN VENTERSDORP WITHIN THE JURISDICTION OF JB MARKS LOCAL MUNICIPALITY,  
IN THE NORTH WEST PROVINCE.  
REF: NWP/EIA/51/2017**

**DATE: 12 FEBURUARY 2018**

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## DECLARATION OF CONSULTANT INDEPENDENCE

This report has been prepared by Lesekha Environmental Consulting with all reasonable skill, care and diligence within the terms of the contract with the client. Lesekha Environmental consulting is a multidisciplinary environmental management and consulting company with more than 15 years of experience in the field. The technical appointments for this project are detailed below.

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The author of this report, Lesekha Environmental consulting, hereby declares that it is an independent consultant and has no business, financial, personal or other interest in the activity. Neither Lesekha Environmental Consulting nor any of its sub-consultants are subsidiaries of the Department of Local Government and Human Settlement or King and Associates. Furthermore, all these parties do not have any interests in secondary developments that may arise out of the authorisation of the proposed project. There are no circumstances that compromise the objectivity of the persons performing such work. All opinions expressed in this report are its own.

Date : 12 February 2018

Sign :

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## TERMS AND DEFINITIONS

TERM/S	DEFINITION
<b>Affected environment</b>	Those parts of the socio-economic and biophysical environment impacted on by the development.
<b>Affected public</b>	Groups, organizations, and/or individuals who believe that an action might affect them.
<b>Alternatives</b>	Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, processor technology alternatives, temporal alternatives or the no-go alternative.
<b>Alternative proposal</b>	<p>A possible course of action, in place of another, that would meet the same purpose and need. Alternative proposals can refer to any of the following but are not necessarily limited thereto:</p> <ul style="list-style-type: none"> <li>• alternative sites for development</li> <li>• alternative projects for a particular site</li> <li>• alternative site layouts</li> <li>• alternative designs</li> <li>• alternative processes</li> <li>• alternative materials</li> </ul>
<b>Appeal</b>	Any affected person may appeal a decision of the competent authority to the MEC.
<b>Applicant</b>	An applicant is a person who applies for environments authorization in order to undertake a listed activity lawfully. The applicant must appoint an independent EAP to manage the application process.
<b>Authorities</b>	The national, provincial or local authorities, which have a decision-making role or interest in the proposal or activity. The term includes the lead authority as well as other authorities.
<b>Baseline</b>	Conditions that currently exist. Also called “existing conditions.
<b>Benefits assessment</b>	The objective of the assessment of benefits is to identify and assess all the significant benefits that may arise from the undertaking of an activity.
<b>Best practical environmental option</b>	Means the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.



TERM/S	DEFINITION
<b>Competent authority</b>	The person who makes decisions in respect of applications for environmental authorizations is known as the competent authority. In this instance, the competent authority is the MEC of North West Province. Delegated officials from relevant departments assist the MEC with the final decision.
<b>Cumulative impacts</b>	Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.
<b>Decision-maker</b>	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.
<b>Decision-making</b>	The sequence of steps, actions or procedures that result in decisions, at any stage of a proposal.
<b>Development footprint</b>	In respect of land means any evidence of physical alteration as a result of the undertaking of any activity.
<b>Direct impacts</b>	Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
<b>Disposal</b>	Licensing, management, capacity, etc. of landfill sites and dump sites.
<b>EAP</b>	An EAP is a person who manages an application for environmental authorisation for an applicant.
<b>Ecology</b>	The study of the inter relationships between organisms and their environments.
<b>EIA process</b>	The scoping and EIA process involves a complex and intensive assessment of the potential impacts of an activity. The process takes place in three broad phases, namely submission of an application form, scoping and the EIA.
<b>Environmental Assessment (EA)</b>	The generic term for all forms of environmental assessment for projects, plans, programmes or policies. This includes methods/tools such as EIA, strategic environmental assessment, sustainability assessment and risk assessment.
<b>Environmental consultant / Assessment</b>	Individuals or firms who act in an independent and unbiased manner to provide information for decision-making.

TERM/S	DEFINITION
<b>Practitioner</b>	
<b>Environmental Impact Assessment</b>	A public process, which is used to identify, predict and assess the potential environmental impacts of a proposed project on the environment. The EIA is used to inform decision-making.
<b>Environmental Management Programme</b>	A working document on environmental and socio-economic mitigation measures that must be implemented by several responsible parties during all the phases of the proposed project.
<b>Environmental Education and Awareness</b>	Public education and awareness initiatives regarding the impact of waste on the environment and people's health and the promotion of sound waste management practices.
<b>Impacts</b>	Impacts are the changes in an environmental parameter that result from undertaking an activity. The change is the difference between the effects on the environmental parameter where the activity is undertaken compared to that where the activity is not undertaken. Impacts may be positive or negative and may be categorized as being direct (primary), indirect (secondary) or cumulative impacts.
<b>Impacts assessment</b>	The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise from the undertaking of an activity.
<b>Independent</b>	In relation to an EAP or a person compiling a specialist report or undertaking a specialised process or appointed as a member of an appeal panel, means – That such EAP or person has no business, financial, personal or other interest in the activity, application or appeal in respect of which that EAP or person is appointed in terms of these Regulations other than fair remuneration work performed in connection with that activity, application or appeal; or that there are no circumstances that may compromise the objectivity of that EAP or person in performing such work.
<b>Indirect impacts</b>	Indirect impacts of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
<b>Integrated Waste Management Plan</b>	An Integrated Waste Management Plan provides a framework within which local municipalities can deliver a waste management service to all residents and businesses.

TERM/S	DEFINITION
<b>Interested and affected parties (I&amp;APs)</b>	Individuals, communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. These may include local communities, investors, business associations, trade unions, customers, consumers and environmental interest groups. The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.
<b>Mitigation measures</b>	Mitigation measures are the steps that are taken to reduce the identified impacts as far as possible. Mitigation measures will address the predicted factors of the impacts clearly to demonstrate how the impacts will be reduced through mitigation.
<b>Mitigate</b>	The implementation of practical measures to reduce adverse impacts.
<b>Municipal solid waste</b>	Solid waste resulting from or incidental to municipal, community, commercial, institutional and recreational activities, and includes garbage, rubbish, ashes, street cleanings, abandoned automobiles, and all other solid wastes except hazardous waste, industrial solid waste, oilfield waste and biomedical wastes.
<b>No-go alternative</b>	The no-go alternative is the option of not undertaking the proposed activity or any of its alternatives. The no-go alternative also provides the baseline against which the impacts of other alternatives can be compared.
<b>Public participation</b>	Public participation is a key element of both the scoping and EIA processes and must be conducted in accordance with at least the minimum requirements as set out in the Regulations.
<b>Recycle</b>	Means to do anything that results in providing a use for a thing that otherwise would be disposed of or dealt with as waste, including collecting, transporting, handling, storing, sorting, separating and processing the thing, but does not include the application of waste to land or the use of a thermal destruction process.
<b>Role-players</b>	The stakeholders who play a role in the environmental decision-making process. This role is determined by the level of engagement and the objectives set at the outset of the process.
<b>Scoping</b>	The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of

TERM/S	DEFINITION
	important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.
<b>Stakeholders</b>	A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.
<b>Stakeholder engagement</b>	The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision making process. The term is considered to be more appropriate than the term “public participation”
<b>Study area</b>	Refers to the entire study area encompassing the total area as indicated on the study area map.
<b>Significant impact</b>	Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
<b>Visual impact</b>	Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the views heed of landscape features thereby detracting from the visual amenity of the area.

## ACCRONYMS AND ABBREVIATIONS

ABBREVIATIONS	DEFINITIONS
<b>BNG</b>	Breaking New Grounds
<b>EIA</b>	Environmental Impact Assessment
<b>CARA</b>	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
<b>DWS</b>	Department of Water & Sanitation
<b>DHPS&amp;L</b>	Department of Human Settlement Public Safety and Location
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECA</b>	Environment Conservation Act, No. 73 of 1989
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMPr</b>	Environmental Management Programme
<b>FLISP</b>	Finance Linked Individual subsidy programme
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IDP</b>	Integrated Development Plan
<b>IWMP</b>	Integrated Waste Management Plan
<b>IWMSA</b>	The Institute of Waste Management Southern Africa
<b>LUPO</b>	Land Use Planning Ordinance, (Ordinance 15 of 1985)
<b>LED</b>	Local Economic Development
<b>NEMA</b>	National Environmental Management Act, (Act 107 of 1998)
<b>NEMBA</b>	National Environmental Management Biodiversity Act (Act No. 10 of 2004)
<b>NGO</b>	Non-Government Organisation
<b>NHR</b>	National Heritage Resources Act (No. 25 of 1999)
<b>NWMS</b>	National Waste Management Strategy
<b>NW READ</b>	North West Department of Rural, Environment & Agricultural Development

<b>ABBREVIATIONS</b>	<b>DEFINITIONS</b>
<b>NEMWA</b>	National Environmental Management: Waste Act (No. 59 of 2008)
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998)
<b>NWMS</b>	National Waste Management Strategy
<b>OHSA</b>	Occupational Health and Safety Act (No. 85 of 1993)
<b>POP</b>	Persistent organic pollutant
<b>PPP</b>	Public Participation Process
<b>POP</b>	Persistent organic pollutant
<b>SABS</b>	South African Bureau of Standards
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SANS</b>	South African National Standard
<b>SDF</b>	Spatial Development Framework
<b>UNEP</b>	United Nations Environment Programme
<b>WSDP</b>	Water Service Provider Province
<b>WULA</b>	Water Use Licence Authority

# 1. INTRODUCTION

## 1.1 Project Background

Lesekha Consulting has been appointed by King and Associates as an independent Environmental Assessment Practitioner (EAP) responsible for facilitating the legally required Environmental Authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, read with the Environmental Impact Assessment Regulations, (07 April 2017 as amended). The applicant, the Department of Local Government and Human Settlements is proposing the Establishment of an Integrated Human Settlement and related infrastructure on Elandskuil Farm No.205 & 206 IP, in Ventersdorp within the jurisdiction of JB Marks Local Municipality, in the North West Province.

The proposed project is primarily aimed at providing affordable housing to lower income groups of Elandskuil and will contribute to alleviating the current housing need in the area. Each housing unit/stand will be serviced with electricity, potable water and sanitation. The relevant application has already been lodged with the North West Department of Rural Development Environment, Agriculture & Development (NW READ) for authorization, with the reference number as: **NWP/EIA/51/2017**. As such, an Environmental Assessment Application process (EAR) will be undertaken to obtain an Environmental Authorization for the proposed project.

## 1.2. Proposed project Description

The Department of Local Government and Human Settlements is proposing the establishment of an Integrated Human Settlement and related infrastructure on Elandskuil. The proposed project is primarily aimed at providing affordable housing to lower income groups and will contribute to alleviating the current housing need in the area. Each housing unit/stand will be provided with electricity, potable water and sanitation. The proposed establishment of an integrated human settlement will entail the following development:

- The development of approximately 3852 housing,
- Provision of open space areas for recreational use as well as for educational purposes;
- Breaking New Grounds (BNG) units,
  - Social housing;
  - Community residential units
  - Rental stock,
  - Pre schools, Primary and Secondary schools;

- Police station;
- Churches;
- Government offices;
- Agricultural technical college;
- Multipurpose sports centre;
- Public open space
- Filling station
- FLISP (Finance Linked Individual subsidy programme) and serviced land for the gap market.

The extent of the site for the proposed development is approximately 280.7752 hectares.

The extent of the site for the proposed development is approximately 280.7752 hectares.

### 1.3 Details and Expertise of the EAP

Lesego Senna is a qualified Environmental Practitioner who managed and coordinated the EIA study of the project in discussion. Lesego holds the Bachelor Degree: in Natural Science majoring in Microbiology and Biochemistry. She also holds an Honors Degree: Environmental Sciences, Majoring in Environmental Impact Assessment and Earth Sciences – North West University (Potchefstroom Campus).

Lesego holds a certificate in Environmental Law (NQF level 7) with the following courses: Waste Management, Biodiversity Management, Waste Management, Heritage Assessment, Environmental law & Environmental Impact Assessment obtained from the Centre of Environmental Management at Potchefstroom University). She also holds a certificate in GIS and GPS course (NQF level 5) from the Free State University, with the following Modules: Spatial data Structures; Spatial data symbolisation and analysis and interpretation Map design. Lesego is a registered Environmental Scientist registered with the **South African Council of Natural Scientific Profession SACNASP (Reg.No.300029/14)**. The acquired qualifications and experience demonstrated that we are uniquely qualified to undertake this Environmental Impact Assessment Study. The CV is attached in Appendix A.



## 2. PROJECT DESCRIPTION

### 2.1 Location of the overall Activity

#### 2.1.1 Project Location

The proposed project is located on the Remainder of Portion 3 of Elandskuil Farm No. 205 IP, Remainder of Portion 206 of Elandskuil Farm No. 206 IP and Remainder of Portion 205 of Elandskuil Farm No. 205 IP located in the JB Marks Local Municipality within the Dr Kenneth Kaunda District Municipality in the North West Province.

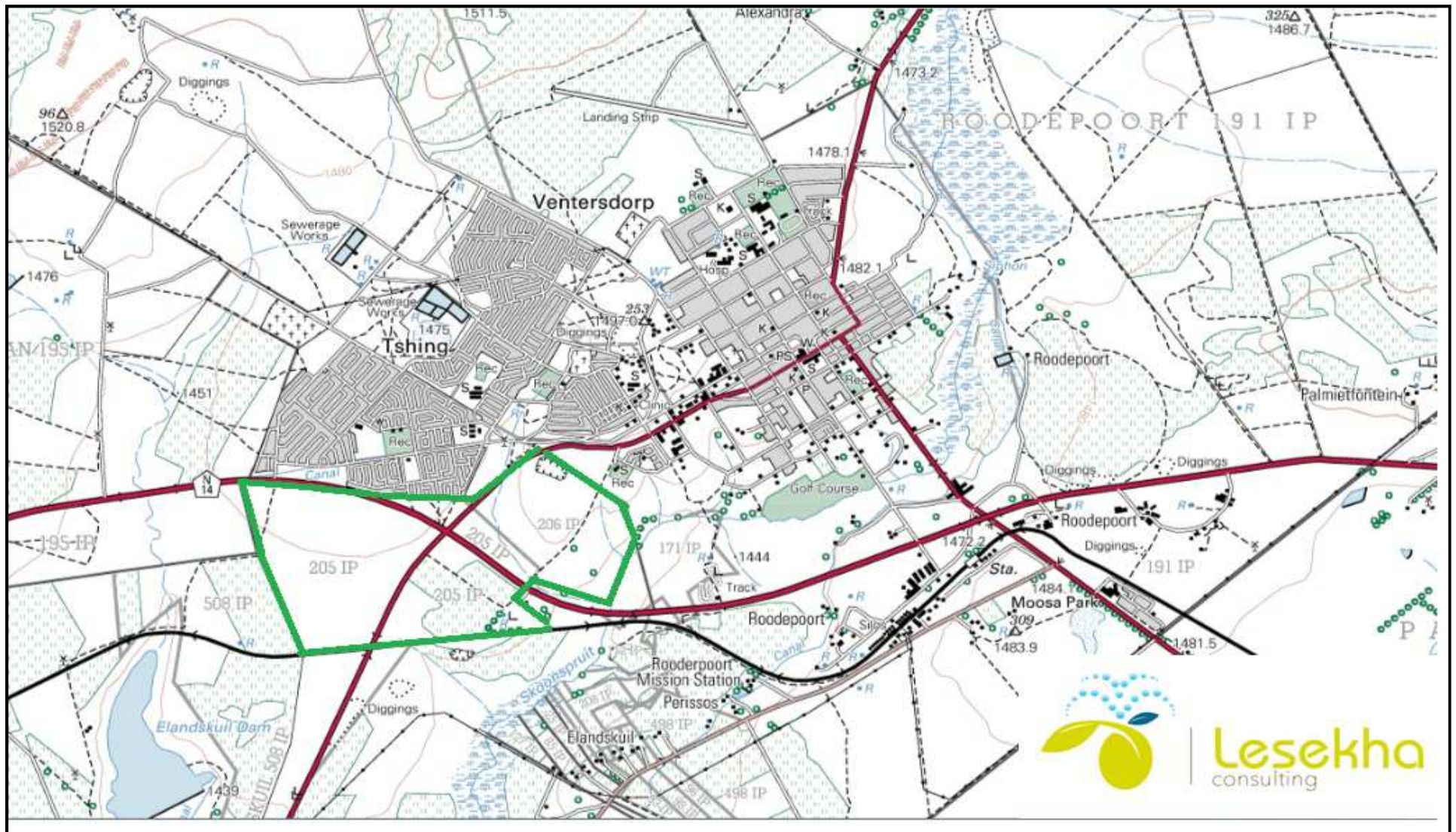
The site lies adjacent and to the south of Tshing Township. It located approximately 2 km to the southwest of Ventersdorp Town and approximately 25 km. The site is rectangular in shape comprises green fields land with some parts of the site currently being used for farming. Civil infrastructures such as bulk sewer and water services have not been installed across the site. The site is bound by a railway line the south, Skoonspruit in east, farmland in the west and the N14 and R30 routes in the north. The site for the proposed township establishment is accessible via the N14 or R30 Routes.

Property description	SG Digit code of all proposed sites	Proposed site per Hectares
Remainder of Portion 3 of Elandskuil Farm No. 205 IP	T 1433/2013	280.7752ha
Remainder of Portion 206 of Elandskuil Farm No. 206 IP	T1433/2013	
Remainder of Portion 205 of Elandskuil Farm No. 205 IP	T1433/2013	

The site co-ordinates are presented on the map below.

#### 2.1.2 Locality map

(Show nearest town, scale not smaller than 1:250000)



*Figure 1: Locality Map*

## **2.2 Description of the scope of the proposed overall activity.**

*Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site.*

The Department of Local Government and Human Settlements is proposing the establishment of an Integrated Human Settlement and related infrastructure on Elandskuil. The proposed project is primarily aimed at providing affordable housing to lower income groups and will contribute to alleviating the current housing need in the area. Each housing unit/stand will be provided with electricity, potable water and sanitation. The proposed establishment of an integrated human settlement will entail the following development:

- The development of approximately 3852 housing,
- Provision of open space areas for recreational use as well as for educational purposes;
- Breaking New Grounds (BNG) units,
  - Social housing;
  - Community residential units
  - Rental stock,
  - Pre schools, Primary and Secondary schools;
  - Police station;
  - Churches;
  - Government offices;
  - Agricultural technical college;
  - Multipurpose sports centre;
  - Public open space
  - Filling station
  - FLISP (Finance Linked Individual subsidy programme) and serviced land for the gap market.
  - Construction of the Reservoir

The extent of the site for the proposed development is approximately 280.7752 hectares.

Figure: 2:

Layout map

The proposed Integrated Human Settlement in Ventersdorp will activate activities under Listing Notice 1 (GN No. R327), Listing Notice 2 (GN No R 325) and Listing Notice 3 (GN No R 326). The process to be followed will therefore be an Environmental Impact Assessment process. The activities being included as part of the environmental authorization are:

**Table 1: Listed activities that are going to be triggered as a result of the proposed establishment of an Integrated Human Settlement.**

Relevant Government Notice	Description of the listed Activity and the Activity No.	Description
GN. R. 325, 07 April 2017	Activity No. 15: - The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for – <ul style="list-style-type: none"> <li>(i) The undertaking of a linear activity; or</li> <li>(ii) Maintenance purposes undertaken in accordance with a maintenance management plan.</li> </ul>	The development of a Human Settlement project and related facilities will entail the clearance of indigenous vegetation to allow the development to take place.
GN. R. 325, 07 April 2017	Activity No. 9: - The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex <u>excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass</u>	The site development will be serviced for gap market; this includes the transmission and distribution of electricity to residential areas and business units.

Relevant Government Notice	Description of the listed Activity and the Activity No.	Description
	<p><u>infrastructure is –</u></p> <p><u>(a)Temporarily required to allow for maintenance of existing infrastructure</u></p> <p><u>(b)2 kilometre or shorter in length</u></p> <p><u>(c)within an existing transmission line servitude; and</u></p> <p><u>(d) Will be removed within 18months of the commencement of development.</u></p>	
GN. R. 327, 07 April 2017	<p>Activity No. 28: - Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purpose or afforestation on or after 01 April 1998 and where such development:</p> <p>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</p> <p>(ii)will occur outside an urban area, where the total land to be developed is bigger than 1hectare;</p> <p>Excluding where such land has already been developed for</p>	The project will entail the development of mixed, residential, commercial, retail and other related facilities. The land on which the development is going to take place was previously used for grazing (agriculture).

Relevant Government Notice	Description of the listed Activity and the Activity No.	Description
	residential, mixed, retail, commercial, industrial or institutional purposes.	
GN. R. 327, 07 April 2017	<p>Activity No. 9: -The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water-</p> <p>(i)with an internal diameter of 0.36meters or more; or</p> <p>(ii)with a peak throughout put of 120 litres per second or more;</p> <p>Excluding where –</p> <p>(a)such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or</p> <p>(b) Where such development will occur within an urban area.</p>	The site development will be serviced for gap market, this includes the bulk transportation of water supply to the dwellings.
GN. R. 327, 07 April 2017	Activity No. 10: - The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –	The site development will be serviced for gap market; this includes the bulk transportation of waste water and sewage to the dwellings.
GN. R. 327, 07 April 2017	Activity No.13:- The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs,	The development will entail the development of a reservoir with a capacity of approximately 5000 cubic metres.



Relevant Government Notice	Description of the listed Activity and the Activity No.	Description
	with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.	
GN. R. 327, 07 April 2017	Activity No. 14:- The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	The project will entail the development of a filling station. The filling station will store and handle fuel (diesel, petrol).
GN. R. 327, 07 April 2017	Activity No. 56: - The development of a road where no reserve exists where the road is wider than 8 metres;	A road network will be developed within the proposed site for the development of a Human settlement.
GN R. 324 07 April 2017	Activity No 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.  <b>h. North West</b>  iv. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the	The development will entail with clearance of vegetation for more than 300 square meters which falls within critical Biodiversity area.



Relevant Government Notice	Description of the listed Activity and the Activity No.	Description
	competent authority;	

### 3. INFRASTRUCTURAL AND SERVICE PROVISION

An Engineering Services Investigation Report has been prepared to investigate the existing bulk engineering infrastructure capacities and effects of the proposed development on it, to identify any development constraints in terms of bulk engineering services infrastructure and give recommendations on the mitigation measures thereof.

The conclusion on the report indicated that the existing bulk services infrastructure networks in Ventersdorp will have additional volumes to accommodate and supply. Refer to the Assessment Report of existing infrastructure capacities and additional volumes required to service the proposed development attached as Appendix G5.

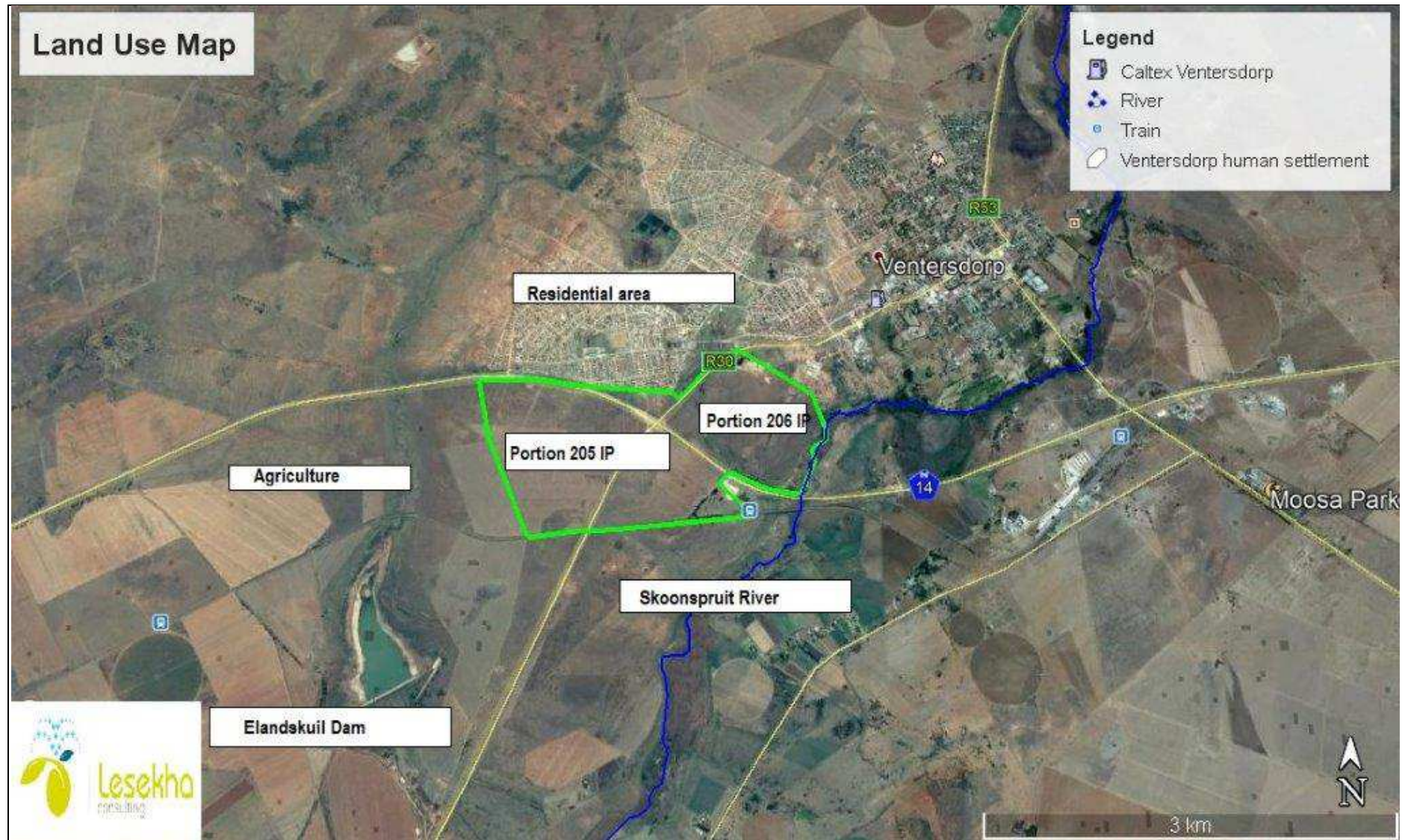
#### 3.1 Surrounding Land Uses

The proposed site is currently being used for agriculture (grazing animals) rezoning application needs to be executed. The site is located approximately 2 km from the Ventersdorp town. Located on the North West boundary of the site is a graveyard that is over a hundred years old and within the proposed site on the western there are also graves. On the south west approximately 1.5 km outside the boundary of the proposed development site there is a dam. On the Southern boundary of the site is a Shell (Garage) filling station approximately 700 metres from the R30/N14 intersection and farms. Informal settlements are also located within the site on the north eastern side.

The site has also a perennial river following through the site and wetlands are also found within the boundaries of the site. Adjacent to the site on the Northern side there is Extension 2 and 3 residential areas approximately 500m from the site and the north eastern side there is the Toevelug residential areas there residential area located approximately 1km from the proposed site. The site is also N14 national route. There is also a quarry/un-rehabilitated borrow pit adjoining/boundary of the development site however it is an exclusion on the development.

The proposed development will fit into the surrounding area and existing residential developments, it will also generate temporary and permanent jobs during the construction phase and operational phase.

This development is focused on the community of Ventersdorp and their needs and desirability for safe and affordable housing.



*Figure 3: Locality Map- Current Land use*

### **3.2. Land use Zoning**

The site is currently vacant land which is zoned agriculture however an assessment done by NW READ reviews that the site is unsuitable for agriculture due to its limited carrying capacity and its proximity to the Ventersdorp town. The client must submit rezoning and subdivision application to the JB marks Municipality. See an attached letter from NWREAD Appendix D8.

### **3.3. Storm water Management**

The primary function of a stormwater drainage system is to collect run-off from roads and properties, and convey this flow and all overland flow from the upstream area to the nearest watercourse. Storm water management system(s) should be planned and designed in line with municipal storm water management policies and or engineering best practices. The study area's storm water management objectives should seek to address the following objectives:

- Control the quality and quantity of storm water runoff;
- To protect local and downstream water courses;
- Encourage natural ground water recharge;
- To prevent soil erosion;
- To protect all property and life from damage caused by storm water and flooding.

In addition, the following design and construction measures should be also adopted as control and mitigation strategies to address the above-mentioned Storm Objectives:

- The storm water reticulation network should be designed to follow the contour formation of the internal road network with draining the area via kerb inlets along the road;
- Storm water reticulation design and construction of storm water infrastructure should ensure that overall development of the study area does not increase the rate of storm water runoff above that which the natural ground can safely accommodate at any point in the sub catchments thus post development runoff should be equal or less than the pre-development runoff. It is expected that the a retention pond(s) will be required to act as a flood control measure to attenuate peak storm water runoff into natural water courses;
- Sub-surface disposal of storm water should be avoided;
- All natural and unlined channels should be inspected for adequate binding of soil to reduce erosion;

- Steeper watercourses (especially in portion 206 IP) should be protected from erosion through the use of appropriate channel linings or controlled drops to dissipate flow energy. Stone pitching should also be used to reinforce channel inverts on such slopes;
- Landscaping and or re-vegetation of areas not occupied by buildings or paving should be constructed immediately after building works have been completed, or have reached a stage where newly established ground cover to all sub-structures is not at risk from the construction works.

### **3.4. Sewerage Treatment**

The establishment of housing development requires the need for essential services including sewage treatment and disposal. The optimal option is to connect to the existing municipal water-borne sewerage system which would transport the effluent from housing units to an existing waste water treatment works.

Sewerage disposal in the Ventersdorp town and Tshing Township is provided through water-borne sewerage reticulation network consisting of collector sewers and raising mains with the sewerage treated at the Ventersdorp Waste Water Treatment Works (WWTW). The service levels are in the form of yard connections in each yard. Sewerage disposal in the surrounding farms, Moosa Park and informal settlements is provided through a combination of septic tanks and pit toilets. Even though the study area currently does not have any sewerage infrastructure constructed in it, bulk service connections to service the study area can be made in the adjacent Tshing Township.

The total sewerage demand required to service the proposed development is 9.69 Mega liters a day which far exceeds the available spare capacity of 0.3 Mega liters a day. The existing infrastructure in terms of waste water treatment is not sufficient to accommodate the proposed development. The capacity of the waste water treatment infrastructure will thus need to be increased to accommodate additional volumes required to service the proposed development. Refer to the Engineering Service Investigation Report attached in Appendix G5.

### **3.5. Water**

The new development will connect into the existing bulk potable water reticulation system supplied by the municipality. The Ventersdorp town receives its potable water supply through river extraction of the Skoonspruit River via a network of canals. The water is then purified at the Ventersdorp Water



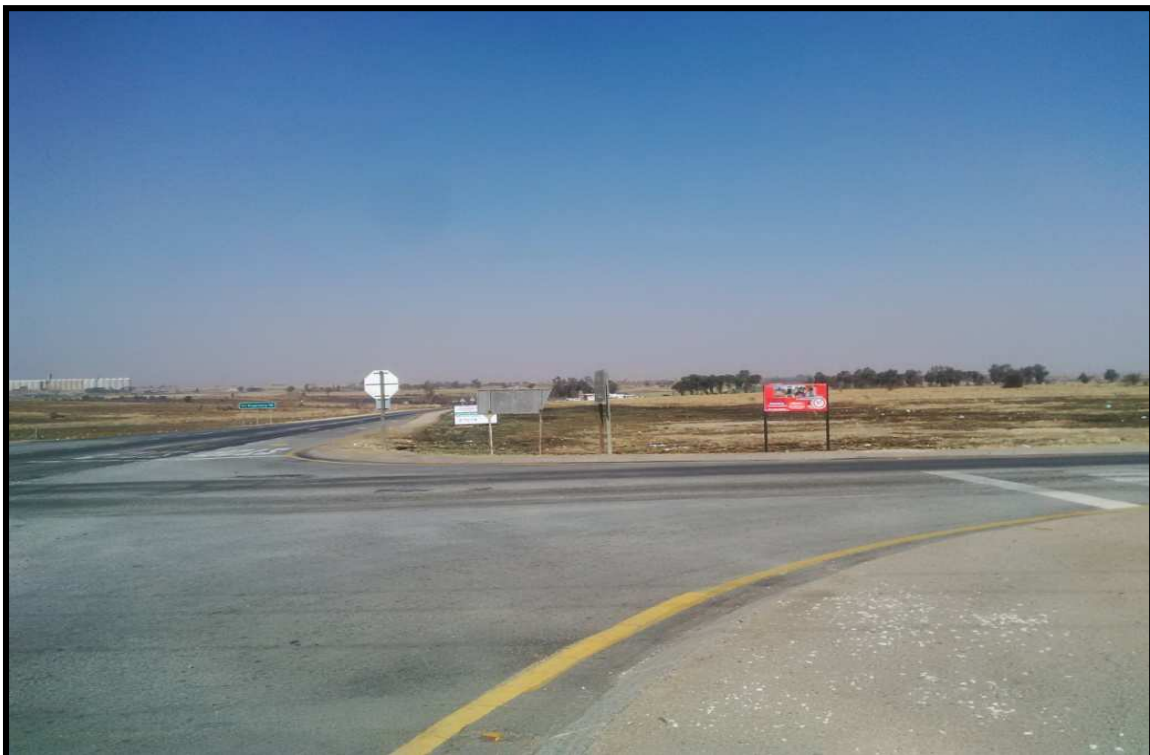
Treatment plant and stored in reservoir. Challenges associated with water supply within the JB Marks Local Municipality are aging infrastructure, water losses and lack of maintenance. JB Marks Local Municipality will upgrade the bulk water supply system which will include a construction of new 5.7 Mega litres reservoirs, an upgrade of the water treatment plant from 7 Mega litres a day to 14 Mega litres a day along with a 2.4 kilometre-long raising main from the water treatment plant to the reservoir.

### **3.6. Road access and traffic**

The site will be accessed through the N14 and R30 subsequently SANRAL and the JB Marks Local Municipality as the custodian of these roads were consulted. The local municipality has issued their comments in this regard as attached on Appendix D9.

The proposed development of Integrated Human Settlement lies opposite Extension 2 and 3 and Toevelug residential Areas. According to the Regional Spatial Development Framework, the existing road infrastructure within the region is adequate to cater for the increased developments at the desired densities; however, developments must be accompanied by road infrastructure upgrades.

The design of the roads must comply with municipal's design standards for residential/commercial townships. All roads and proposed stormwater infrastructure for the proposed township will comply with the minimum standards and requirements as set out by the municipality.



Picture 1: Access to site obtain from N14 and R30

### **3.7. Solid waste Management**

The Refuse Collection Service will be provided by the JB Marks Local Municipality – Solid Waste Department. The vehicle access and waste collection requirements for the provision of solid waste services will be based on the accepted standards as defined by JB Marks Local Municipality. These requirements will be implemented as part of the detail design and incorporate details provided by the Municipality – Solid Waste Department. Waste collection services do not extend to residents the surrounding farms, villages and informal settlements. Some residents in these un-serviced areas currently dispose of their waste in unoccupied parcels of land which may pose health hazards. The close proximity of the study area to the Tshing Township will thus enable waste collection services to easily be extended to service the proposed development.

### **3.8. Electricity Provision**

Eskom is the sole bulk electricity supplier to the JB Marks Local Municipality. Residents in the Ventersdorp town receive power from the municipality while residents in the surrounding farms and villages are supplied by Eskom. The current electrical supply to the municipality from Eskom is a total of 20MVA via a network of high voltage lines. The current municipal load on the grid is 9MVA leaving 11MVA available to service future developments and to connect villages not currently connected. There is multiple overhead electrical power lines running through portion 205 IP and along the R30 thus electrical connections to any new developments in the study area may be made with relative ease. Refer to the Engineering Service Investigation Report attached in Appendix G5.

## **4. POLICY AND LEGISLATIVE CONTEXT**

This section serves to highlight key legislation and policy framework that has implications on the proposed activity. It must be noted that this list is not exhaustive but notes, at high level, the critical laws and policies that have been considered.

### **4.1 National Environmental Management Act 107 of 1998 (NEMA)**

The objective of NEMA is to provide co-operative governance by establishing principles for decision makers on matters affecting the environment, institutions that promote co-operative governance and procedures for coordinating environmental functions exercised by the organs of state. Chapter 1 of the

Act establishes a number of principles related to the environment in South Africa. These principles are designed to provide a general framework for environmental planning and guidelines for the interpretation, administration and implementation of the Act. The principles include a number of internationally recognized environmental law norms and some principles peculiar to South Africa, i.e. the:

- Preventive principle;
- Precautionary principle, and
- Polluter pays principle

Environmental management must place people and their needs at the forefront of its concerns, and serve their physical, psychological, developmental, cultural and social interests equitably. Development must be socially, environmentally and economically sustainable. Sustainable development requires the consideration of all relevant factors including the following:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, minimized and remedied;
- Pollution and degradation of the environment are avoided, or, minimized and remedied; (align )
  - Disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or, minimized and remedied;
  - Waste is avoided, or, minimized and re-used or recycled where possible and otherwise disposed of in a responsible manner;
  - Use and exploitation of non-renewable natural resources is responsible and equitable;
  - The development, use and exploitation of renewable resources and the ecosystem of which they are part of do not exceed the level beyond which their integrity is jeopardized;
  - A risk-averse and cautious approach is applied, and
  - Negative impacts on the environment and on the people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimized and remedied.

### **Implications for the proposed development**

- The principles advocated in NEMA serve as guidelines for relevant decision makers in ensuring the protection of the environment. Therefore, the proposed development must be consistent with these principles;
- Where this is not possible, deviation from these principles would have to be very strongly motivated;



- The activity may not take place without the required authorization; and
- Both the Scoping and EIA processes will have to be facilitated with the submission of both final Scoping Report and an Environmental Impact Report.

#### **4.2 The Constitution of the Republic of South Africa, 1996 (Act no 108 of 1996)**

The Constitution is the most important piece of legislation that provides a framework for environmental management in South Africa. There are various sections that have implications for environmental management, hence for sustainable development. Section 24(b) (i) encourages prevention of pollution and ecological degradation. Section 24(b) (iii) promotes ecologically sustainable development.

According to chapter 2 of the Bill of rights, section 24 says:

Everyone has the right:

- a) To an environment that is not harmful to their health or well-being; and
- b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
  - i) Prevent pollution and ecological degradation;
  - ii) Promote conservation; and
  - iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

#### **Implications for the proposed development:**

- Obligation to ensure that proposed activity will not result in pollution and/or ecological degradation;
- Obligation to ensure that where possible conservation is promoted; and
- Obligation to ensure that the proposed activity is ecologically sustainable, while demonstrating economic and social development.

#### **4.3 National Environment: Air Quality Act 39 of 2004**

The objective of this Act is:

- a. *“To protect the environment by providing reasonable measures for -*
  - i. *The protection and enhancement of the quality of air in the Republic;*
  - ii. *The prevention of air pollution and ecological degradation, and*
  - iii. *Securing ecologically sustainable development while promoting justifiable economic and social development; and b. Generally to give effect to the section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of*

*securing and environment that is not harmful to the health and well-being of people.”*

The Act emphasises that the key to ensuring that air quality is improved is by the minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices.

#### **Implications for the proposed development:**

- The principles advocated in NEAQA serve as guidelines for relevant decision makers in ensuring the air quality. Therefore, the proposed development must be consistent with these principles;
- Where this is not possible, deviation from these principles would have to be very strongly motivated;
- The development should minimise air pollution.

#### **4.3.1 Air Emissions**

The control of atmospheric emissions of noxious, hazardous and nuisance causing materials is controlled by the Atmospheric Pollution Prevention Act 45 of 1965 and its amendments. The administration of the Act has been assigned to the Air Pollution Control Department under the Department of READ.

#### **4.3.2 Dust Control**

In terms of the Atmospheric Pollution Prevention Act 45 of 1965, Section 27 - 35; industries should adopt the “best practicable means” for preventing dust from becoming dispersed or causing a nuisance. The act also empowers owners or occupiers present in the vicinity of the source of dust/nuisance to take or adopt necessary steps or precautions against the nuisance. Where steps have not been prescribed, owners must adopt the “best practicable means” as described by the developer, for the abatement of the nuisance. Should the developer not comply with the necessary steps to prevent owners/occupiers from the effects of dust, the developer would be found guilty and be liable to pay a dust control levy to the minister.

#### **4.3.3 Vehicular Emissions**

The Atmospheric Pollution Prevention Act 45 of 1965, Section 36 - 40, regulates atmospheric pollution by fumes emitted by vehicles. The act authorizes local authorities to examine any vehicle that emits

noxious and offensive gases. Should the examination process reveal noncompliance, the owners of the vehicle will be advised to take required steps in prevention of air pollution by fumes. Vehicles owners are required by law to take necessary steps for preventing the emission of the noxious or offensive gases. Failure to comply with the requirements of the law is considered an offence.

#### **4.4 National Waste Management Strategy (first draft for public comment March 2010)**

The National Waste Management Strategy was first established in 1999 to address South Africa's waste management challenges, and gave effect to the suite of policies and legislation which preceded it, including the Constitution (1996), the Environmental Management Policy for South Africa (1998), the Draft White Paper on Integrated Pollution & Waste Management (1998), the National Water Act (1998) and NEMA (1998). The overall objective of the strategy was to reduce the generation of waste and reduce the impact of all forms of waste on economic development, health and the quality of environmental resources. The 1999 NWMS sought to achieve three key goals:

- Develop strategies for integrated waste management;
- Develop action plans to implement the strategies; and
- Build capacity within DEA and DW&S to implement the action.

The new NWMS however will have to deal with the following items:

- Strategies, objectives, plans, guidelines, systems and procedures relating to the protection of the environment and the generation (including avoidance and minimisation of such generation), re-use, recycling, recovery, treatment, disposal, use, control and management of waste in order to achieve the objectives of the Waste Act,
- Mechanisms, systems and procedures for giving effect to the Republic's obligations in terms of international agreements National norms and standards for waste management, including planning and national norms for service delivery,
- Practical measures for achieving co-operative governance in waste management matters,
- Guidance on raising awareness regarding the impacts of waste on health and the environment,
- Approaches for securing compliance with the requirements of the Waste Act.

## **4.5 National Water Act 36 of 1998**

### **4.5.1 Water Supply**

The National Water Act 36 of 1998 ensures that water resources are adequately protected, used, developed, conserved and controlled. The Act deals with the development of strategies to facilitate the proper management of water resources, provides for the protection of the water resource, the regulation of the use of water, for financial provision, catchment management agencies, water use associations, Advisory committees, international water management, government waterworks, dam safety, access to and rights over water, monitoring and assessment and information, appeals and dispute resolution.

Under the Act, a facility is required to obtain the necessary permits for water usage and the disposal of wastewater from the authority responsible for the administration of the Act, namely the Department of Water & Sanitation (DWS). The Act stipulates that if an industry is acquiring water from a municipality or other local supplier, it is the responsibility of that supplier to obtain the necessary permits. Any private well or borehole sunk for the abstraction of groundwater has to be reported to the regulatory authority.

### **4.5.2 Wastewater**

The National Water Act is the principal piece of South African legislation governing wastewater management. Under the Act there are several important issues to note:

- Industrial and sanitary wastewater cannot be directly or indirectly discharged to stormwater drainage systems, surface or groundwater;
- Persons storing chemicals and oils must take the necessary precautions to prevent leakage into stormwater drains or water courses, unless specifically authorized by the regulatory authority;
- It is generally prohibited to allow stormwater to enter sewer systems;
- Industrial effluents may be discharged to sewer only with the permission of the regulatory authority. There are site effluent discharge limits that if exceeded can result in a fineable offence;
- It is an offence to willfully or negligently pollute surface water or groundwater;
- In the event of a pollution incident, the offending party is obliged to report the incident to the regulatory authority;

- The regulatory authority can take the necessary steps to prevent the pollution of water resources and can recover the costs of clean-up from the polluter. Local by-laws can also require a facility that stores or handles environmentally hazardous materials that could pollute stormwater runoff, rivers, water courses etc. to take 'adequate precautions' to prevent the spillage or seepage of such materials into the environment.

### **4.5.3 Pollution**

Section 19 of the National Water Act deals with pollution prevention and remedying effects, and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. The party who owns controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources. If these measures are not taken, the catchment management agency concerned may do whatever is necessary to prevent the pollution or to remedy its effects, and to recover all reasonable costs from the persons responsible for the pollution.

Section 31A of the Environmental Conservation Act empowers the regulatory authority to undertake action if a person or company carries out any activity that results in significant damage to the environment e.g. surface and groundwater pollution. The costs of remedial work can be recovered from the polluter. Currently there are no soil and groundwater clean-up guidelines. For groundwater, DWS uses a range of standards depending on the final use of the water. It is unlikely that the project will affect any groundwater users. For the cleanup of soil the Department has accepted the use of risk assessments as the basis for establishing remediation criteria.

#### **Implications for the proposed development:**

- Any proposed water uses must be specified and registered and/or licensed;
- Any modifications to drainage lines on site must be investigated in terms of water use requirements;
- The developers are responsible for taking reasonable measures to prevent pollution of water resources that it owns, controls occupies or uses on the land in question;
- The developers are required to remedy a situation where pollution of a water resource occurs following an emergency incident and where it is responsible for the incident or owns or is in control of the substance involved;

- The developers must take all reasonable measures to minimise the impacts of the incident, undertake clean-up procedures, remedy the effects of the incident and take measures as directed by the catchment agency; and
- Waste created during construction needs to be controlled adequately to negate the impacts on ground and surface water.

#### **4.6 The National Water Act and Riparian Areas**

Riparian habitat is afforded protection under the National Water Act in a number of ways. Firstly reference in the National Water Act to a watercourse includes its banks, on which riparian habitat is encountered. Riparian areas are thus afforded the same degree of protection as the river beds and channels alongside which they occur. Riparian habitat is also important in the context of resource quality objectives that are a critical part of the Act. In terms of Section 13(1) of the Act resource quality objectives must be determined for every significant water resource, and are a central part of data type specifications relating to national monitoring systems and national information systems as determined in Section 137(2) and Section 139(2) of the Act respectively. Resource quality is important in the context of riparian habitat as resource quality as defined in the Act means the quality of all aspects of a water resource and includes the character and condition of the riparian habitat. In terms of Section 26(4) of the Act, the need for the conservation and protection of riparian habitat must be taken into account in the determination and promulgation of regulations under the Act.

#### **Implications for the proposed development:**

- The developers are responsible for taking reasonable measures to prevent pollution of the riparian areas.
- The developers are required to remedy a situation where pollution of the riparian areas occurs following an emergency incident and where it is responsible for the incident or owns or is in control of the substance involved;
- The developers must take all reasonable measures to minimise the impacts of the incident, undertake clean-up procedures, remedy the effects of the incident and take measures as directed by the catchment agency; and
- Waste created during construction needs to be controlled adequately to negate the impacts on the riparian areas.

#### **4.7 National Environmental Management: Waste Act, 2008**

The legislation most pertinent to the management of waste in South Africa is the National Environmental Management Waste Act, (Act 59 of 2008). The Act was promulgated in order to provide for institutional arrangement and planning matters, to provide for national norms and standards for regulating management of waste by all spheres of government, and to provide for the licensing and control of waste management activities and all matters connected therewith. In essence, it provides the much needed legislative framework for the management of waste in South Africa.

##### **4.7.1 National Environmental Management: Waste Act, 2008**

Chapter 1, Section 2 of the Act describes the objectives of the Act as follows:

- a) *"to protect health, well-being and the environment by providing reasonable measures for*
  - i) *minimising the consumption of natural resources,*
  - ii) *avoiding and minimising the generation of waste,*
  - iii) *reducing, re-using, recycling and recovering waste,*
  - iv) *treating and safely disposing of waste as a last resort;*
  - v) *preventing pollution and ecological degradation;*
  - vi) *securing ecologically sustainable development while promoting justifiable economic and social development;*
  - vii) *promoting and ensuring the effective delivery of waste service;*
  - viii) *remediating land where contamination presents, or may present, a significant risk of harm to health or the environment*
  - ix) *achieving integrated waste management reporting and planning.*
- b) *to ensure that people are aware of the impact of waste on their health, wellbeing and the environment.*
- c) *to provide for compliance with the measures set out in paragraph (a)*
- d) *generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being."*

The Act requires the drafting of a national waste management strategy for achieving the objectives of the Act. The Act sets waste service standards, covering areas such as tariffs, quality of service and financial reporting. The Act requires that each municipality designate a waste management officer. The Act requires each municipality to produce an Integrated Waste Management Plan (IWMP) and to submit this plan to the MEC for approval. The approved IWMP must be included in the municipal Integrated Development Plan (IDP). Before finalizing the IWMP the municipality is required to follow the consultative process as defined in section 29 of the Municipal Systems Act. This can be done either as a separate process or as part of the consultative process relating to its IDP.

### **Implications for the proposed development:**

- The developers are responsible for taking reasonable measures to manage waste in order to protect health, well-being and the environment.
- The developers are required to ensure the employees are aware of the impact of waste on their health, wellbeing and the environment;
- The developers must take all reasonable measures to minimise the consumption of natural resources.

### **4.8 Environment Conservation Act No. 73 of 1989**

The main purpose of this Act is to provide for the protection of the natural environment (Section 16) to control environmental pollution by prohibiting littering and controlling the removal of littering, and controlling waste management (Section 20) where the owner of a disposal site is required to apply for a permit from the minister of Water Affairs to operate such a facility. The Act further provides for the control of activities which may have a detrimental effect on the environment (Section 21). The Act defines a disposal site as:

*“A site used for the accumulation of waste with the purpose of disposing or treatment of such waste.”*  
Sections 24 to 28 of the Act contain regulations regarding waste management, littering, noise, vibration and shock, environmental impact reports, limited development areas and general regulatory powers.

### **Implications for the current development**

- Obligation to ensure that proposed activity will not result in pollution and/or ecological degradation;
- Obligation to ensure that where possible conservation is promoted; and
- Obligation to ensure that the noise, vibration and shock, environmental impact reports, limited development areas.

### **4.9 National Forest Act**

In terms of The National Forests Act (Act 84, 1998), trees in natural forests or protected tree species (as listed in Government Gazette Notice 1012 of 27 August 2004) may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported,



donated, purchased or sold - except under licence granted by the Department of Agriculture, Forestry and Fisheries.

#### **Implications for the current development**

- DAFF would have to be contacted in order to obtain a permit or licence to remove any protected or indigenous trees species.
- Site development is at grassland whereby few trees are dominated.

#### **4.10. National Heritage Resources Act**

In terms of Section 38 of the Heritage Resources Act (Act No 25 of 1999), a Heritage Impact Assessment has to be undertaken for the following developments:

- Any development or other activity which will change the character of a site exceeding 5 000 m<sup>2</sup> in extent; or
- Involving three or more divisions thereof which have been consolidated within the past five years; or
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- The re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest 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.

##### **4.10.1 Heritage Management**

The National Heritage Resource Act (Act No. 25 of 1999) was introduced to ensure protection of South Africa's important heritage features. As such the act covers 4 billion years of history. The act covers the following areas of heritage value:

- Archaeology;
- Paleontology;
- Meteorites.

All the above mentioned materials that are discovered are thus property of the state. Tools used to conserve and manage these resources are the formal regulated EIA processes as well as permits

issued by the South African Heritage and Resources Agency (SAHRA) to restrict and/or regulate development within a heritage environment.

**Implications for the proposed development:**

- A heritage impact Assessments must be conducted.
- Any artifacts uncovered during the construction phase must be reported to SAHRA;
- SAHRA must be informed of the proposed development and provided an opportunity to comment.

**4.11. Occupational Health and Safety**

The Occupational Health and Safety Act of 1993 is South Africa's principle legislation concerning health and safety of employees. It also aims to protect persons who are not at work against hazard to health and safety arising out of or in connection with the activities of a person at work. The Act places the responsibility on the employer to ensure a safe and healthy working environment and to cause every employee to be made conversant with health and safety requirements relevant to their work. At the same time the Act places the responsibility on the employee to follow its employer's health and safety procedures and instructions. A number of Regulations have been promulgated under the Act including the following:

- General Administrative Regulations, 1994;
- Regulations for Hazardous Chemical Substances, 1995;
- General Safety Regulations, 1986;
- Construction Regulations, 2003.

**Implications for the proposed development:**

- The developers will protect all persons against hazard to health and safety arising out of or in connection with the activities of a person at work.

**4.12. National Environmental Management: Biodiversity Act, (Act No. 10 of 2004)**

The objective of the act are within the framework of the National biodiversity Act, to provide for, the management and conservation of biological diversity within the republic; the components of such biodiversity, the use of indigenous biodiversity resources in a sustainable manner, and the fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources. To provide for a South Africa National Biodiversity Institute to assist in achieving the objectives of this act.

The National Environmental Management: Biodiversity Act 10 of 2004 currently has negligible influence over environmental assessment and management. Nonetheless it has potentially major significance in terms of introducing mandatory biodiversity considerations at scale to planning and authorization processes relating to land use. Besides giving effect to the Convention on Biological Diversity and other ratified international agreements relating to biodiversity, NEMBA closely details with the IEM aspects of NEMA by providing for the regulation of restricted activities in areas defined by threats to ecosystems or species. In summary, the NEMBA provides for a form of 'tailor-made' environmental impact assessment dispensation in certain areas, or involving specifically listed activities, that is, informed by the prerogatives of the conservation and sustainable use of biodiversity. These provisions, which are contained in sections 52 and 53 are directly linked to the integrated environmental management provisions of the NEM Second Amendment Act. Reference needs to be made to chapter 5 of NEMA in order to illustrate the implications of the NEMBA for the regulation of agricultural land-use change. The most directly-applicable provisions of chapter 5 of NEMA are those that relate to the identification of activities (own emphasis) which may not be commenced without environmental authorization, and the identification of geographical areas (own emphasis) in which specified activities may not be commenced without prior authorization.

#### **4.13. National Road Traffic Act (Act 83 of 1996)**

This Act is relevant if the applicant intends to transport, load, off-load or package dangerous goods as listed in SANAS Code of Practice 10228.

A TIA is underway and results shall be incorporated into the EIA Report. A number of access points are proposed for the development, which requires approval from SANRAL, and the Department of Public works and Roads together with any road upgrades required as part of the development.

#### **Implications for the proposed development:**

- A Traffic Impact assessment will be done to assess traffic conditions on the existing road network and assess the traffic generation effects of the proposed development.

#### **4.14. Development Facilitation Act (Act No. 65 of 1995)**

The Development Facilitation Act (DFA) has formalized the restructuring of urban settlements and planning in South Africa. The aim of the DFA has been to expedite land development projects and to promote efficient and integrated land development. It is aimed at concluding the Reconstruction and

Development Planning (RDP) Programme and to a certain extent replaces the RDP. The Act contains general principles for land developments. It provides that the municipalities must prepare their Land Development Objectives (LDOs) on an annual basis. All the regulations contained in the Development Facilitation Act, 1995 (Act 65 of 1995) contain provisions relating to public participation, creating room for communities to be involved in matters of land development in their areas. The LDOs deal with how people will gain access to basic services and the standard of the services. Since the inception of the Integrated Development Plans (IDPs), the land development objectives are addressed in the Spatial Development Framework (SDF), which could form part of the sector plans in the IDP.

Sections of the Act state that development initiatives are necessary for:

- Promoting integration in respect of social, economic, institutional and physical aspects of development;
- Promoting integrated development in rural and urban areas
- Promoting development of localities that are nearer to residential and employment opportunities;
- Optimizing the use of existing resources
- Discouraging urban sprawl and contributing to more compact cities and towns.

#### **4.15 National Housing Code (2006)**

The National Housing Code (2006) identified the primary role of the municipality as taking all reasonable and necessary steps, within the framework of national and provincial legislation and policy, to ensure that the inhabitants within its area of jurisdiction have access to adequate housing. This entails the following:

- Initiating, planning, facilitating and coordinating appropriate housing development.
- Promoting private sector development and playing the role of developer.
- Preparing a housing delivery strategy and setting up housing development goals.
- Setting aside, planning and managing land for housing.
- Creating a financially and socially viable environment for housing delivery.
- Facilitating the resolution of conflicts arising from housing delivery initiatives.
- Facilitating the provision of bulk services.
- Administering national housing programmes.
- Exploring land for housing development. The aim of this HSSP is to assist the municipality in fulfilling the abovementioned role assigned to it in terms of the National Housing Code.

#### **4.16 The Land Reform Programme**

The overall goal of the land reform programme is to redistribute land, rights and economic benefits of land to those sections of society that were forcibly removed from their land from 1913. The programme is implemented under three components, or pillars, namely:

- Restitution, which seeks to restore land ownership or compensate those forced off land during white rule;
- Redistribution, of mainly agricultural land, to redress the discriminatory colonial and apartheid policies by providing the disadvantaged and poor with access to land; and
- Land tenure reform, which seeks to secure tenure for all South Africans, especially the more vulnerable, such as farm labour tenants.

The Department of Land Affairs has implemented the Labour Tenant Strategy in terms of the Land Reform Programme of 1996. An alignment document has also been produced to ensure alignment between this programme and the National Department of Human Settlement housing subsidy programmes.

#### **4.17 White Paper on Local Government (1998)**

The White Paper on Local Government adopts development policy guidelines and principles and advocates the developmental role of local government. The guidelines and principles can be summarized as follows:

- Orientation towards people's needs;
- Poverty alleviation with special consideration of marginalized and disadvantaged groups and gender equity;
- Environmentally sustainable development and a safe and healthy environment;
- Economic growth with creation of income and employment opportunities;
- Involvement of residents, communities and stakeholders;
- Sustainability of services, municipalities and settlements.

#### **4.18 Municipal Demarcation Act (Act 27 of 1998)**

Demarcation objectives: The Demarcation Board determines a Municipal boundary with the objective that it must be to able to enable the municipality for that area to fulfill its constitutional obligations in line with the provision of a democratic and accountable government for communities within a specific geographic area inclusive of:

- The provision of services to the communities in an equitable and sustainable manner.
- The promotion of social and economic development.
- The promotion of a safe and healthy environment.
- Enable effective local governance.
- Enable integrated development.
- Have a tax base as inclusive as possible for the user of municipal services in the municipality.

#### **4.19 The Municipal Structures Act (Act 117 of 1998)**

The Municipal Structures Act 1998 (Act No. 117 of 1998) provides for the establishment of municipal categories and for the appropriate division of functions and powers between these categories of municipality. A municipality has the functions and powers assigned to it in terms of sections 156 and 229 of the Constitution. They must be divided in the case of a district municipality and the local municipalities within the area of the district municipality, as set out below. A district municipality has the following functions and powers in terms of development planning:

- Integrated development planning for the district municipality as a whole, including a framework for integrated development plans for the local municipalities within the area of the district municipality, taking into account the integrated development plans of those local municipalities.

Furthermore a district municipality must seek to achieve the integrated, sustainable and equitable social and economic development of its entire area by:

- Ensuring integrated development planning for the district as a whole;
- Promoting bulk infrastructural development and services for the district as a whole;
- Building the capacity of local municipalities in its area to perform their functions and exercise their powers where such capacity is lacking; and
- Promoting the equitable distribution of resources between the local municipalities in its area to ensure appropriate levels of municipal services within the area.

Local municipality has the functions and powers referred to in sections 156 and 229 of the Constitution excluding those functions and powers vested in the district municipality in whose area it falls.

#### **4.20 The National Housing Act (Act 107 of 1997)**

The National Housing Act (NHA) sets out three general principles, namely: giving priority to the needs of the poor in respect of housing development; consultation with individuals and communities affected by housing development; and ensuring that housing development is economically, fiscally, socially and financially affordable and sustainable. The NHA lays down general principles applicable to housing

development in all spheres of government, defines the functions of national, provincial and local governments in respect of housing development, and promotes the role of the state as a facilitator of housing development.

National government must establish and facilitate a sustainable national housing development process, provincial government must do everything in its power to promote and facilitate the provision of adequate housing in its province within the framework of national housing policy, while municipalities must take reasonable and necessary steps within the framework of national and provincial housing legislation and policy to ensure that the right of access to adequate housing is realised on a progressive basis. Section 3(2) of the NHA provides that the Minister must monitor the performance of all spheres of government in relation of housing delivery goals and budgetary goals. Section 3(4) (i) of the NHA provides that the Minister must, in relation to the duties of government, evaluate performance of the housing sector against set goals and requirements, equitableness and effectiveness.

#### **4.21 Extension of Security Act of 1993**

The extension of Security of Tenure Act is aimed at promoting the achievement of long term security to tenure for occupiers of land through the joint efforts of occupiers, landowners and government bodies. Through this Act, the rights of occupiers may be extended while giving due recognition to the rights, duties and legitimate interests of landowners. The long-term security of tenure is facilitated by the minister by granting subsidies:

- To facilitate the planning and implementation of development;
- To enable occupiers in need of long-term security of tenure to
- acquire land or land rights; and
- For the development of land

#### **4.22 Municipal Finance Management Act of 2003**

The Municipal Finance Management Act plays a central role in housing delivery because it regulates the procurement of service providers for the planning and implementation of national housing programmes and projects. Importantly, it also clearly defines the roles and responsibilities of the councilors and officials in the tender process. The purpose of the Municipal Finance Management Act (MFMA) is three-fold:

- To secure sound and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government;

- To establish treasury norms and standards for the local sphere of government;
- To provide for matters related to the above purpose.

#### **4.23 Disaster Management Act of 2002**

The Disaster Management Act 2002 (Act No57 of 2002) establishes a multi-tier disaster management system for the Republic. In terms of the prescripts of section 43 of the Act SDM must, establish a disaster management centre for its municipal area in its administration. SDM must further establish and implement a framework for disaster management in the district. The Municipality must, in terms of section 53 of the Act prepare and approve a disaster management plan after which it must submit same to the national disaster management centre, the provincial disaster management centre.

#### **4.24 National Spatial Development Perspective (2006)**

The NSDP consists of a set of five normative principles for development:

- Principle 1: Rapid economic growth that is sustained and inclusive is a pre-requisite for the achievement of other policy objectives, among which poverty alleviation is key.
- Principle 2: Government has a constitutional obligation to provide basic services to all citizens wherever they reside.
- Principle 3: Government spending on fixed investment should be focused on localities of economic growth and/or economic activities and to create long-term employment opportunities.
- Principle 4: Efforts to address past and current social inequalities should focus on people, not places. In localities where there are both high levels of poverty and demonstrated economic potential, this could include fixed capital investment beyond basic services to exploit the potential of those localities. In localities with low demonstrated economic potential, government should beyond the provision of basic services, concentrate primarily on human development.
- Principle 5: In order to overcome the spatial distortions of apartheid, future settlement and economic development opportunities should be channeled into activity corridors and nodes that are adjacent to or that link the main growth centers. Infrastructure investment should primarily support localities that will become major growth nodes in South Africa and the SADC region to create regional gateways to the global economy.

#### **4.25 National Development Plan: Vision for 2030**



The National Planning Commission (NPC) (2011) published the NDP: Vision for 2030. Its contents will impact directly and indirectly on the provision of housing within the national spatial system. Its core focuses includes:

- The active efforts and participation of all South Africans in their own development
- Redressing the injustices of the past effectively
- Faster economic growth and higher investment and employment
- Rising standards of education, a healthy population and effective social protection
- Strengthening the links between economic and social strategies
- An effective and capable government
- Collaboration between the private and public sectors
- Leadership from all sectors in society.

#### **4.26 Policies and guidelines consulted**

From the NEMA Environmental Impact Assessment Regulations Guideline and Information Document Series the following guidelines were used:

- Guideline on Public Participation in the Environmental Impact Assessment Process (October 2012);
- Draft Guideline on Need and Desirability in Terms of the Environmental Impact Assessment (EIA) Regulations, 2010 (October 2012);
- Guideline on Alternatives (August 2010);
- JB Marks Local Municipality Spatial Development Framework
- White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- Spatial Development Frameworks(where available);
- Integrated Development Plans;
- Relevant provincial, district and local policies and strategies

#### **4.27 Provincial Spatial Development Framework (PSDF) 2009**

The PSDF (2009) purports to be aligned with the National Spatial Development Perspective and endorses the vision of PGWC to create a 'home for all'. In order to achieve this vision the PSDF claims to:

- be the spatial expression of the Provincial Growth and development Strategy (PGDS); guide (metropolitan, district and local) municipal integrated development plans (IDPs) and spatial

development frameworks (SDFs) and provincial and municipal framework plans (i.e. sub-SDF spatial plans);

- help prioritize and align investment and infrastructure plans or other provincial departments, as well as national departments' and parastatals' plans and programs in the Province;
- Provide clear signals to the private sector about desired development directions; increase predictability in the development environment, for example by establishing no-go, conditional and 'go' areas for development; redress the spatial legacy of apartheid.

The PSDF is a policy document that is applied in terms of the conformity principle; it does not create or take away any rights to use land, but on the other hand upgrading of existing rights will have to conform to the PSDF. However, like all guidelines, the PSDF must not be applied rigidly but in a developmental way that takes account of the particular circumstances of each case. The latter goal is achieved through the consistency principle.

The PSDF is implemented in accordance with the consistency principle that applies in the relations between development applications vis-à-vis relevant spatial development frameworks or framework plans, and in the relations between lower- and higher-order spatial development frameworks or framework plans in the plans hierarchy. Furthermore development applications must be consistent with relevant spatial development frameworks.

The relevant framework and plan that the anticipated development must be measured against, is the SDF. This plan designates the subject property for "new urban development".

#### **4.28 Triple Bottom Line (PSDF 2009)**

The three pillars of sustainability also referred to as the "triple bottom line" (PSDF 2009) are:

- Ecological integrity (health of the Planet): This refers to the continued wholeness and success of the environment in terms of providing for and sustaining life on Earth or as a subset thereof such as a region or town, and concerns both the natural and the human-made environment. Due to the fact that the survival of species, including our own, ultimately depends on the ecology, ecological integrity is then the key factor in the environmental sustainability equation.

The integrated human settlement development model is based on an approach whereby the integrity of the ecology and natural environment is respected and where the human-made environment is modeled to ensure a healthy and pleasant environment.

Social equity (situation of the people): Within a secure ecology, society can move towards needs fulfillment for all. Social equity refers to both material human wellbeing (the absence of poverty) and spiritual human wellbeing, i.e. provision of a physical and moral space where the continuity of a complex society and ecology is sought to be maintained and enhanced, and its health attained.

The very essence of the this development model is reflected in its structuring of an integrated settlement pattern, social infrastructure and a range of housing opportunities are provided in an ecological environment that is maintained and enhanced, linked to an integrated system of open spaces and creational opportunities to ensure a physical and moral space for human wellbeing.

Economic efficiency (attainment of Prosperity): If human needs are met, society can seek prosperity through economic efficiency. This refers to the optimization of benefit at the lowest cost, i.e. optimal development must be achieved at the lowest possible cost – and moreover, to comply with the sustainability principle, taking all costs now and in future into consideration.

The whole integrated human settlement development model is structured to attain economic efficiency in terms of efficiency for residents (i.e. walk able neighborhoods, integrated transport, proximity to community facilities, regional accessibility, etc). It is also structured to ensure the minimum cost to the environment to ensure the long term sustainability thereof.

#### **4.29 Sustainable Development Criteria for Built Environment Projects requiring Environmental Impact Assessments in Gauteng, 2009 Housing**

"Long term goals include:

- On a progressive basis, all residents living in inadequate housing to access affordable, safe and decent accommodation.
- Meet housing needs at all levels of the housing ladder through direct delivery or facilitation (partnerships with private sector, financial institutions, community organizations );
- Quality of the City's existing and future housing stock is enhanced and maintained;
- Increased sustainability and live ability of all residential communities; and
- Access to adequate accommodation that is suitable, relevant, appropriately located, affordable, and fiscally sustainable.

#### **4.30 Spatial form and Urban Management**

Long-term goals include:

- A city with an urban form that is efficient, sustainable, and accessible;
- A city with quality urban environments, providing for integrated and sustainable settlements and well-designed urban spaces;
- An appropriate and efficient land use management system that facilitates investment and continuous regeneration;
- Effective urban management to ensure maintenance of appropriate standards of safety, cleanliness and orderliness across the city; and
- An efficient and effective spatial information service that meets the standards of a World Class African City.

#### **4.31. Breaking New Ground**

(A Comprehensive Plan for the Development of Sustainable Human Settlements August 2004)

The purpose of this document is to outline a plan for the development of sustainable human settlements over the next five years, embracing the People's Contract as the basis for delivery. The nature of demand for government-assisted housing in South Africa has changed significantly over the last five years:

- An average population growth of 2.1% per annum has resulted in the population increasing by 10.4% or over 4.2 million people between 1996 and 2001. If this growth has been sustained since 2001, the extrapolated population for 2004 is 47.5 million people.
- In addition, the country has experienced a 30% increase in the absolute number of households, where only a 10% increase was expected. This has been caused by the drop in average household size from 4.5 people per household in 1996 to 3.8 in 2001.
- Urban populations have increased as a result of both urbanisation and natural population growth. One fifth of urban residents are relative newcomers to urban areas (i.e. first generation residents) and urban areas are expected to continue to grow at a rate of 2.7% per annum.
- Population growth trends however reveal significant regional differences and increasing spatial concentration. Thus, Gauteng has a significantly higher population growth rate, growing at twice the national average. The Western Cape, KwaZulu Natal and Mpumalanga also have population growth rates above the national average. Over a quarter of the households in the

country's nine largest cities (around 1.2 million in total) continued to live in informal dwellings in 2001. This is equivalent to over one-third of all informal dwellings nationally. The greatest growth is however occurring in South Africa's secondary cities.

- Unemployment, on the official definition, leapt from 16% in 1995 to 30% in 2002, placing pressure on household incomes. Growing unemployment is a feature of the increased size of the labour pool, and slow job creation. Whilst the economy has created 12% more jobs over the last five years, the number of potentially economically active individuals has increased threefold. Thus the Towards a 10 Year Review notes a dramatic increase of 4% in the economically active population in the country.
- As a result of high rates of unemployment, housing and service provision has not kept pace with household formation, and a range of other factors have had negative impact on social coherence and crime, particularly contact crimes (comprising 40% of all crimes). This has a human settlement dimension in that many of these crimes typically take place in private, domestic spaces where public policing has limited impact. Moreover informal settlements have been associated with high levels of crime.
- Despite scale delivery, the changing nature of demand and the pace of urbanisation have meant that the size of the backlog has increased. Current figures indicate that there are over 1.8 million dwellings which can be classified as inadequate housing. The number of households living in shacks in informal settlements and backyards increased from 1.45 million in 1996 to 1.84 million in 2001, an increase of 26%, which is far greater than the 11% increase in population over the same period<sup>2</sup>.
- Delivery at scale, in high, medium and low cost housing, has also not created a functionally balanced residential property market. The repeal of the Group Areas Act created an increased demand in historically well serviced and located neighbourhoods – fuelling demand and increasing prices and sale and property investment. By contrast, investment in large parts of the middle to lower end of the property market i.e. historically working class neighbourhoods has declined. The consequent uneven investment in housing has skewed the growth of the residential property market – bringing windfalls to approximately 30% of the market, whilst continued stagnation thwarted property value appreciation in marginalized areas. This has been exacerbated by the practice of “red lining” by financial institutions barring housing investment and sales in inner city areas and traditional black townships.

#### 4.31.1. Housing supply

- Over the last 10 years, state-assisted housing investment of some R29,5 Bn has provided 1.6 million housing opportunities and has allowed 500,000 families the opportunity to secure titles of old public housing stock. The lack of affordable well located land for low cost housing resulted in the housing programme largely extending existing areas, often on the urban periphery and achieving limited integration. Post-1994 extensions to settlements have generally lacked the qualities necessary to enable a decent quality of life. This is attributed largely to the lack of funding and poor alignment of budgets and priorities between line function departments and municipalities responsible for providing social facilities in new communities.
- A central challenge has been to transform the extremely complicated bureaucratic, administrative, financial and institutional framework inherited from the previous government. This on-going process presents significant challenges to build capacity particularly at provincial and local spheres of government and maintain the rate of housing delivery, which peaked in 1997 at some 323 000 units for that year.
- National policy and provincial allocations have not always been able to respond to the changing nature of demand deriving from urbanisation pressures amongst others (particularly in the three provinces of KwaZulu-Natal, Gauteng, and the Western Cape). Those that are experiencing the greatest demographic and social pressures are not spending their resources, or are not correctly structuring their resources, or are not being allocated sufficient resources, to address the demand.
- The 1.6 million subsidy-houses that have been built have not become “valuable assets” in the hands of the poor. In addition to this the inability of recipients of subsidy-housing to pay for municipal services and taxes has meant that such housing projects have been viewed as liabilities to municipalities and have not assisted many of the country’s major cities struggling to come to grips with rapid changes to economic conditions since South Africa’s inclusion into the global economy.
- Housing subsidy grants increased from R2, 692 Bn in 1996/97 to some R4, 5 Bn in 2004/2005 and will increase to R5,0 Bn in 2006/07. These increases in housing development funding have largely gone towards funding the increases in the quantum of the housing subsidy, which is now adjusted annually for inflation.

#### 4.31.2 New housing vision

Whilst Government believes that the fundamentals of the policy remain relevant and sound, a new plan is required to redirect and enhance existing mechanisms to move towards more responsive and effective delivery. The new human settlements plan reinforces the vision of the Department of Housing, to promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing.. Within this broader vision, the Department is committed to meeting the following specific objectives:

- Accelerating the delivery of housing as a key strategy for poverty alleviation
- Utilising provision of housing as a major job creation strategy
- Ensuring property can be accessed by all as an asset for wealth creation and empowerment
- Leveraging growth in the economy
- Combating crime, promoting social cohesion and improving quality of life for the poor
- Supporting the functioning of the entire single residential property market to reduce duality within the sector by breaking the barriers between the first economy residential property boom and the second economy slump.
- Utilizing housing as an instrument for the development of sustainable human settlements, in support of spatial restructuring.

#### 5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

(Motivate the need and desirability of the proposed mining activity including the need and desirability of the activity in the context of the preferred location)

In terms of Regulation 22(2) g of GN No R543 (18 June 2012), this section discusses the need and desirability of the project. In order to address the need and desirability of the project, the questions raised in the Guideline on Need and Desirability (DEA&DP, 2009) are answered in the table to follow.

**Table 1 Need and desirability**

Need and desirability		
No	Question	Response
Need (timing)		
1	Is the land use (associated with the activity)	Yes. The JB Marks IDP says the land along N14

Need and desirability		
No	Question	Response
	being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the IDP).	Provincial Road and R30 Road is identified as a node for development. This land comprises of three farms, Elandskuil RE 206, RE 3/205 and RE 205.
2	Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	The township establishment application was submitted on 12 October 2017. Various Departments commented on the application regarding the development.
3	Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is national priority, but within a specific local context it could be inappropriate)	Yes, there is an urgent need for formal housing and is therefore this project is a societal priority.
4	Are the necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	<ul style="list-style-type: none"> <li>• Water supply to the proposed development will be made able possible by connecting into the existing water network. The existing system will require certain upgrades to accommodate to the proposed development.</li> <li>• Sewage from the proposed development will be able to discharge into the existing system. The existing system will require certain upgrades to accommodate to the proposed development.</li> <li>• Stormwater management reticulation system has been provided.</li> <li>• The N14 and R30 are the two main roads</li> </ul>



<b>Need and desirability</b>		
<b>No</b>	<b>Question</b>	<b>Response</b>
		that will provide access to the proposed development; various existing intersections need to be upgraded to accommodate the proposed development. The internal roads proposed for the development will be designed and constructed according to the criteria and design standards of the relevant authority (the JB Marks Local Municipality).
5	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication is on the infrastructure planning of the municipality (priority and placement of services)?	Yes, the development is provided for in the infrastructure planning of the municipality, and therefore no implication will be on the infrastructure planning of the municipality.
6	Is this project part of a national programme to address an issue of national concern or importance?	Yes, there is an urgent need to address housing backlog and provide basic services to communities around South Africa.
<b>Desirability ('placing')</b>		
7	Is the development the best practicable environmental option (BPEO) for this land/site?	Yes, the development is the best practicable environmental option (BPEO), though the development is within the CBA1, the landscape will be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services.
8	Would the approval of this application compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities?	No, the approval of this application will not compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities. This development is part of the JB Marks IDP.
9	Would the approval of this application compromise the integrity of the existing	No, the integrity of the existing environmental management priorities for the area will not be

Need and desirability		
No	Question	Response
	environmental management priorities for the area (e.g. as defined in Environmental Management Frameworks), and if so, can it be justified in terms of sustainability considerations?	compromised. This site is located within the rural core according to the SDF.
10	Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context).	Yes, the site is surrounded by residential properties to the western side. The development will extend the residential boundary.
11	How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The proposed site of development according to the North West Biodiversity Sector Plan is a CBA, the impact on biodiversity or change in land-use must not result in a change from the desired ecological state is most significant locally at the point of impact through the direct loss of a biodiversity feature.  Impact on the wetland and the water resources on site will not be tempered with, a buffer will be determined.
12	How will the development impact on people's health and wellbeing (e.g Noise, odours, visual character and sense of place, etc)?	The development will not have an impact on people's health and wellbeing, the constitution of SA which states that everyone has the right to have the environment protected and conserved for the benefit of present and future generations will be adhered to.

## 6. PROJECT ALTERNATIVES

One of the objectives of an EIA is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the

same objectives should be identified and investigated. In order to ensure that the proposed development enables sustainable development, *feasible* alternatives must be explored. The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process. Alternatives should be considered as a norm within the Environmental Process. The alternatives considered for the proposed development of the integrated human settlement application includes

- land use alternatives;
- layout alternatives;
- location alternative;
- technological and
- No-go option).

## **6.1 Land use Alternative**

### **6.1.1 Alternative 1 (*Preferred Alternative*) Mixed Use/Integrated Human Settlement**

The present proposed Integrated Human Settlement layout will consist of residential, retail, and educational land uses. Included in the proposed Integrated Housing Settlement, are public open spaces. Although the emphasis is on housing, complimentary land uses have been included in the development. People want easy access to job opportunities shops, banking facilities, clinics, etc. and want their living environment, such as residential areas to be placed at strategic positions with good access routes in close proximity to these amenities. The same applies for their place of work. People wish to have their place of work in close proximity to their homes. A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will inevitably support the use of public transport;
- The development will include supporting social infrastructure (schools), as well as some retail or commercial activities;
- The layout of the development must respond to the future road planning for the area, to facilitate and maximize pedestrian and public transport.
- Commercial even can accommodate a shopping centre, to service the existing formalised and informal settlements in the area. The commercial node will:
  - ✓ Promote entrepreneurial services and products;
  - ✓ Be within walking distance to places of refreshment and trade for residents;

- ✓ Provide Job opportunities; and
- ✓ Improve neighborhood quality.

Therefore the mixed/integrated human settlement is the preferred option for this development.

### **6.1.2 Alternative 2: Agricultural Activity**

Considering that the historic use of the site was for agriculture, the option of agriculture as a land use needs to be considered. This would, however, imply the following:

- This outcome will be the preservation of a relatively small piece of low to high potential agricultural land (40%) of the site for that purpose. Given the agricultural economy of scale, the site that small will not provide significant commercial opportunities to whoever is looking to practice intensive agriculture. .

Based on development drivers that exist in the area, this would probably only is a short- term outcome, if it is at all feasible. The NW READ has further shown that the land has a very low to no agricultural potential therefore agriculture is not considered a viable option for the study area.

However, a small portion of the land should be allocated to low-income residents to grow vegetables for their own use and commercial purposes.

### **6.1.3 Alternative 3: Single land use: Housing only**

By providing only one land use type (ie, housing), mixed income development and social integration across race and income levels, *cannot be achieved*. A Commercial node on site is commonly utilised as a “Multi Purpose Community Centre/Rural Service Centre” which is defined as “a focal point at which a range of essential services can be obtained by people living in its vicinity”. In turn, a commercial node acts as a pool of human and physical resources from which the inputs necessary for development can be distributed efficiently, and from which a community can draw to promote their development”. By restricting the development to one land use only, the above benefits to the local community, and subsequent council area, cannot be realised, and hence, is not a preferred land use option.

## **6.2 Layout Alternative**

No layouts alternatives have been considered, only one layout is available as alternative for the proposed development. The preferred layout alternative which consists of the construction of Breaking New Grounds (BNG) units, Social housing, Community residential units, Rental stock, Pre schools, Primary and a secondary schools. The proposed layout will also entail the construction of a Police

station; Churches; Government offices; an agricultural technical college; multipurpose sports centre and a filling station.

The development of the site would require the establishment and/or upgrading of infrastructure such as the road network, water and sewer pipes and electrical supply equipment. There would be requirement to upgrade infrastructure including that of the sewage treatment plant to accommodate the new development. The layout doesn't consider the following:

- Environmental constraints/sensitivities on the properties.
- Buffer areas for sensitive environments, geological features, traffic constraints and the current landscapes.

Various options needs to be explored in terms of the layout for the proposed development and these options should take into consideration the above listed points. The onus lies with the applicant to ensure that the layout is done in a manner which takes into consideration recommendations from various specialist reports i.e. ecological assessment and the wetland delineation assessment.

### **6.3 Location Alternative**

The proposed development is site specific and therefore there are no other feasible site alternatives. The current zoning of the site is agriculture however it was mentioned by NW READ that the site is not viable for agriculture, the preferred location would be environmentally and socially feasible for the development of Integrated Human Settlement. This is the most preferred location type due to the balance achievable between social, environmental and economic requirements:

- The land is an available vacant land earmarked by the JB Marks Local Municipality for residential development in the form of affordable housing;
- The locality of the proposed residential development provides for affordable housing in close proximity to economic opportunities in the Ventersdorp town.
- Aligns to the prerequisites of the JB Marks SDF;
- Situated within the urban realm adjacent to existing and proposed urban infrastructure, service and amenities; and
- Socially inclusive due to its location to numerous communities and along public transport routes.

The proposed development site is situated south west of the Ventersdorp town which is a mixed use business area, and in between residential areas. The proposed development site is ideal for affordable housing based on integrating pockets of development into a coherent hole, and utilising existing bulk

infrastructure. It is clear that the proposed residential township is in line with the existing and planned land uses of the area and thus suitable for the planned residential development. Therefore, locality alternatives were not considered.

## **6.4 Technology Alternatives**

Alternatives that can be looked at in line with technology can entail the use of solar energy for the residential units and water harvesting technologies. These option needs to be further looked at by the applicant the Department of Local Government and Human Settlement.

### **6.4.1 Energy efficiency**

Solar water heaters (SWHs) and pipe reticulation systems can be installed to deliver hot water directly into the government subsidized houses. These should be SABS approved, 100-litre, low pressure, evacuated tube-type systems with no electrical backup connection. Such a product should be selected for its superior performance qualities. It should deliver balanced cold/hot pressure and 'safe' tempered water at 50 to 60 degrees Celsius. It should also come with a lifetime guarantee against corrosion.

### **6.4.2 Rain water capture and water efficiency**

Rain-water harvesting systems can be installed for the government subsidized houses. These can be in the form of 1000/2500 litre rain tanks depending on what is allowable in the budget and space constraints. Rain harvesting systems provide emergency water supplies in periods of drought or service interruptions. The water can also be used to irrigate food gardens, or for doing laundry. Installing the systems will require that the house designs include external timber rafters, purlins or trusses to which gutter brackets can be attached.

## **6.5 No go Alternative**

No go alternative implies that the site be left as it is and that no development or alteration be done, where disturbed ecological ecosystems will continue. The no-go option is basically a reflection and the continuation of the current situation, which might have a negative impact on the environment if there is no environmental management plan for the area. If this alternative is pursued the existing land use will be retained. This option has the following drawbacks:

- A high demand for commercial and employment provision that exists in this area, especially with respect to the proposed developments characteristics as infill development, Should the site not be developed a very viable opportunity to exploit the commercial market in the immediate area will be negated.
- Illegal squatters or vagrants may continue as it is already the status qua of the site, severe pressure for housing in the lower income brackets also exist and will continue. Due to the presence of extensive development throughout the greater area it is possible that undeveloped, un-managed land may be illegally settled.
- The development does not site remains as undeveloped and unmanaged. Dumping of household refuse and the utilisation of the dense vegetation for criminal activities may continue. No housing will be provided for low –middle middle income public.
- The proposed site is disturbed as a result of the lack of basic services thus leading to a degraded environment. Should the No-Go alternative be preferred by the decision makers would mean that the proposed integrated human housing development would not be constructed at the proposed site and the land would remain vacant.
- If the site remains undeveloped, the need for formalised housing in the Elandskuil area will not be addressed.
- The proposed project objectives will not materialise, which implies a significant loss of opportunity for the development the site and creation of a safe living environment for the community residing on the site.
- Many direct and indirect spin-off benefits, such as job creation, capacity building, rates for the municipality and the upgrading and supply of services will not be realised.
- The 2011-2012 SDF has earmarked the site as Future Integrated Development. An informal settlement and a vacant derelict site would definitely not meet this classification.
- Signs of human use are evident throughout the site, and it is possible, that with such prolonged (mis-)use, the already non-existent environmental sensitivity of the site will be totally lost (dumping, illegal dumping, uncontrolled fires etc.). The portion of land which is disused (vacant) could become a haven for future unplanned / informal settlements.
- Invasive vegetation would probably occur in areas where land is vacant and not actively used.
- Impacts associated with current and previous uses (informal settlement and quarrying etc.) may well result in impacts of a higher significance, especially in terms of pollution risk.

The no-go alternative will only be considered as an alternative if it is concluded that the preferred alternative will have significant negative impacts on the environment which cannot be reduced or

managed to an acceptable level. As there it has already been indicated that there is a need and desirability for the proposed development it is anticipated that this development will relieve the demand for housing and basic services in the region. It is anticipated that the no-go alternative will constrain the development planning of the Local Municipality.

## **6.6 Reasons for the preferred development alternative**

The development alternative of the new human settlements is preferred in order to reinforce the vision of the Department of Housing, to promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing. Within this broader vision, the Department is committed to meeting the following specific objectives:

- Accelerating the delivery of housing as a key strategy for poverty alleviation
- Utilising provision of housing as a major job creation strategy
- Ensuring property can be accessed by all as an asset for wealth creation and empowerment
- Leveraging growth in the economy
- Combating crime, promoting social cohesion and improving quality of life for the poor
- Supporting the functioning of the entire single residential property market to reduce duality within the sector by breaking the barriers between the first economy residential property boom and the second economy slump.
- Utilizing housing as an instrument for the development of sustainable human settlements, in support of spatial restructuring.

The proposed development forms part of a larger development precinct identified by government to address the socio-economic conditions of this marginalised region. The proposed uses that include housing and a school with associated infrastructure will alleviate some of the challenges within this area. It is Important is to note that the proposed uses are aligned with the provisions of the Regional Spatial Development Framework.

## **7. PUBLIC PARTICIPATION PROCESS**

Public Participation Process (PPP) is regarded as an integral part of an EIA process. It allows the public to have access to all information regarding the proposed development in hand through transparency and provision of sufficient and accessible information about the development. Public participation plays an important role in the compilation of a Scoping Report as well as the planning, design and implementation of the project. Public participation is a process leading to informed decision - making,



through a joint effort. The PPP for this project will satisfy the requirements stipulated in Chapter 6, Sections 54, 55, 56 and 57 of the NEMA EIA Regulations in terms of the National Environmental Management Act, Act 107 of 1998.

This section provides an overview of the public participation process undertaken to date and that to be undertaken during EIAR phase.

## **7.1 Objectives of Public Participation**

The public consultation process is designed to provide information to and receive feedback from interested and affected parties (I&AP). That feedback is in turn fed into the EIA process. This provides organisations and individuals with the opportunity to raise concerns and make comments and suggestions regarding the proposed activity. By being part of the assessment process, stakeholders have the opportunity to influence the Project Layout, design and the Plan of Study for the EIA.

The approach to communication with the community is aligned with the principles of the NEMA as elaborated upon in General Notice 657, titled *“Guideline4: Public Participation”* (Department of Environmental Affairs and Tourism, 19 May, 2006), which states that: *“Public participation process means a process in which potential interested and affected parties (I&APs) are given an opportunity to comment on, or raise issues relevant to specific matters.”*

Public participation is an essential and regulatory requirement for an environmental authorisation process and must be undertaken in terms of the Environmental Impact Assessment (EIA) Regulations (GN R.326 of 07 April 2017). Public participation is a process that is intended to lead to a joint effort by stakeholders, technical specialists, the authorities and the proponent/developer who work together to produce better decisions than if they had acted independently. During the Scoping Phase the public participation process enables Interested and Affected Parties to:

- Understand the context of the EIA;
- Become informed and educated about the proposed project and its potential impacts;
- Raise issues of concern and suggestions for enhanced benefits;
- Verify that their comments, issues of concern and suggestions have been recorded;
- Assist in identifying reasonable alternatives; and
- Contribute relevant local information and traditional knowledge to the environmental impact assessment process.

During the EIA phase, the public participation process assists I&APs to:

- Contribute relevant information and local and traditional knowledge to the environmental impact assessment process;
- Verify that their issues and suggestions have been evaluated and considered in the environmental investigations and feedback has been provided;
- Comment on the findings of the EIA; and
- Identify further issues of concern from the findings of the EIA.

During the decision-making phase the process enables I&APs to be advised of the outcome, i.e. the authority decision and how the decision can be appealed.

## **7.2 Identification of I&AP's**

I&APs were invited to participate in the process through newspaper advertisements, onsite notices and notification of adjacent land owners/occupiers. The notices requested potential I&APs to submit names and comments on any aspect of the application and/or the scoping report. This process aimed to attract I&APs representing from various sectors of society including:

- Government (national, provincial and local);
- Environmental NGOs;
- Filing station
- Community Representatives and
- Directly affected communities;
- Business and Commerce.

## **7.3 Pre-Scoping Notification**

I&APs were invited to participate in the process through newspaper advertisements, site notices and notification of adjacent land owners/occupiers. The notices requested potential I&APs to submit names and comments on any aspect of the application and/or the scoping report. This process aimed to attract I&APs representing from various sectors of society including:

- The Department of Mineral Resources (DMR);
- The Department of Water and Sanitation (DWS);
- Department of Agriculture and Forestry (DAFF);
- The South African Heritage Resources Agency (SAHRA);
- JB Marks Local Municipality (VTLM).
- Telkom;

- Eskom;
- Department of Public Works and Roads;
- PRASA
- South African National Road Agency Limited (SANRAL).

#### **7.4 Register of IAP's**

The NEMA EIA Regulations (GN R.326 of 07 April 2017) distinguishes between I&APs and registered I&APs. The former, as contemplated in NEMA include: “(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”. However, RI&AP is an I&AP whose name is recorded in the register opened for an application. In terms of the Regulations an EAP must open and maintain a register which contains the names, contact details and addresses of:

- (a) All persons who have submitted written comments or attended meetings with the applicant or EAP;
- (b) All persons who have in writing requested the applicant or EAP managing the application, for their names to be placed on the register; and
- (c) All organs of state which have jurisdiction in respect of the activity to which the application relates.

Following the notification process, a Register for I&APs has been opened. This Final Scoping Report was submitted to all stakeholders for review. As per the EIA Regulations, future consultation during the Impact Assessment phase will only take place with registered I&APs. All stakeholders who were involved in the consultation process will be added to the register as the I&APs register will be updated throughout the EIA process.

#### **7.5 Public Participation during Scoping**

The availability of the Draft Scoping Report (DSR) was announced for comments through an advert in a local Newspaper and email communication to interested and affected parties including government departments. Briefly, the process involved the following:

- Newspaper advert in Sowetan Newspaper, Carletonville Herald and the Potchefstroom Herald
- Distribution of this Draft Scoping Report (DSR) and a letter of invitation to participate to all I&APs;
- Placing of a hard copy of the DSR at a school and Library located close to the study area;

- Distribution of the DSR government departments and to NW READ at the same time.

## 7.6 Summary of issues raised by I&APs

Please refer to the attached minutes as Appendix D5  
Refer to an attached table for the issues raised by the I&APS

## 8. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES.

*(The environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects).*

This section describes the biophysical and socio-economic environment that may be affected and the baseline conditions which are likely to be affected by the proposed activity. This description has not been informed by any specialist studies undertaken for this assessment but includes information obtained from various literature sources and is described at a level deemed appropriate for a Scoping study. A summary of the affected environment is provided and more detailed studies focused on significant environmental aspects of the development will be provided during the impact assessment phase. The three components to the environment are recognised as:

- Biological Environment
- Physical Environment.
- Socio-Economic Environment.

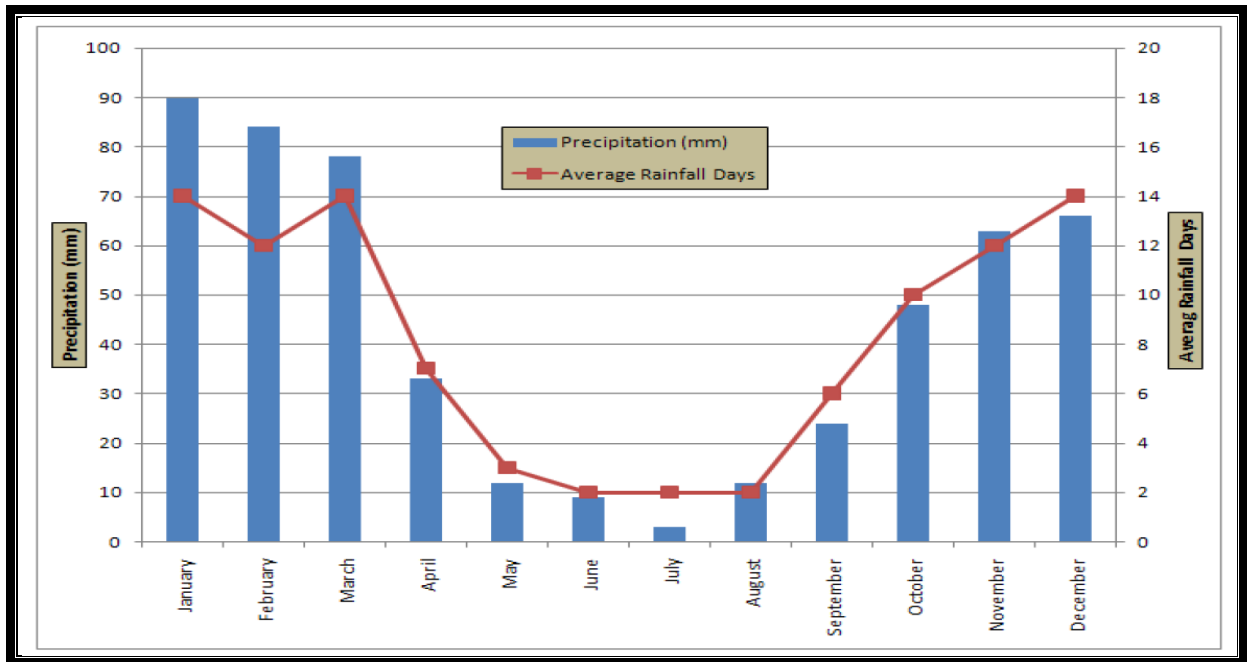
Only those elements of the environment that have a direct bearing on the impact assessment process of the project are discussed. The severity of the potential impacts is largely determined by the state of the receiving environment.

### 8.1 Bio-Physical Environment

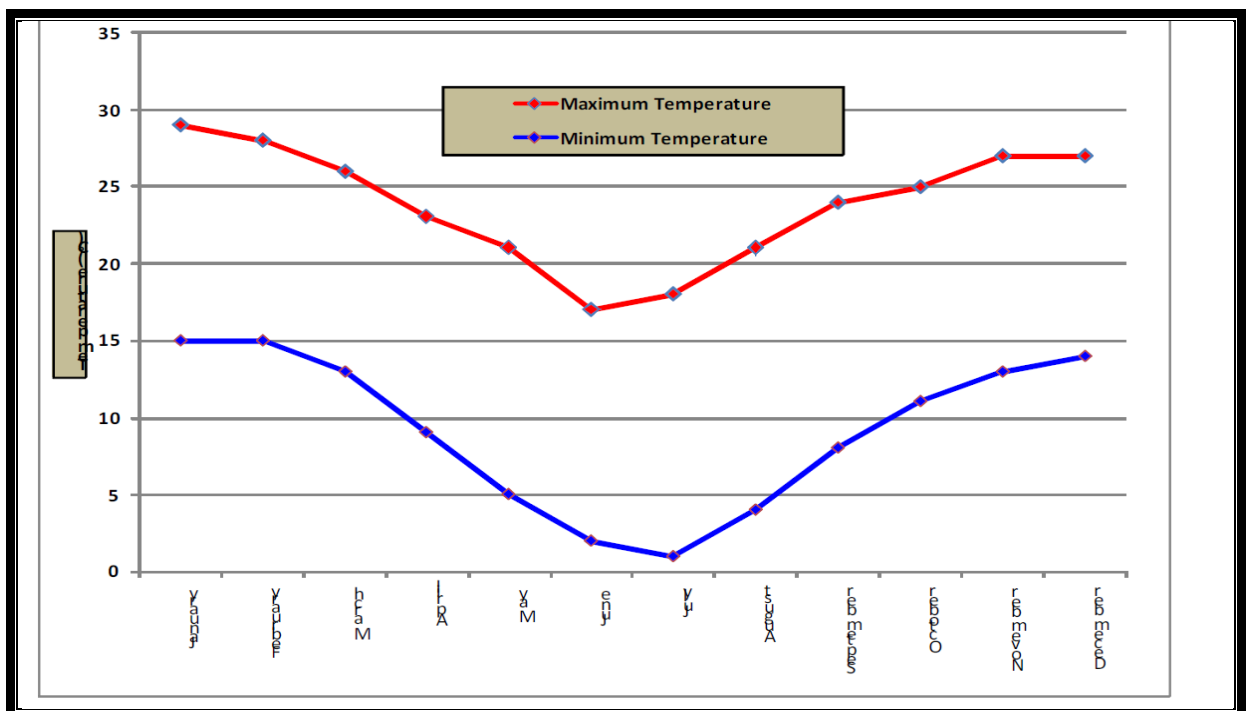
#### 8.1.1 Climate

Ventersdorp normally receive an average of 522 mm of rain per year between 2000 and 2012, with most rainfall occurring mainly during midsummer. Graph 1 indicates the average rainfall values for Ventersdorp per month. It receives the lowest rainfall (3 mm) in July and the highest (90 mm) in January. The monthly distribution of average daily maximum temperatures (Graph 2) indicates the

average midday temperatures for Ventersdorp range from 17°C in June to 29°C in January. The region is the coldest during June when the mercury drops to 1°C on average during the night.



*Graph 1: Rainfall data (average) for Ventersdorp, North West Province (200-2012)*



*Graph 2: Temperature data (averages) for Ventersdorp, North West Province (200-2012)*

### 8.1.2 Soil and Land capacity

According to Environmental Management Framework of JB Marks Local Municipality the most urbanised province in SA, with 17 % of its land area classified as being in “urban” land uses. Surveys and analyses of the remaining areas indicate complex soil and land capability patterns, due to the complex geology. The deep, well drained, apedal soils of the Hutton type give rise to the 23.1 % of the province with arable potential. Another 25.3% is deemed “marginally” arable, with the remainder suitable for grazing and wildlife. The soils of the province are dominated by plinthic, duplex and hydromorphic soils, which all carry limitations for agricultural crop production.

Further analysis of the potential for irrigation-fed crop production reveals that over 50 % of the province is not suitable for irrigated crops, but the analysis yields a map of areas to be protected for agricultural use, areas which comprise 19% of the land area of the province (GPG, 2002). The large blocks of good potential agricultural land lie in the south-west, between Carletonville and Magaliesberg, in the south-east, around Heidelberg, and in the north-west of the province, south of Bronkhorstspuit (Source: National Land cover 2000 (CSIR and ARC)).

The proposed development site is surrounded by existing residential developments and as such it is suitable for the proposed housing development and will alleviate the demand for housing in the area. Clearance of vegetation for construction, excavations for foundations and access road construction will leave the soil bare and exposed to wind and water erosion. During the construction phase, activities such as topsoil stripping, removal and stockpiling of subsoil, and soil compaction will impact negatively on soils and will consequently impact on the land capability of the study area. Materials lay down areas as well as heavy vehicle and construction vehicle traffic on site will contribute to soil compaction. Areas compacted will lose their soil structure and fertility permanently. Furthermore, there is a risk of pollution by hydrocarbon spillages.

### **8.1.3 Geology of the Site**

The 1: 250 000 scale Geological Map, Sheet 2626 West Rand, indicates that the investigated area is located on colluvial soils of the Quaternary stage, which overlies quartzfeldspar porphyry of the Makwassie Formation and amygdaloidal lava, agglomerate and tuff of the Rietgat Formation. These formations form part of the Platberg Group of the Kliprievirsburg Supergroup. They overlie quartzite and shale of the Orange Grove Formation of the West Rand Group, Witwatersrand Supergroup. These lithologies are overlain by their weathered soil derivatives, which are in turn mantled by variable thicknesses of transported. Refer to Geotechnical Report attached as Appendix G4.

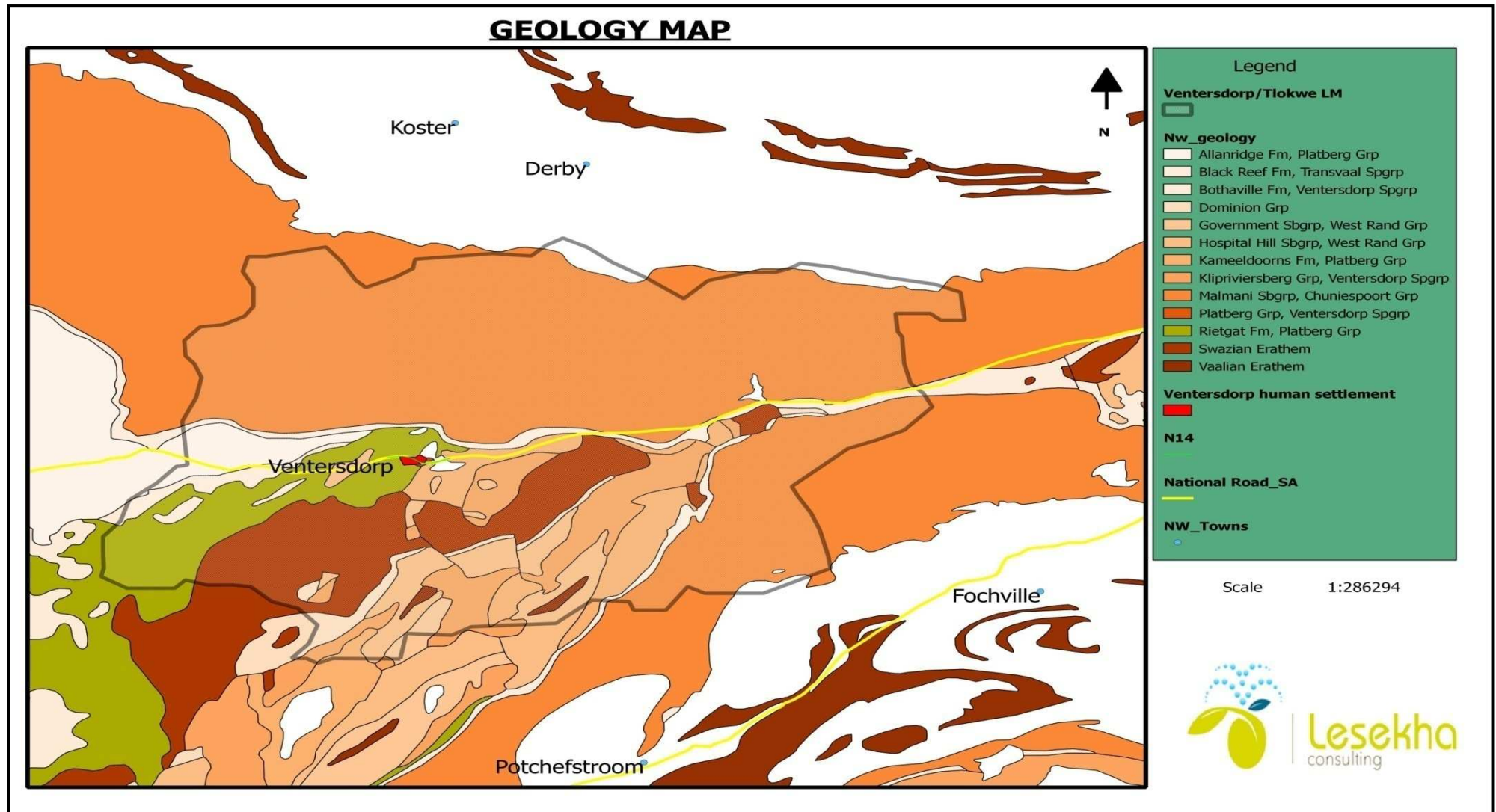


Figure 4: Geology map for Ventersdorp

### 3.14 Hydrology and Wetlands

The project site is located in the east of the secondary catchment C2 more specifically within the C24E quaternary catchment drained by the Skoonspruit River which eventually drain in the Vaal River. The project is located in the Skoonspruit River system. The surface water attributes of the C24E quaternary catchment are summarised in **Error! Reference source not found.** (Hydrological Report). This includes the Mean Annual Precipitation (MAP), Mean Annual Runoff (MAR), and Mean Annual Evaporation (MAE) as obtained from the Water Resources of South Africa 2012 Study (Hydrological Report) presents the regional hydrology.

In the Vaal Catchment, land use is predominately mining, dry-land and limited irrigated agriculture and urbanization. The Skoonspruit dolomitic eye represents an important resource in the upper part of the catchment, providing water for irrigation agriculture and Ventersdorp as well as base flow in the river. Refer to the Geo- hydrological Report attached as Appendix G1.

The study identified issues pertaining to surface aquatic environments on the property that may influence, impede or preclude any or all aspects of the proposed development. The site is situated within the Vaal Catchment area. The small streams and wetlands on site have been assessed and the Biodiversity Report is attached as Appendix G6 in the specialist reports.

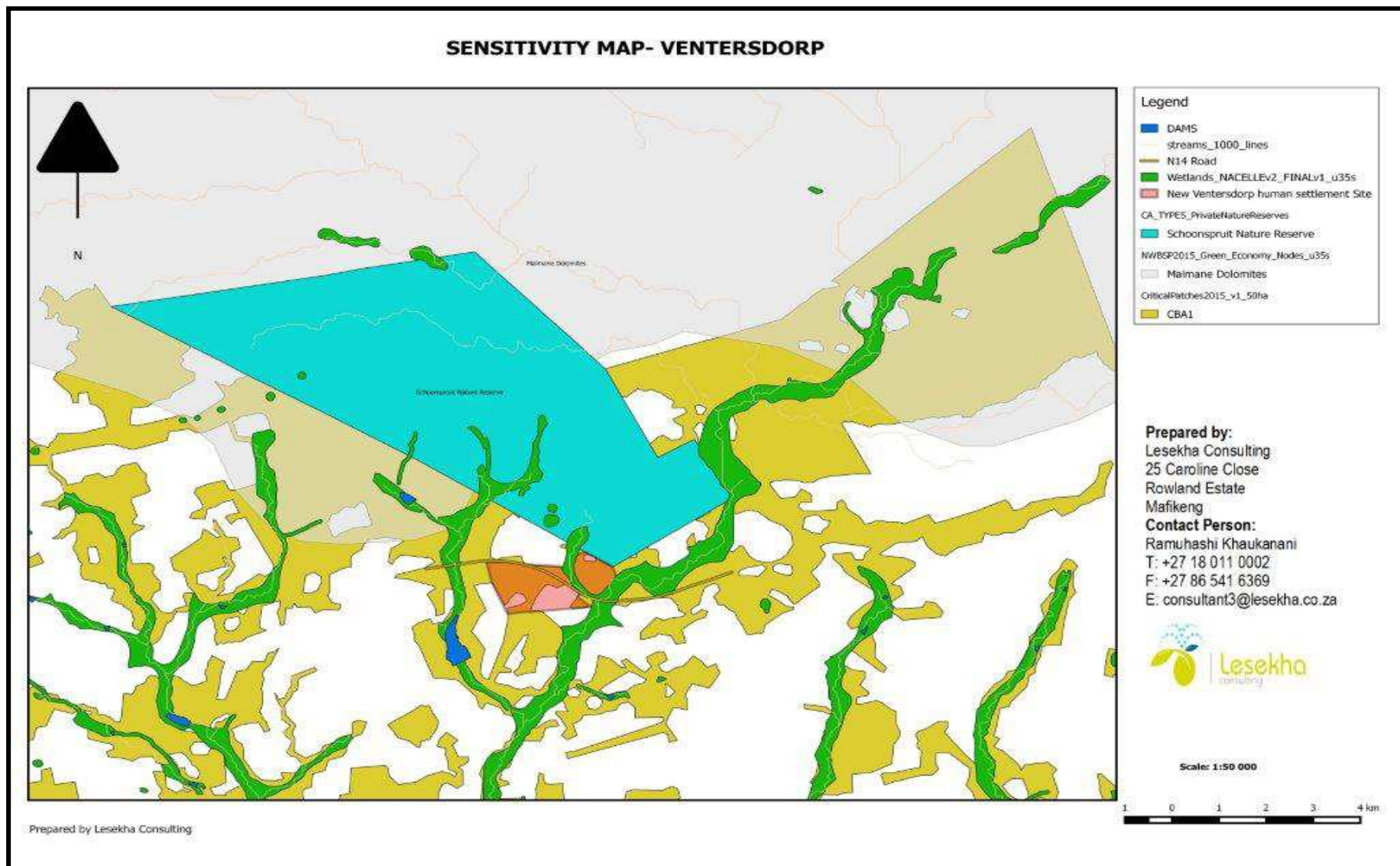
#### 8.1.5 Ecological characteristics

As per the Biodiversity Assessment the majority of the site has been identified as CBA 1 with additional smaller sections identified as ESA 1 and 2. The vegetation is largely dominated by the Vaal Vet Sand grassland which merges into the Highveld Alluvial vegetation along the banks of the Schoonspruit.

The CBAs are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure continued existence and functioning of species and ecosystems and the delivery of ecosystem services (e.g. flood mitigation). These areas need to be maintained in a natural or near natural state to meet biodiversity targets. (READ 2015)

ESAs are terrestrial and aquatic areas that are not essential for meeting biodiversity targets, but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. (READ 2015).





*Figure 5: Sensitivity Map*

### 8.1.8 Declared areas of conservation

Three following reserves are situated within geographic proximity of the study site:

- Schoonspruit Nature Reserve – Nature Reserve (10 km north).
- Boskop Dam Nature Reserve – Nature Reserve (28 km southeast);
- Abe Bailey Provincial Nature Reserve – Provincial Nature Reserve (47 km north); and
- Lichtenburg Game Breeding Centre (70 km northwest)

None of these conservation areas is likely to be affected, either directly or indirectly, by the proposed development of Integrated Human Development in relation to conservation areas within the immediate surrounds.

### 8.1.9 Topography and Drainage

The study area has an average height of 1465 meters above sea level and is dominated by gentle sloping hills and a few water courses all draining south towards the Skoonspruit River. As part of the engineering services investigations, a topographical survey was conducted to identify possible development constraints that may be posed by the sites topography. The detailed analysis of the topographical survey revealed the following slope characteristics of the two land parcels proposed for development:

#### *Elandskuil No. 205 IP*

- Gentle to fair slopes sloping in a south westerly direction on the portion located west of the R30 and gentle to fair slopes sloping in a south easterly direction on the portion located east of the R30.
- A maximum slope of 1:23 was encountered on the southern edge of the portion located east of the R30 adjacent to the railway line.

#### *Elandskuil No. 206 IP*

- Fair slopes all sloping in a south easterly direction towards the Skoonspruit River.
- A Maximum slope of 1:10,5 was encountered on the south eastern edge of the this portion.
- Maximum slopes of both portions can be deemed developable.

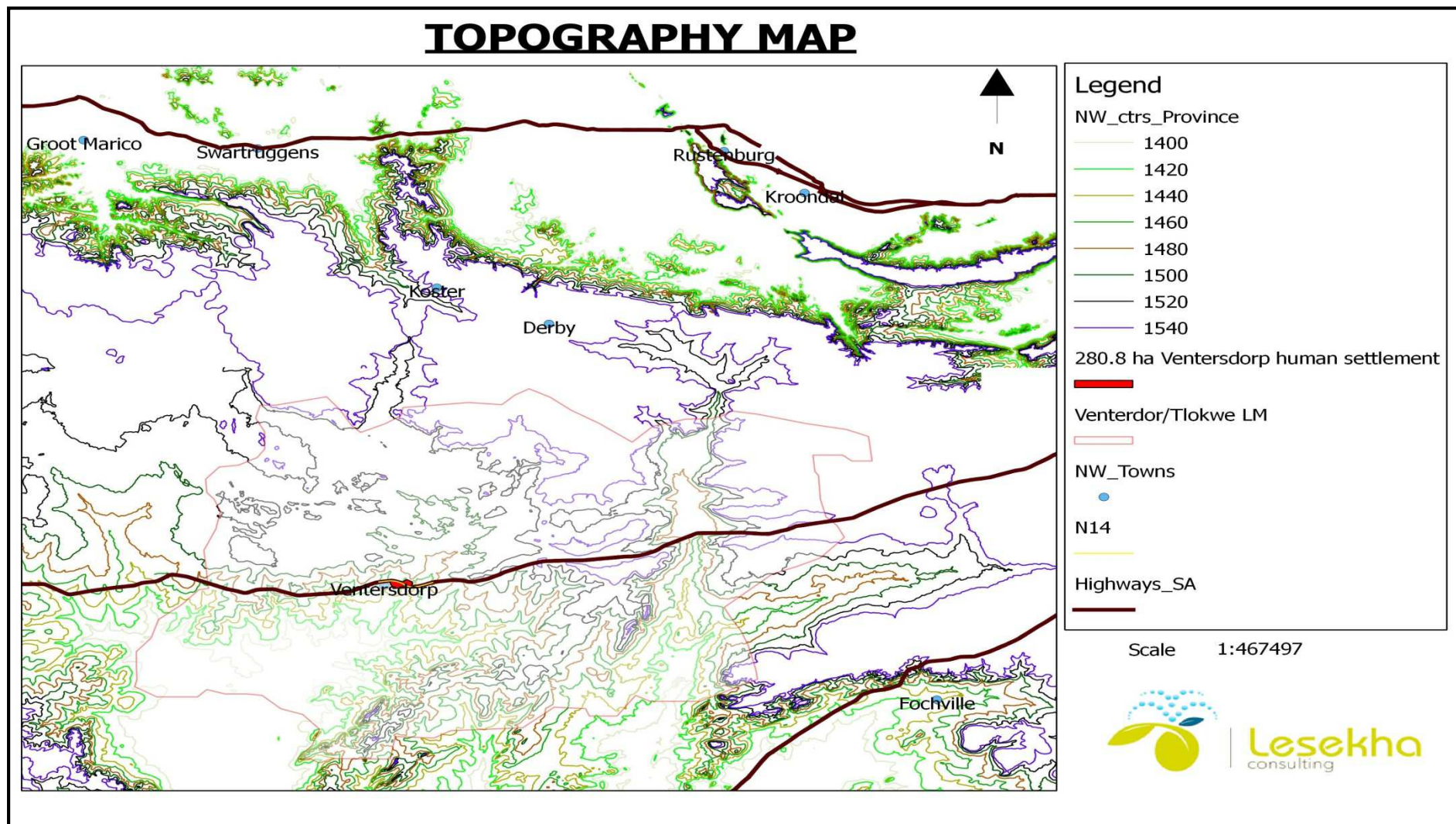


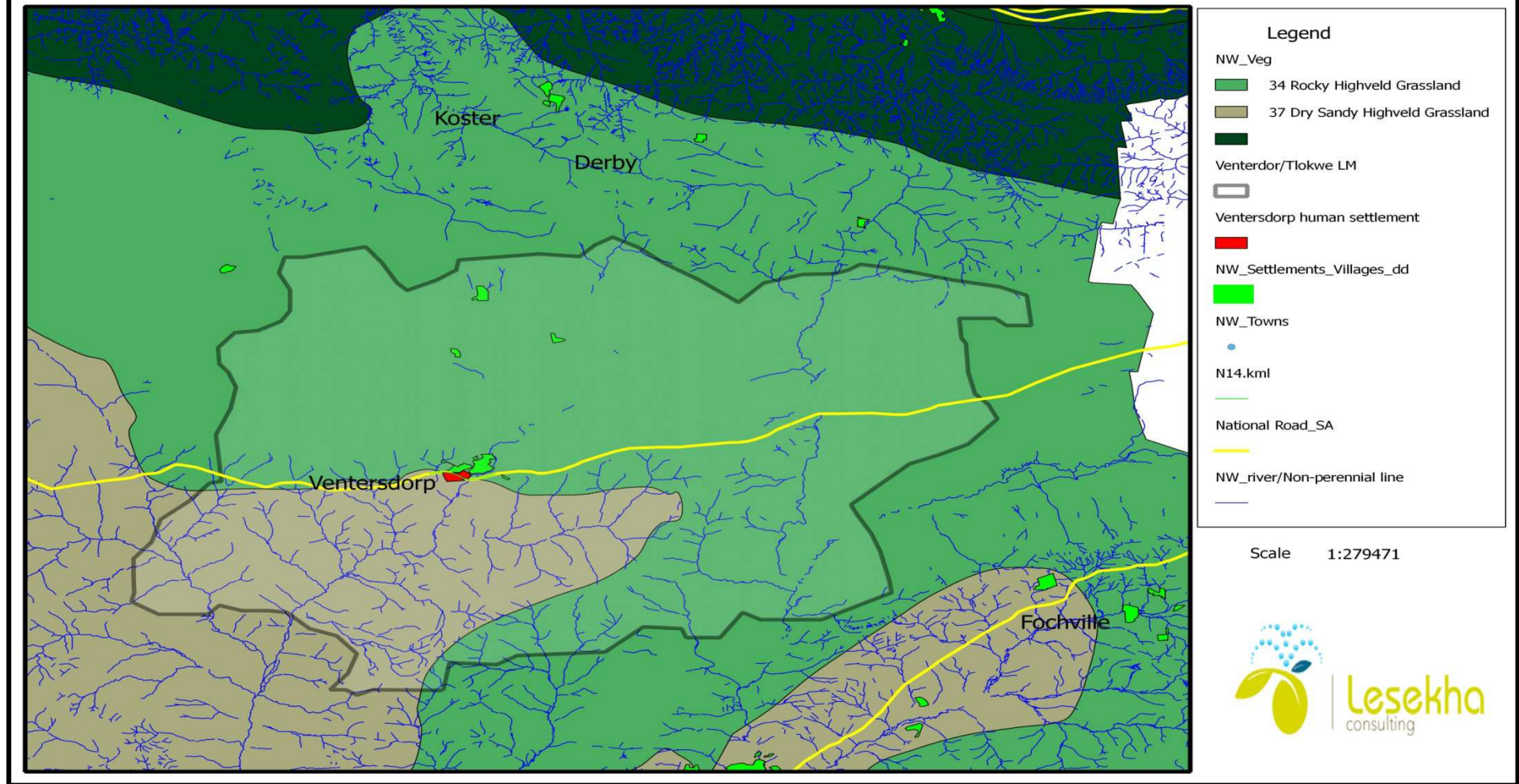
Figure 6: Topography Map

### **8.1.9 Vegetation**

The study area is located in the Grassland Biome of South Africa and within the Rocky Highveld Grassland and Dry Sandy Highveld Grassland. Species within grasslands are non-grassy herbs (forbs), most of which are perennial plants with large underground storage structures. Frost, fire and grazing maintain the herbaceous grass and forb layer, and ultimately prevent the establishment of tall woody plants (Tainton, 1999). According to the latest vegetation mapping in the country, the specific vegetation type is classified as (Mucina & Rutherford, 2006). During the site visit it was observed that the vegetation had been heavily impacted upon by human activities. Due to the significant disturbance of vegetation in the study area as it is adjacent to existing housing development it is considered that the impact of the proposed development will be of relatively minor nature.



## TYPES OF VEGETATION MAP



*Figure 7: Vegetation Map*

## 8.2 Human Environment

Ventersdorp is predominantly rural area that is characterized by high unemployment rate, low literacy levels and agricultural farming. The available land in the city provides opportunities for certain sectors of the economy such as commercial and agriculture to thrive. However, all villages are situated on the land that is underlain by dolomites and this presents challenges on the provision of services to the citizens. JB Marks LM is situated in the Dr Kenneth Kaunda District in the North West province. It is located 72km to the north of Klerksdorp City of Matlosana LM and to the south of Rustenburg. It covers an area of 3764.05 km<sup>2</sup> and is divided into six wards.

### 8.2.1 Socio-economic issue

#### 8.2.1.1 Population

The JB Marks Municipality has a fairly low population of approximately 56 702 people which translates to 14 562 households according to the 2011 census. This translates to 2.7% population growth per annum (2001 – 2011) is however much higher than the national growth rate of 1.44 The majority of the population of Ventersdorp is falling within the working age group (15 to 64 years). The JB Marks LM is divided in to 6 wards with a total of 14 562 household, and most household are headed by females.

Area	Total Population	Relative Share	%
NW Province	3 509 953	% of National	6.8%
Dr Kenneth Kaunda DM	599 670	% of National	1.2%
		% of Provincial	17%
JB Marks LM	56 702	% of National	0.1%
		% of Provincial	1.6%
		% of District	9.5%

*Table 1 the population figures (STATSSA: Census 2011)*

The JB Marks LM is divided in to 6 wards with a total of 14 562 household, and most household are headed by females. The spatial distribution of population and households across the 6 wards in the municipality is as follows:

Ward	Households	Female Headed Households (%)
Ward 1	1211	46.7
Ward 2	1444	49.0
Ward 3	3240	40.0
Ward 4	2288	29.2
Ward 5	3169	35.9
Ward 6	3210	37.3

*Table 2: Number of household per Wards (STATSSA: Census 2011)*

With the JB Marks Municipality the Black Africans are the dominant population group in the area constituting 90.1% of the total population. The white population, colored and Indian Asian are 5.9%, 2.7%, 0.3% respectively.

Population group	Total	Percentage
Black African	51 101	90.1
White	3 346	5.9
Colored	1 539	2.7
Indian Or Asian	172	0.3

*Table 3: Population by ethnic group (STATSSA: Census 2011)*

### 8.2.3 Unemployment and Poverty

In terms of earnings, most households in the area have low incomes per year. Around 60% of households earn R38 200 or less per year (R3 183 per month), including 14% of households who have no income.

Annual household income	% of Households 2011
No income	14%
R 1 - R 4800	4%
R 4801 - R 9600	7%
R 9601 - R 19 600	16%
R 19 601 - R 38 200	18%
R 38 201 - R 76 400	12%
R 76 401 - R 153 800	9%
R 153 801 - R 307 600	7%

Annual household income	% of Households 2011
R 307 601 - R 614 400	5%
R 614 001 - R 1 228 800	2%
R 1 228 801 - R 2 457 600	1%
R 2 457 601 or more	0%
Unspecified	5%

*Table 4: Unemployment and poverty*

### **8.3.4 Human Settlements and Housing**

Meeting the demand for housing remains one of the municipality's biggest challenges, as the function is with Provincial Human Settlement Department. Around 66% of population in the JB marks LM live in formal structures. There is also still high prevalence of informal dwellings, with close to 30% of population still living in informal structures. There has been a growth in informal dwellings since 2001 and Municipality is having a growing backlog and with these trends there will also be growing constraints on the bulk infrastructure.

Focus still needs to be placed on the provision of social housing units and mixed housing developments towards meeting the diverse housing needs of the people in the area. Most of the villages in Ventersdorp can be regarded as semi-formalized villages where development is based on settlement layout plans (most of the stands were surveyed). Villages are currently managed by CPA's (Community Property Association), except Ga-Mogopa that is managed by a Trust. Ownership of stands / plots within the villages are based on commercial ownership (no individual ownership exist). Most of the villages within the Ventersdorp area are provided with basic services. In the Ventersdorp area a trend exist that splinter groups establish new settlements that leads to a dispensed rural settlement pattern (rural sprawl).

This trend leads to a duplication of services and social amenities (Boikhutsong for example). Most of the villages North of Ventersdorp are situated on land that is underlain by dolomite formations that can cause problems in unstable areas if certain precautionary measures or conditions are not implemented or maintained. No geotechnical investigation was done in this area prior to any village development. A large number of households in Ventersdorp villages indicated that they want ownership of their stands / plots.



Type of Structure	2001 (%)	2011 (%)
House or brick structure on a separate stand or yard	62.9	66.2
Traditional dwelling/hut/structure made of traditional materials	6.4	1.5
Flat in block of flats	0.4	0.4
Town/cluster/semi-detached house (simplex; duplex; triplex)	1.0	0.5
House/flat/room in back yard	8.3	5.9
Informal dwelling/shack in back yard	18.1	22.8
Informal dwelling/shack NOT in back yard	0.3	0.2
room/flat let not in back yard but on shared property	0.2	0.1
Other	0.0	0.7

*Table 5: housing types*

### 8.3.5 Basic services

Basic service provision remains a priority in the Ventersdorp area. Rural areas are most affected by lack of access to basic services.

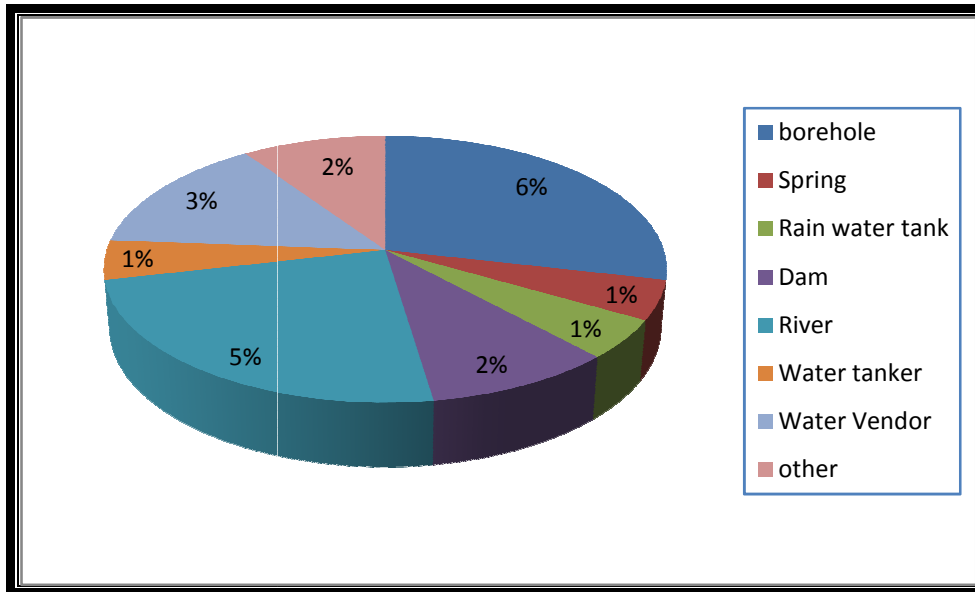
### 8.3.6 Water and Sanitation

The JB Marks LM is the Water Services Authority for the area. Close to 70% of the households in the municipality has access to piped water, although only 20% of households have piped water inside their dwelling

Household access to water	2001 (%)	2011(%)
Access to piped water in the yard (%)	38	48.8
Access to piped water in the dwelling (%)	19.8	20.0

*Table 6: access to water*

In terms of water sources, 80% of households obtain water from a local water scheme, with boreholes and rivers/streams the dominant alternative sources: The detail regarding sanitation systems used by households are summarised in the Figure 9 below.



*Figure 8: Water sources alternatives*

### 8.3.7 Electricity

A fairly large percentage of households in the JB Marks LM have access to electricity. Close to 74% of households uses electricity for cooking, and nearly 60% uses electricity for heating. Close to 85% uses electricity for lighting.

### 8.3.8 Waste Removal

The majority of households in the municipality receive weekly household refuse removal by the municipality.

Service	No of households 2011	% of Households 2011
Removed by local authority at least once a week	8972	62
Removed by local authority/private company less often	218	2
Communal refuse dump	271	2
Own refuse dump	4075	28
Other	129	1
<b>Total</b>	<b>14 446</b>	<b>100</b>

*Table 7: waste management*

### 8.3.9 Roads and Transport

The tar, gravel and paved streets in the Ventersdorp area are relatively old and designed many years ago and cannot cope with the increased volume and weight of the traffic that uses these roads on a daily basis and needs urgent attention.

### 8.3.10 Education

In terms of education, the area is characterized by fairly low skills level, however the percentage of people over 20 years with no schooling has decreased since 2001. According to the Census 2011, the percentage of people who completed matric increased by 1.7%

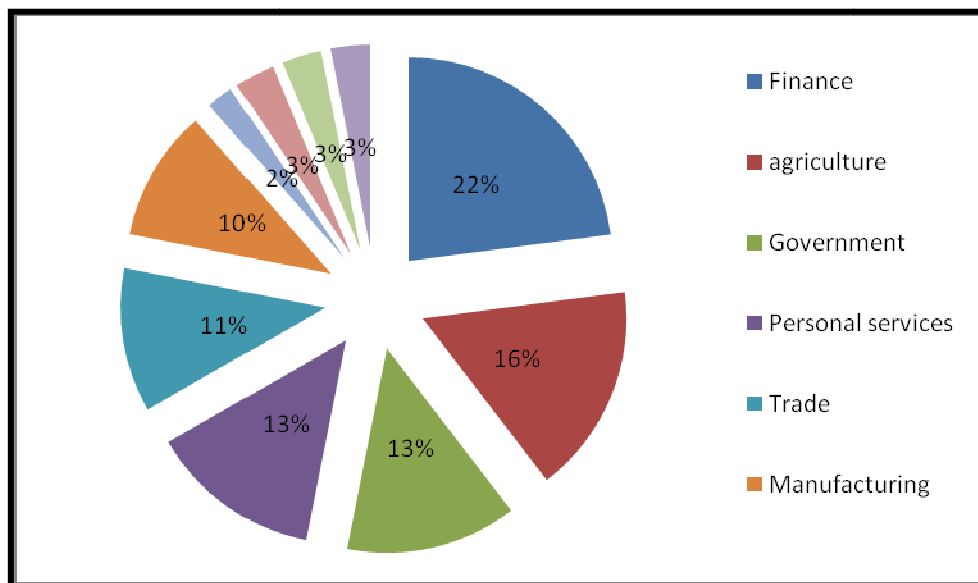
<b>Educational indicator</b>	<b>2001</b>	<b>2011</b>
Literacy Rates	70.4	76.7
Attending Educational Institution (%)	62.4	69.3
No Schooling (%) (20yrs +)	25.2	17.2
Primary Enrolment (%) (6-13yrs)	84.7	93.3
Matric Completion (%) (20yrs +)	13.3	15.0
Matric Pass Rate	16.1	18.4
Completed Higher Education (%) (20yrs +)	4.2	2.0

*Table 8 Education: (STATSSA: Census 2011)*

### 8.3.11 Economic Activities

The JB Marks LM has a small economic base, and contributed only around 1% of the provincial economy in 2009 (CSIR and Quantec). In the municipal SDF and LED strategy, the sectors of Manufacturing, Construction, Trade and Finance are identified as important economic activities in the Municipal area, due to existing industries, shops, banks and agriculturally oriented settlements. JB Marks Local Municipality could be regarded as a central strategic grain crop production hub; this could include the current commercial farmers' production capabilities as well as their ongoing contribution to sustain Ventersdorp. The potential for growth shown by the trade and manufacturing sectors need to be enhanced to improve overall productivity of the municipality. Food processing sector is heavily dependent on agriculture for its inputs, and as agriculture stagnated over the past eight years, so did this sector. The other important sub-sectors in manufacturing are furniture and other manufacturing

(17%), petroleum and chemicals, wood and wood products and metal products and machinery. Since 1996, the fastest growth in manufacturing has been in the sub-sector transport equipment and petrol and chemicals. Both of these sectors depend significantly on the agricultural sector for demand and their growth reflect the increased capital intensity in agriculture. Tourism is one of the fastest growing sectors in the economy. Ventersdorp has a number of tourist attractions and tourism establishments. Given the historical background the municipality has, the tourism market has a potential to grow.



*Figure 9: Economic activities*

## 9. EIA PROCESS AND METHODOLOGY

The overall process and methodology that was followed for the scoping phase of the EIA was based on best practice guidelines and the requirements of South African legislation (specifically NEMA and MPRDA). The approach included the following key stages:

- Gap Analysis of existing information against the Project compliance criteria;
- Project Definition and Analysis of Alternatives – inclusive of data review, red flag and constraints mapping, input to alternatives analysis and preferred layout planning and project description;
- Screening (legal and process review) – review of all applicable compliance criteria;
- EIA Scoping (identification of key issues and development of plan of study for carrying out the impact assessment). This report is presented to the public for comment and to the South African Government departments dealing with mining and environmental authorisation for a decision on whether the scope proposed for the EIA is appropriate;

- Environmental and Social Baseline Studies – carrying out monitoring, data collection and fieldwork to determine the baseline conditions of the environment that could be affected by the Project;
- Stakeholder Engagement – was undertaken throughout the Scoping process to record issues and comments received from the public. These issues and comments are integrated into the process and will be considered in the impact assessment phase of the EIA.
- The following activities will be undertaken during the next phase of the EIA:
- Impact Assessment – evaluation of potential impacts and benefits of the Project utilising qualitative and quantitative evaluation as determined by the scoping phase;
- Environmental and Social Management Systems Development – establishment of a system for the management of environmental, social impacts supported by action plans;
- Preparation of an EIA report – documenting all processes and presenting the findings of the impact assessment. The EIA report will be presented to the public for comment and to the relevant South African Government departments for a decision on whether the Project may proceed and if so under what conditions; and
- Stakeholder Engagement – will continue throughout the remainder of the EIA process to record issues and comments received from interested and affected parties.

### 9.1 The overarching principles that guide the EIA include:

- Sustainability – development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs;
- Mitigation hierarchy – The mitigation hierarchy describes a step-wise approach that illustrates the preferred approach to mitigating adverse impacts as follows (the governing principle is to achieve no net loss and preferably a net positive impact on people and the environment as a result of the Project):

1) The preferred mitigation measure is **avoidance**;

2) Then **minimisation**;

3) Then **rehabilitation** or **restoration**; and

4) Finally **offsetting** residual, unavoidable impacts

- Duty of care towards the environment and affected people.

#### 9.1.2 Scoping Methodology

The methodology specifically adopted for the scoping phase included the following:

- Stakeholder consultation as described in section iii
- Review of existing data;
- Fieldwork by the EIA specialist team to obtain additional baseline data;
- Workshops with the specialist team to identify key impacts and issues and to outline the plan of study; and
- Compiling the Scoping report.

## 9.2 IMPACT ASSESSMENT METHODOLOGY

### Methodology used in determining the significance of environmental impacts

#### 1) METHODOLOGY OF IMPACT ASSESSMENT

According to the DEA IEM Series guideline on "Impact Significance" (2002), there are a number of quantitative and qualitative methods that can be used to identify the significance of impacts resulting from a development. The process of determining impact significance should ideally involve a process of determining the acceptability of a predicted impact to society. Making this process explicit and open to public comment and input would be an improvement of the BA process. Lesekha Consulting approach to determining significance is generally as follows:

- Use of expert opinion by the specialists ("professional judgment"), based on their experience, a site visit and analysis, and use of existing guidelines and strategic planning documents and conservation mapping(e.g. SANBI biodiversity databases);
- Our approach is more a qualitative approach - we do not have a formal matrix calculation of significance as is sometimes done.

#### 2) SPECIALIST CRITERIA FOR IMPACT ASSESSMENT

The following methodology has been provided by the Lesekha Consulting for incorporation into assessments:

##### Assessment of Potential Impacts

The assessment of impact significance is based on the following conventions:

**Nature of Impact** - this reviews the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"

**Spatial Extent** - this should indicate whether the impact will be:

- Site specific;
- Local (<2 km from site);

- Regional (within 30 km of site); or
- National.

**Duration** - The timeframe during which (lifetime of) the impact will be experienced:

- Temporary (less than 1 year);
- Short term (1 to 6 years);
- Medium term (6 to 15 years);
- Long term (the impact will cease after the operational life of the activity); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

**Intensity** - it should be established whether the impact is destructive or innocuous and should be described as either:

- High (severe alteration of natural systems, patterns or processes such that they temporarily or permanently cease);
- Medium (notable alteration of natural systems, patterns or processes; where the environment continues to function but in a modified manner); or
- Low (negligible or no alteration of natural systems, patterns or processes); can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.

**Probability** - this considers the likelihood of the impact occurring and should be described as:

- Improbable (little or no chance of occurring);
- Probable (<50% chance of occurring);
- Highly probable (50 – 90% chance of occurring); or
- Definite (>90% chance of occurring).

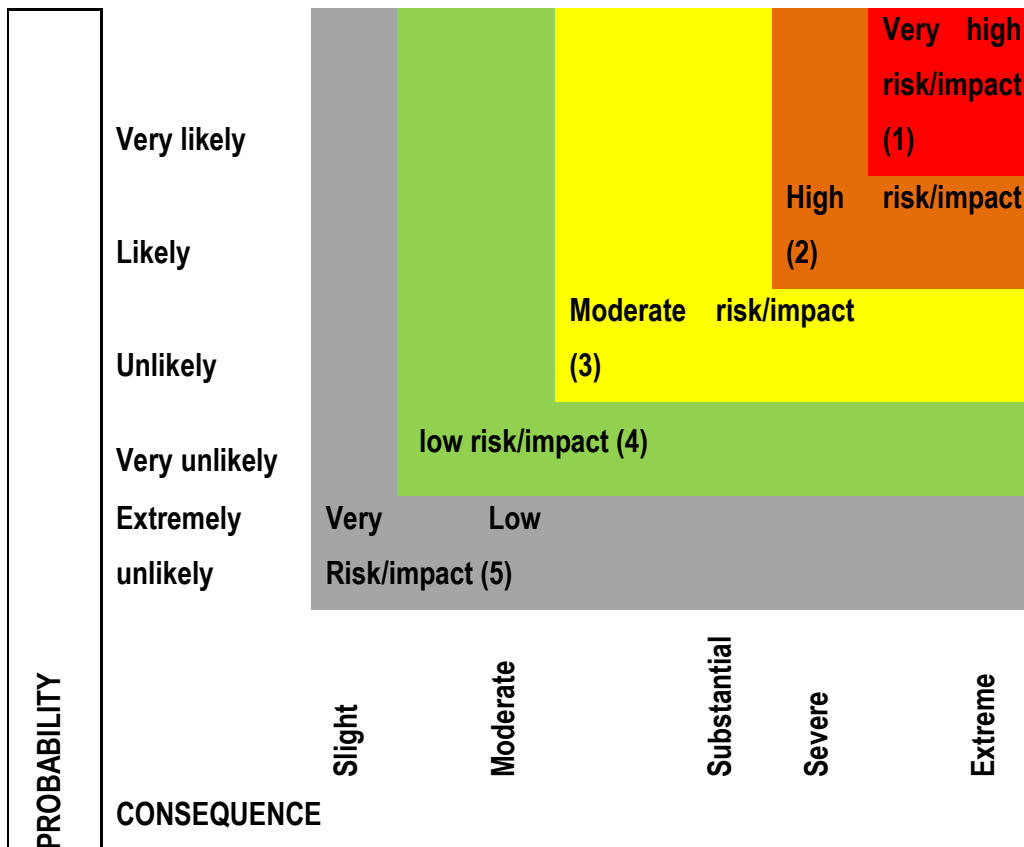
**Reversibility** - this considers the degree to which the adverse environmental impacts are reversible or irreversible. For example, an impact will be described as low should the impact have little chance of being rectified to correct environmental impacts. On the other hand, an impact such as the nuisance factor caused by noise impacts from wind turbines can be considered to be highly reversible at the end of the project lifespan. The assessment of the reversibility of potential impacts is based on the following terms:

- High - impacts on the environment at the end of the operational life cycle are highly reversible;
- Moderate - impacts on the environment at the end of the operational life cycle are reasonably reversible;

- Low - impacts on the environment at the end of the operational life cycle are slightly reversible; or
- Non-reversible - impacts on the environment at the end of the operational life cycle are not reversible and are consequently permanent.

**Irreplaceability** - this reviews the extent to which an environmental resource is replaceable or irreplaceable. For example, if the proposed project will be undertaken on land that is already transformed and degraded, this will yield a low irreplaceability score; however, should a proposed development destroy wetland systems for example, these may be considered irreplaceable and thus be described as high. The assessment of the degree to which the impact causes irreplaceable loss of resources is based on the following terms:

- High irreplaceability of resources (this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (this is the most favourable assessment for the environment).



*Figure 8: Guide to assessing risk/impact significance as a result of consequence and probability.*



The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

**Status of the impact:** A description as to whether the impact will be:

- Positive (environment overall benefits from impact);
- Negative (environment overall adversely affected); or
- Neutral (environment overall not affected).

**Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as:

- High;
- Medium; or
- Low.

Based on the above considerations, the specialist provides an overall evaluation of the significance of the potential impact, which should be described as follows:

- **Low to very low:** the impact may result in minor alterations of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated;
- **Medium:** the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated; or
- **High:** Where it could have a “no-go” implication for the project unless mitigation or re-design is practically achievable. Furthermore, the following must be considered:
- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the construction, operation and decommissioning phases of the project, where relevant.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.

**Management Actions:**

- Where negative impacts are identified, mitigatory measures will be identified to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated.

- Where positive impacts are identified, augmentation measures will be identified to potentially enhance these.
- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.

**Monitoring:**

Specialists should recommend monitoring requirements to assess the effectiveness of mitigation actions, indicating what actions are required, by whom, and the timing and frequency thereof.

**Cumulative Impact:**

Consideration is given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts are evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

**Mitigation:**

The objective of mitigation is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on the receiving environment and to maximise re-vegetation and rehabilitation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potentially negative impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested. Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts. Feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. The No-Go alternative will be considered.

### **9.3 Potential Environmental Impacts**

*Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities and as informed by the consultation with the affected parties together with the significance probability and duration of the impacts. The following environmental impacts associated with the proposed facility have been identified and will further be assessed during the impacts assessment phase and mitigation measures will be developed to manage the impacts.*

#### 9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING /DESIGN PHASE

9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
<b>INFRASTRUCTURE AND SERVICES</b>											
Alignments that would interfere with existing and potential future Infrastructure and services.	Local	Short term	Likely	High	Low	High	Yes	Yes	Minimise alignments that would interfere with existing and potential future and services. Construction related disturbances will be kept to a minimum. Consult with the community regarding impacts on access to site and foreseeable disruptions on infrastructure.	Low	4
Compliance with Environmental Legislation, guidelines, by laws and other applicable policies	Local	Short term	Likely	High	Low	High	Yes	Yes	The planning and design of the integrated human settlement, should take into account, and comply with all relevant environmental legislation and policies as detailed in of this report.  At least a 50m buffer should be allowed from the edge of the wetland and the watercourse. No development should occur on the buffer area or sensitive area.	Low	4
Topography &	Local	Short	Likely	High	Low	High	Yes	Yes	The removal of large tracts of vegetation can	Low	4

9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
Visual Aspects		term	y						<p>drastically alter the appearance and character of a community. Design and siting of the integrated human settlement will result in an alteration of the site topography.</p> <p>The study area has an average height of 1465 meters above sea level and is dominated by gentle sloping hills and a few water courses all draining south towards the Skoonspruit River. The analysis of the topographical survey revealed the following slope characteristics of the two land parcels proposed for development:</p> <p><i>Elandskuil No. 205 IP</i></p> <ul style="list-style-type: none"> <li>• Gentle to fair slopes sloping in a south westerly direction on the portion located west of the R30 and gentle to fair slopes sloping in a south easterly direction on the portion located east of the R30.</li> <li>• A maximum slope of 1:23 was encountered on the southern edge of the portion located east of the R30 adjacent</li> </ul>		

9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
									<p>to the railway line. Elandskuil No. 206 IP</p> <ul style="list-style-type: none"> <li>Fair slopes all sloping in a south easterly direction towards the Skoonspruit River.</li> <li>A Maximum slope of 1:10, 5 was encountered on the south eastern edge of the portion.</li> </ul> <p>Maximum slopes of both portions can be deemed developable.</p>		
Bulk Services	Local	Short term	Likely	High	Low	High	Yes	Yes	The Engineering Service Investigation Report attached in Appendix G5 has outlined that the Municipality have enough capacity to cater for the new development except of the sewerage that will need to be upgraded.	Low	4
Stormwater	Local	Short term	Likely	High	Low	High	Yes	Yes	Increased stormwater can cause severe damage in terms of erosion and pollution. Infrastructure should be planned and designed in such a way	Low	4

9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
									<p>as to take increased stormwater runoff in consideration.</p> <p>-To protect all property and life from damage associated with the flooding of streams and rivers, the “National Water Act 36 of 1998” under Part 3 of Chapter 14 all township development layouts should have 1:100 year flood line parameters.</p> <p>-The storm water reticulation network should be designed to follow the contour formation of the internal road network with draining the area via kerb inlets along the road.</p> <p>-Storm water reticulation design and construction of storm water infrastructure should ensure that overall development of the study area does not</p>		

9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
									<p>increase the rate of storm water runoff above that which the natural ground can safely accommodate at any point in the sub-catchments thus post development runoff should be equal or less than the pre-development runoff.</p> <p>-retention pond(s) will be required to act as a flood control measure to attenuate peak storm water runoff into natural water courses.</p> <p>-Areas of ecological value such as wetlands and rivers of the site could be sensitive to any alteration of localised drainage patterns. The introduction of roads and impermeable areas of hard standing could increase rates of run-off and therefore the risk of localized flooding and contamination.</p>		



9.4 IMPACTS THAT MAY RESULT FROM THE PLANNING PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
Appointment of irrelevant people who might fail to meet the set objectives for the proposed project.	Local	Short term	Likely	High	Low	High	Yes	Yes	The project managers together with the appointed professionals will ensure that the correct planning has been put into place by appointing all relevant experts to tackle different tasks involved in the proposed project	Low	4

**9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

<b>9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE</b>
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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
Access to site	Local	Short term	Very unlikely	High	High	Low	Yes	Yes	The contractor should ensure that the access roads leading to the construction are in good conditions. No access roads should be constructed on natural features e.g wetlands and rivers.	Very Low	5
Destabilisation of surface geology as a result of excavations Potential erosion, degradation and loss of topsoil due to construction activities as well as storm water runoff.	Local	Short – term	Likely	High	Low	Low	Yes	Yes	All site disturbances must be limited to the areas where structures will be constructed. Cleared areas are effectively stabilised to prevent and control erosion. Excess rocks and boulders that are excavated from the site can be used for erosion protection work on site.  Suitable excavated material is to be stockpiled next to excavations for use as backfill. Excess material as a result of	Moderate	3

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>excavation and construction rubble must be removed, and appropriately disposed of.</p> <p>Areas susceptible to erosion must be protected by installing the necessary temporary and/or permanent protective materials.</p> <p>Any tunnels or erosion channels developing during the construction period shall be backfilled and compacted, and affected areas restored to proper conditions.</p> <p>Soil stockpiling areas must be sufficiently situated away from the drainage areas.</p>		

9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
Inundation	Local	Short-term	Very unlikely	Moderate	Low	Low	Yes	Yes	Drainage areas such as rivers, streams, marshy areas may be prone to flooding however floodline study has been determined (refer to the attached Floodline Report Appendix G1. All drainage boundaries near wet areas or drainage lines must also be confirmed before construction.	Very low	4
Erosion of stockpiled material (sand and steel etc).	Local	Short-term	Very unlikely	Moderate	Low	Low	Yes	Yes	Material must be stockpiled in such a way that it cannot fall or cause injury or damage to properties or the natural environment. Stockpiles must not exceed 2m in height and must be covered if exposed to heavy wind or rain. Alternatively, low walls or berms must be constructed around the stockpiles. On	Very low	4

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									completion of the construction all exposed soil must be re-vegetated, preferably with indigenous vegetation. Implementation of erosion control measures is essential.		
Alteration of topography due to excavations, stockpiling of soil, building material, debris and waste material on site.	Local	Short-term	Very unlikely	Moderate	High	Low	Yes	Yes	Limit excavations to areas required for construction purposes. Avoid placing of stockpiles and other services on areas likely to pose obtrusive visual impact Precautionary measures and design from the engineer must be implemented. Re-vegetation of re-profiled slopes; Temporary stabilisation of slopes using geotextiles; and Installation of gabions and	Very low	5

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									reno mattresses.		
Pollution or Contamination of surface and groundwater due to excavations, spillages, leakage, incorrect storage and handling of chemicals, oils, lubricants, cement, fuels and other hazardous materials. Erosion	Local	Short term	Likely	High	Moderate	Moderate	Yes	Yes	Adequate stormwater drainage should be constructed. Stormwater culverts and drains are to be located and covered with metal grids to prevent blockages; All hazardous substances must be stored on an impervious surface in a designated bunded area able to contain 110% of the total volume of materials stored at any given time. All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. No repairs may be undertaken beyond the contractor	Moderate	3

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
of the banks and wetland/water courses pollution.									<p>lay-down areas or without precautionary measures implemented.</p> <p>Ensure the establishment of stormwater diversion berms around the contractor lay down area and other potential contaminated areas (e.g. diesel storage tanks or refuelling station).</p> <p>Care must be taken to ensure that no contaminated water from the construction site enters the natural watercourse. Preventative measures including establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste</p>		

**9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>site.</p> <p>Excess or spilled concrete should be confined within the works area and then removed to a waste site.</p> <p>Stream banks stabilization and prevention of further erosion to be implemented.</p>		
Poor storm water Management during construction can lead to erosion and loss of soil.	Local	Short term	Very unlikely	Moderate	Low	Low	Yes	Yes	Storm water control must be implemented during construction; however this is a temporary impact of the proposal. A drainage system must be established for the construction camp. Contaminated storm water must not be allowed to enter the river. The drainage system must be regularly checked to ensure an	Low	4



9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>unobstructed water flow. To reduce erosion and loss of soil/silt during rain, silt traps should be used on slopes and areas that are likely to erode during development.</p> <p>Storm water drainage systems must be able to control the volume, speed and location of runoff expected. The site surface must be engineered and shaped in such a way that rapid and efficient evacuation of runoff is achieved. Improve existing alignments and drainage systems. Provide containment areas for potential pollutants at construction camps, refuelling</p>		

**9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>depots, asphalt plants and concrete batching plants. Appropriate waste management practices should be implemented during construction. The transport, storage, handling and disposal of hazardous substances must be adequately controlled and managed.</p> <p>If vegetation is to be removed, it must be done in phases to ensure that a minimum area of soil is exposed to potential erosion at any one time. Storm-water outfalls should be designed to reduce flow velocity and avoid stream bank and soil erosion.</p>		

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									Disturbed surfaces must be re-vegetated immediately after completion of construction activities in each area.		
Pollution or Contamination of surface and groundwater due to excavations, spillages, leakage, incorrect storage and handling of chemicals, oils, lubricants, cement, fuels and other	Local	Short term	Likely	High	Moderate	Moderate	Yes	Yes	Adequate stormwater drainage should be constructed. Stormwater culverts and drains are to be located and covered with metal grids to prevent blockages; All hazardous substances must be stored on an impervious surface in a designated bunded area able to contain 110% of the total volume of materials stored at any given time. All earth moving vehicles and equipment	te	3

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
hazardous materials. Erosion of the banks and wetland pollution									<p>must be regularly maintained to ensure their integrity and reliability. No repairs may be undertaken beyond the contractor lay-down areas or without precautionary measures implemented.</p> <p>Ensure the establishment of stormwater diversion berms around the contractor lay down area and other potential contaminated areas (e.g. diesel storage tanks or refuelling station).</p> <p>Care must be taken to ensure that no contaminated water from the construction site enters the natural watercourse. Preventative measures including</p>		

**9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.</p> <p>Excess or spilled concrete should be confined within the works area and then removed to a waste site.</p> <p>Stream banks stabilization and prevention of further erosion to be implemented.</p> <p>Enforcement and adherence to speed limits on onsite roads to prevent the liberation of dust. Dust suppression measures including regular application of water must be implemented. Water used</p>		

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									for this purpose must be used in quantities that will not result in the generation of runoff. All site workers to wear PPE to avoid any exposure to contaminated dust particles.		
Site clearing for construction activities leading to loss of species diversity and habitat characteristics.	Local	Short term	Very likely	High	Low	Moderate	No	Yes	Conduct a search and rescue operation for all conservation important plants on the site. The areas in a natural or near-natural state with biodiversity capability should not be lost for the conservation targets to be met. The loss of a biodiversity feature should not be affected by the development.  Appoint an Environmental Control Officer	Moderate	3

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>(ECO) prior to commencement of construction phase. Responsibilities should include, but not necessarily be limited to, ensuring adherence to EMP guidelines, guidance of activities, planning, reporting to authorities, etc.;</p> <p>Compile and implement environmental monitoring programme, the aim of which should be ensuring long-term success of rehabilitation and prevention of environmental degradation.</p> <p>Limit site clearing to those areas required for construction at a time.</p>		
<b>IMPACT ON FAUNA</b>											

9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
Site clearing for construction activities leading to loss of species diversity and habitat characteristics.	Local	Short term	Very likely	High	Moderate	Moderate	No	Yes	<p>Demarcate areas of high and medium-high floristic sensitivity by means of semi permanent means (fencing). Demarcation should be periodically inspected by the ECO in order to ensure that fencing remain intact.</p> <p>Appoint an Environmental Control Officer (ECO) prior to commencement of construction phase to ensure adherence to EMP guidelines, guidance of activities, planning, reporting to authorities, etc;</p> <p>Limit site clearing to those areas required for construction at a time Delineation of the</p>	Moderate	3



9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated ?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									conservation area prior to commencement of construction activities. The sensitive drainage line/wetland areas to be fenced off from all construction activities. Disturbance of mammals, birds, reptiles, other animals and their habitats must be prevented. If subterranean mammals are found in a construction area, construction must stop and the ECO must arrange for their capture and translocation to a safe area.		
Risk of alien invasive Encroachment into	Local	Medium term	Likely	Moderate	High	Low	Yes	Yes	At present, no alien species identified however it must be controlled during construction, if it will be found. The	Very Low	5

9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated ?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
disturbed areas.									establishment or spread of alien plant species on site must be monitored and the correct removal and disposal of alien plant species must be followed. Rehabilitation of disturbed areas must commence as soon as construction activities are completed in those areas		
Removal of endangered Vegetation	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	The development site is in a CBA type 1; however the site is not a protected area. The site has ecologically important biodiversity. Biodiversity in near natural state with minimal loss of ecosystem integrity must be maintained. No transformation of natural habitat should be	Low	4

9.5IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE											
Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated ?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>permitted.</p> <p>Any Red data species identified should be protected It is expected that there is probability of finding red-data species on the site. Disturbance of indigenous fauna and flora, and the natural ecology in the surrounding areas must be avoided where possible.</p> <p>Gathering of firewood, fruit, medicinal plants, crops or any other natural material or the collecting of animals on site or in areas adjacent to the site is not allowed.</p>		
Improper storage and disposal of	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	Due to the nature of the activity, waste is anticipated to be minimal. All solid waste	Low	4

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solid waste									generated during the construction process must be placed in a designated waste collection area within the site camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent to the skips/bins. All solid waste must then be disposed of at the nearest licensed landfill and safe disposal certificates must be obtained and kept on site at all times during construction. Separate skips/ bins for the different waste streams must be available on site. The waste containers must be appropriate to the waste type contained		

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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated ?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>therein and where necessary should be lined and covered. This must be monitored by the ECO.</p> <p>Littering is not permitted on the site and general housekeeping must be enforced. General waste bins must be readily available for litter disposal and general housekeeping. The EMPr must be followed during construction.</p> <p>All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. All excess material and rubble must go to an approved designated landfill and a safe disposal</p>		

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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									certificate must be obtained. Site workers will be trained in avoiding such impacts during induction training and regular toolbox talks.		
Littering around the site.	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	Littering is not permitted on the site and general housekeeping must be enforced. General waste bins must be readily available for litter disposal and general housekeeping. The EMPr must be followed during construction.	Low	4
Improper disposal of rubble i.e. burying or Neglecting building	Local	Short term	likely	Moderate	High	low	Yes	Yes	All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. All excess material and rubble must go to an approved	Low	4

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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
rubble resulting in direct Mechanical damage to Surrounding vegetation and untidiness of the site									designated landfill and a safe disposal certificate must be obtained. Site workers will be trained in avoiding such impacts during induction training and regular toolbox talks.		
Lack of toilet facilities resulting in unsanitary Conditions.	Local	Short term	likely	High	High	Low	Yes	Yes	Toilet facilities must be provided for all staff members as standard construction practice. These toilets must be regularly cleaned by a reputable company and maintained in a clean state. This must be monitored in an EMPr.	Low	4
Improper disposal	Local	Short	Unlikel	Moderate	High	Low	Yes	Yes	Chemical toilets must be placed within the	Low	4

**9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
of toilet waste from chemical toilets resulting in contamination of the surrounding environment		term	y						construction camp and not in close proximity to the river. The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licenses facility. Safe disposal certificates must be kept on record.		
Increase waste to Landfill site.	Regional	Short term	Likely	Moderate	High	Low	No	Yes	Due to the nature of the activity, waste is anticipated to be minimal. Where possible, waste streams will be separated and recycled to limit the amount of waste being added to the landfill site.	Low	4
Hazardous Substances & Materials ( <i>Those</i>	Local	Short term	Likely	High	High	Low	Yes	Yes	Hazardous storage and refuelling areas must be underlain with an impermeable liner to protect groundwater quality. If	Moderate	3



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<p><i>hazardous substances and materials which are potentially poisonous, flammable, carcinogenic or toxic. These could include: Diesel, petroleum, oil, bituminous products. Cement, Solvent based paints, Lubricants,</i></p>									<p>applicable; fuel tanks must meet relevant specifications and must be elevated so that leaks may be detected easily. Storage areas containing hazardous substances and materials must be clearly signed. If applicable; Staff dealing with these Materials and substances must be aware of their potential impacts and follow the appropriate safety measures. Handling, storage and disposal of potential hazardous materials, residues or their containers must be in accordance with DWS's requirements and specifications. Scheduled hazardous waste such as</p>		

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<i>Explosives, Drilling fluids. Pesticides, herbicides. Liquid petroleum gas</i>									bitumen, tar, oils, etc., must be disposed of at DWS-approved facilities.		
Hazardous Areas due to Construction Activities	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	Potentially hazardous areas such as trenches are to be demarcated clearly marked so that warning about these areas is visible during the day and night.	Low	4
Handling of Hazardous Materials	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site. Powders, e.g. lime, must not be mixed during excessively windy conditions. All concrete mixing must take place on a	Low	4

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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									designated, impermeable surface. Hazardous material should be carefully handled to avoid polluting the tributary and the wetland present onsite. No vehicles transporting concrete to Construction site may be washed on site. Hazardous substances and materials are to be transported in sealed containers or bags.		
Noise generated by construction workers, machinery and construction vehicles Disturbing	Local	Short term	Unlikely	Moderate	High	Low	Yes	Yes	Excessive noise must be controlled on site to avoid scaring of animals. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00).	Low	4

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surrounding residents.									<p>The construction activities will be monitored by an ECO who will ensure compliance with the construction EMP. All precautions must be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event.</p> <p>All equipment and activities to comply with noise regulations.</p> <p>Adherence to Occupational Health and Safety Act.</p> <p>Ear protection for workers that may be</p>		

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									affected by noise.		
Visibility of dust, waste pollution and construction activities from surrounding roads and properties.	Local	Short term	Likely	Moderate	High	High	Yes	Yes	Apply dust control measures diligently, especially on provincial roads. Apply recommendations of specialist regarding colour and construction of site structures during the Construction Phase. Indigenous plants or trees must be retained where appropriate to provide screens to make the construction site less visually intrusive. Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring residents. The site is currently vacant. The aesthetics	Low	4

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Potential Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact/risk	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be Avoided?	Can impact Be mitigated ?	Potential mitigation	Significance of residual impact (after mitigation)	Ranking of impact
									<p>will not be negatively impacted by the proposed development as the site does not have any scenic resources on or near the study area. The proposed development may improve the appearance of the area which will become more visually appealing.</p> <p>During the construction phase, the inadequate storage of material, equipment and waste may result a potential visual impact.</p>		
Dust pollution on site which would affect adjacent	Local	Short tem	Likely	low	High	low	Yes	Yes	The only emissions that will be generated will be from construction vehicles which will be minimal and is not expected to	Very low	5

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developments as a result of construction activities and vehicles on site.									significantly affect the surrounding communities or the environment. Enforcement and adherence to speed limits on onsite roads to Prevent the liberation of dust. Dust suppression measures including regular application of water must be implemented. Water used for this purpose must be used in quantities that will not result in the generation of run-off. All site workers to wear PPE to avoid any exposure to contaminated dust particles.		
Dust generated from construction	Local	Short tem	Likely	Moderate	Medium	Low	Yes	Yes	Dust control measures (the use of a water cart / truck) must be used to wet exposed	Low	4

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vehicles and other onsite activity.									<p>soil and thereby ensure that excessive dust levels are not experienced on site. The dust levels must be kept below the required SANBS standard to ensure minimal impact on the surrounding community and the environment.</p> <p>Areas that have been stripped of vegetation, existing exposed soil surface and sandy access route must be dampened regularly to avoid excessive dust, particularly during dry and windy conditions.</p> <p>The time that stripped areas are left open to exposure should be minimized wherever</p>		



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									<p>possible.</p> <p>Maintenance of existing vegetation helps control dust and prevents soil erosion. The ECO can order areas of vegetation to be fenced off during construction that remain out of bounds.</p> <p>Construction vehicles must adhere to speed limit to avoid creating excessive dust. A speed limit of 30km/hr must be adhered to on all dirt roads. Contractor must provide appropriate arrangement for cooking and for heating requirements open fires not allowed.</p> <p>Spoil dumps need to be implemented</p>		

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									Ensure that building type and design will be compactable to future planned adjacent developments		
Sourcing of raw materials i.e.: (gravel, stone, sand, cement and water) from unsustainable sources resulting in illegal mining and mining operations causing significant environmental	Local	Short term	Very unlikely	Moderate	High	low	Yes	Yes	All materials must be obtained from a registered and sustainable source and all delivery notes and slips must be made available to the ECO e.g. mined material such as stone must only be obtained from permitted quarries.	Very low	5

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damage.											
Potential temporary Employment during the Construction phase	Local	Short term	Very likely	Moderate	High	N/A	Yes	Yes	<p>Positive impact Jobs will be created in the development phase and must be optimized during the implementation stages to contribute towards longer term economic sustainability in the project area. Anticipated benefit also includes skill transfer and enhancement.</p> <p>Various ad hoc works may arise during the construction phase and a plan should be developed for obtaining the services of local skills and people where possible.</p> <p>The development will enhance economic opportunities for vulnerable communities.</p>	Moderate	3

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									<p>Unskilled labour, such as earth works and establishment, might be sourced from the neighbouring community. Depending on the skills levels required, it is believed that different skills levels will have differently structured salary packages, thereby creating lower income to higher income opportunities.</p> <p>It is believed that most of the employment opportunities would be restricted to the construction phase. The required skills might not be available in the local area, which means that the appropriate skills might have to be "imported", thereby</p>		

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									causing a reduction in the job and income opportunities available to local.		
Various biophysical and sociological impacts due to poor staff conduct of contractor Staff Conduct on Site Social Environment & Affected Parties (IAPs).	Local	Short term	Very likely	Moderate	High	High	Yes	Yes	The contractor/developer should ensure proper supervision of employees at all times. Staffs needs to be made aware of the following general rules which must be followed at all times. No alcohol or drugs are to be present on site. No firearms are allowed on site or in vehicles transporting staff to/from site, unless used by security personnel. Prevent excessive noise. No harvesting of firewood from the site or from the areas adjacent to it.	Low	4
Safety during	Local	Short	Likely	Moderate	Low	Low	Yes	Yes	Excavations and open trenches during	Low	4

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construction is very trenches & excavation should not be left unbaricaded.		term							construction could act as a trap for children, reptiles and animals. Pro-active measures which include the placement and covering of pipelines portion by portion will be done, no excavation areas may be left overnight, as well as the placement of danger tape around open ditches.		
Health Impacts. Temporary accommodation of workers during construction phase would lead to the	Local	Short tem	likely	Moderate	low	low	Yes	Yes	Health as a result of possibility of single men engaging in relations with local women, this could lead the increased risk of STD's, HIV and AIDS as well as unwanted pregnancies resulting in fatherless children. A potential increase in	Low	4

**9.5 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE**

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influx of job seekers to the area. Temporary workers combined with influx of unsuccessful job seekers can have a number of social impacts.									<p>criminal and other illegal activities cannot be excluded. Contractors to procure products and services locally as far as possible.</p> <p>To mitigate the above mentioned impacts local labourers will be hired, and there would be HIV awareness induction to educate labourers about safe sex practices.</p> <p>Influx of people not residing in Ventersdorp looking for employment can be mitigated by requesting information from the project proponent on the construction process and the likely profile of a typical construction</p>		

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									worker. Conduct a desk top study to determine the health profile of the area, including typical indicators such as HIV prevalence, etc. Interviews with municipal officials and other authority figures (such as the South African Police Service) to determine the current extent of social problems in the area and initiatives to combat them.		
Increase in crime in the area and increase in squatters on vacant land.	Local	Short term	Likely	Moderate	High	High	Yes	Yes	Proper management and planning A limited number of workers along with security guards will be allowed to sleep on site, however within a cordoned-off secure area.	Low	4



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Migration of job seekers into the area in search of employment									<p>All staff will carry identification, access control will be enforced and the site will be swept and a search will be done each night.</p> <p>The development will have 24-hour access control and security.</p> <p>If necessary a Community Liaison Officer can be appointed. The CLO (Community Liaison Officer) to be consulted regarding employment of members of the surrounding communities</p>		
Uncontrolled fires from cooking and Veld fires	Regional	Short term	Likely	Moderate	High	High	Yes	Yes	A designated area shall be assigned for fire making for the construction workers to prevent run-away veld fires do not occur.	Low	4

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Increase in construction traffic	Local	Short term	Likely	Low	High	High	Yes	Yes	<p>The access of large trucks will be investigated to provide a suitable access route that does not become a nuisance to existing residents</p> <p>Construction vehicles and activities must aim to avoid peak hour traffic times (weekdays 7-8am and 5-6pm).</p> <p>Establish an all-weather site access and wheel wash or shake down to prevent soil and materials from being trekked onto the road.</p>	Very low	5
Housekeeping Establishment and Maintenance of	Local	Short term	Medium	Moderate	High	Low	Yes	Yes	Storage areas of all the building materials and equipment .must be designed, demarcated and fenced if necessary.	Low	4

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storage areas.									Location of storage areas must take into account prevailing winds, distance to water bodies, boreholes and on-site topography. Storage areas should be secure and be safe from access by children and animals. Fire prevention facilities must be present at all storage facilities. Contractors/Developer must ensure that storage facilities are cleaned and maintained regularly and that leaking containers are disposed of without spillage onto the soil.		
All the archaeological,	Local	Short term	Low	Moderate	High	Low	Yes	Yes	During site visit there were graves that were identified close to the north-western boundary of the Remainder of the farm	Low	4

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historical, Cultural or paleontological objects found on the development activity must not be disturbed.									Elandskuil 205-IP. In terms of the SAHRA they will not be disturbed rather be demarcated & zoned public open space for usage by family members of those buried (NB: - usage will be limited to allow visits to graves, paying homage & cleaning thereof). Whereas, to the north of the Remainder of the farm Elandskuil 206-IP, There is JB Marks Memorial site (consisting of his inscribed granite plate, grave & statue), after whom the new Ventersdorp municipality name has been officially changed. A Heritage Impact Assessment has been undertaken please refer to the attached report. Before construction starts, all staff must be informed regarding possible		

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									<p>archaeological, historical or paleontological objects (e.g. tools, human's remains, fossils, etc) of value and what they look like. The engineer or contractor/developer must be notified should such an item be uncovered.</p> <p>All work should cease immediately and SAHRA NW will be notified if any archaeological, historical or paleontological remains are discovered during development.</p>		

**9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE**

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
Possible soil erosion of the banks of the stream and stormwater discharge points.	Local	Long term	Likely	Moderate	Low	High	Yes	Yes	<p>Rehabilitation of the stream banks and proper design and construction of the storm water discharge points.</p> <p>All surfaces susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed.</p> <p>Steeper watercourses (especially in portion 206 IP) should be protected from erosion through the use of appropriate channel linings or controlled drops to dissipate flow energy. Stone pitching should also be used to reinforce channel</p>	Low	4

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									inverts on such slopes. Add on the EMPR.		
Erosion of surrounding banks due to storm water. Hardened surfaces, as opposed to undeveloped areas natural vegetation, will lead to an increase in runoff, which in turn may lead to increased pressure being exerted on the camp's storm water control system.	Local	Short term	Likely	High	High	High	Yes	Yes	Storm water control measures must be implemented to ensure run off from the buildings and footpath does not cause erosion to the surrounding environment. All storm water should be directed to the surrounding vegetative environment and stream via storm water channels or pipelines without the possibility of sediment being picked up or structural damage to the water resources. Impermeable surface will be replaced by a permeable surface, leading to the reduction of storm water runoff. If vegetation is to be removed, it must be done in phases to ensure that a minimum area of soil is exposed to potential erosion	Moderate	3

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									at any one time. Storm-water outfalls should be designed to reduce flow velocity and avoid stream bank and soil erosion. Disturbed surfaces must be re-vegetated immediately after completion of construction activities in each area. Sub-surface disposal of storm water should be avoided.		
All property must be protected from damage associated with the flooding of streams and rivers.									The storm water reticulation network should be designed to follow the contour formation of the internal road network with draining the area via kerb inlets along the road. -Storm water reticulation design and construction of storm water infrastructure should ensure that overall development of the study area does not increase the rate		



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									<p>of storm water runoff above that which the natural ground can safely accommodate at any point in the sub-catchments thus post development runoff should be equal or less than the pre-development runoff.</p> <p>-It is expected that a retention pond(s) will be required to act as a flood control measure to attenuate peak storm water runoff into natural water courses. All natural and unlined channels should be inspected for adequate binding of soil to reduce erosion;</p> <p>-Steeper watercourses (especially in portion 206 IP) should be protected from erosion through the use of appropriate channel linings or controlled drops to dissipate flow energy. Stone pitching</p>		

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									<p>should also be used to reinforce channel inverts on such slopes.</p> <p>-Landscaping and or re-vegetation of areas not occupied by buildings or paving should be constructed immediately after building works have been completed, or have reached a stage where newly established ground cover to all sub-structures is not at risk from the construction works.</p>		
General usage of water (Household, industries business, etc). Water pollution. No operational activities should impact on the	Local	Long term	Likely	Moderate	Low	High	No	Yes	<p>Waste water to be recycled and re-used as far as possible. Good monitoring and management measurements to be set in place by facilities managers.</p> <p>Adequate measures to be put in place to prevent surface and groundwater</p>	Low	4

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
quantity of groundwater available to surrounding borehole users.									contamination of any kind – responsibility of civil Engineers. All sewage infrastructures are to be maintained and checked at yearly intervals. No French drains allowed.		
Emissions from vehicles and operations affecting ambient air quality.	Local	Long term	Likely	Moderate	Low	High	Yes	Yes	Trucks and vehicles to be properly maintained; Operations to meet air quality standards. Roads will be paved and thus eliminate dust. Locate structures outside of the odour buffer zone.	Very Low	5
General human interference and impact leading to loss of species diversity and habitat characteristics.	Local	Short term	Likely	High	High	High	Yes	Yes	Once the 50m buffer zone has been allowed areas of high and medium-high floristic sensitivity must be demarcated by means of permanent means (fencing) to prevent disturbance of the wetland and the pollution the rivers. Landscaping guidelines which include an allowable	Moderate	3

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									<p>indigenous vegetation list that attracts fauna is to be formulated and implemented.</p> <p>Minimal to no exotic vegetation will be allowed.</p> <p>Indigenous vegetation must be maintained on the servitude on an annual basis and all exotics removed as they appear and disposed off appropriately. No fauna and flora species must harmed by maintenance staff during any routine checks of the infrastructure development</p>		
The ecological characteristics of the land development area and its surrounding. Habitat fragmentation	Local	Short-term	Likely	High	Low	Low	Yes	Yes	At present, alien encroachment is minimal but must be controlled during construction. The establishment or spread of alien plant species on site must be monitored and the correct removal and disposal of alien plant	Moderate	3

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
and negative impact on the functional contribution to the larger ecosystem Increase and spread of exotic invader species habitat destruction.									species must be followed. Rehabilitation of disturbed areas must commence as soon as construction activities are completed in those areas. All the sensitive area will be buffered to prevent disturbance.		
Loss of valuable landscape and habitat associated with environmental sensitive area and wetland areas.	Local	Short term	likely	Moderate	High	High	Yes	Yes	Buffer zone to be fenced off and only walkways that are strategically placed and infrastructure services properly designed and implemented allowed.	Very low	5
Impact on water and pollution	Local	Short term	likely	High	High	Moderate	Yes	Yes	The sewer reticulation networks infrastructure must be properly maintained on ongoing basis, the municipality will take the responsibility as well. Laying of	Moderate	3

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									reticulation pipelines will be according to the municipal standard. Storm water plan designed by the engineers will be sent to the municipality to ensure compliance. Water Resource Management is imperative.		
Potential impacts of leaking of pipes, bursting of reticulation pipes	Local	Short term	likely	Moderate	High	Low	Yes	Yes	The material that will be used when laying reticulation pipes will be of high quality to sustain the condition of the pipes when it is in operation. The good quality uPVC pipe will be used. They will range from 400mm to 900mm diameter. Leakage of water and sewer pipes must be properly monitored in order to minimise water loss and groundwater pollution.	Very low	5
A lack of management with regards to solid	Local	Short term	likely	Moderate	High	Low	Yes	Yes	There is already illegal waste dumping on site which is a clear indication that waste	Low	4

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
waste collection and sanitation could lead to surface water contamination.									management is not being properly managed. During the operation phase collection of waste must be regularly done. Waste must be sorted for recycling and recyclable waste must be removed from the premises. All other waste must be disposed of in an environmentally responsible manner Waste disposal must be closely monitored to prevent pollution and other adverse impacts, especially of the water resources. A comprehensive waste management plan with procedures must be developed and implemented for the development.		
Waste Disposal	Local	Short term	Likely	Moderate	High	High	Yes	Yes	Waste must be sorted for recycling and recyclable waste must be removed from the Reserve. All other waste must be	Low	4

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									disposed of in an environmentally responsible manner Waste disposal must be closely monitored to prevent pollution and other adverse impacts, especially of the water resources. A comprehensive waste management plan with procedures must be developed and implemented.		
Littering around the site.	Local	Short term	Likely	Low	Medium	Low	Yes	Yes	The municipality should ensure that waste generated is on a weekly basis collected.	Very Low	5
Aesthetics, Landscape Character and Sense of Place. Irresponsible and/or uncontrolled activity can have.  -Higher density development and	Local	Short term	Likely	Moderate	Moderate	low	Yes	Yes	Waste will be properly managed to avoid aesthetic impact and the landscape of the development will be appealing, grass and pavement will be developed. -Architectural guidelines (including aspects of roof and wall finishes, colours, heights of buildings, and lighting), as well as Landscape Architectural guidelines	Low	4



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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated ?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
change in land use. -Change in sense of place of the specific site, however appropriate and good design will result in an improved urban character and will positively enhance the place.									(screening, buffering, functioning, aesthetics etc) for the development will be developed to promote the enhancement of this urban area and therefore creating new and valuable places with a modified and positive urban.		
Increase waste to Landfill site.	Local	Short term	Likely	Low	High	High	Yes	Yes	The client will ensure that the development is well maintained.	Very Low	5
Active operational phase with residential leading to decrease in crime due to the creation of a more	Site	Short term	Likely	Moderate	High	High	Yes	Yes	Security provided via passive surveillance -Appropriate environmental design to address safety and security issues -Good accessibility for emergency and police services	Low	4

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
secure environment and minimising of vacant land.											
Increase of residents and users of the area. Additional vehicles on road servicing industrial and commercial uses.	Local	Long term	Likely	Moderate	High	High	Yes	Yes	All requirements of the municipality to be adhered to. All improvements to road infrastructure as recommended by traffic engineer to be adhered to.	Low	4
The socio economic impact communities in the land development area and its surrounding. Number of employment opportunities will be created during the	Local	Short term	Likely	Moderate	High	Low	Yes	Yes	This would be associated with a positive impact no mitigation required.	Moderate	3

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated ?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
operation phase. Where possible local people should be employed for this project. Livelihood of civilians will be improved both from a social and economic perspective. More people will be employed.											
Availability of services in the area.	Local	Long term	Likely	Low	High	High	Yes	Yes	-The engineers to ensure that adequate measures are in place for adequate service delivery that does not impact negatively on surrounding areas. -All requirements of the municipality to be adhered to regarding service reticulation	Low	4

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									and delivery. -Provision of a human settlement there will be crossing of N14 road.		
Employment of local workers. Decrease in unemployment and crimes. Employment and opportunities for BEE and local companies.	Local	Long term	Likely	Moderate	High	High	Yes	Yes	Local labour and employees to be made use of as far as possible for all aspects of the operational phase. BEE companies to be trained and involved in during the operational phase of the development e.g. Management of retail facilities, maintenance, landscaping, etc.	Very low	5
Safety risk to neighbours of explosion and fire during operation of the filling station	Local	Long term	Likely	High	None	High	Yes	Yes	Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station.	Very low	5
It is possible that the operation of an	Local	Long term	Likely	Moderate	High	High	Yes	Yes	Competition cannot be avoided however the filling station will not be within the	Very low	5

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
additional filling station could lead to the loss of business of the existing filling station and retrenchment of staff.									10km radius from the existing filling station in order to comply with the regulations of the FRA. It is envisaged that the development of the area will boost the economical status, influx of people to the area will be notable as a result more development will result in a creation of employment.		
Increase in demand for local goods and services. -Decrease in unemployment and empowerment of local trade and industry.	Local	Long term	Likely	Moderate	High	High	High	Yes	Increase in local population and therefore demand for local products, goods and services.	Moderate	3
Increase in service delivery and number of	Local	Long term	Likely	Moderate	High	High	Yes	Yes	No mitigation but vibrant community with access to services.	Moderate	3

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
housing units. Increase in taxes raised on property.											
Leakage of fuel from storage tanks into the soil, and into the wetland. Toxic compounds washed off the site by storm water, e.g. hydrocarbons from parking areas or the filling station forecourt, may negatively impact on ecosystem functioning off site.	Regional	Long term	Likely	High	Low	High	Yes	Yes	Adherence to national and industry standards for the installation of underground storage tanks and the operation of filling stations include secondary containment measures and the implementation of dedicated monitoring programmes. Management of the development must be in compliance with relevant environmental, water, and health legislation to contribute greatly to the mitigation of potential impacts on ground water. Storage tanks must be lined to prevent leakage. Adoption of a forecourt design which	Moderate	3

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									diverts potentially contaminated storm water to a separator; and Maintenance of spill kit on site for cleaning up larger spills.		
Noise Pollution. Noisy activities at the development site. Noise from vehicles using the new access road	Local	Short term	Likely	Moderate	High	High	Yes	Yes	Appropriate architectural design measures must be designed into the building. The architectural design consideration must be adequate in order to meet interior noise standards as specified by SANS 10103. Roof mounted fans may further require attenuators and need to be screened from noise sensitive areas. Night-time use of the facility should be kept to a minimum to ensure that no activities and regular operational activities, or movement of facility users to and from the facility disturb adjacent noise sensitive users.	Low	4

9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
During operation of the proposed project, additional energy will be consumed, resulting in a direct medium term increased demand on this resource. Energy efficiency resources are essential.	Local	Long term	Likely	Moderate	High	Low	Yes	Yes	Electricity provision should be extended to the new facilities that would require electricity connection. Refer to the Engineering Service Investigation Report attached as appendix G5. The solar system will also be installed as alternative energy source during the operation and water saving flush toilets should be installed.  The lighting mechanism and bulbs should be the ones using low voltages. Naturally lit and well ventilated buildings, that utilise alternative energy sources and those that are designed to offer attractive whole life performance to consumers are more likely to be sound wealth investments than those which are over-dependent on fossil fuels or	Low	4



9.6 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE											
Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Significance of impact	Reversibility of impacts	Irreplaceability of receiving environment/ resource	Can impact be Avoided?	Can impact be mitigated?	Potential Mitigation Measure	Significance of residual impact (after mitigation)	Ranking of impact
									which ignore the fundamental human need for a healthy and engaging environment. Increasingly, the design and layout of buildings necessitate active measures to maintain conditions which ensure the health and safety.		

### 9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE

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Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
All the rubble would need to be removed and disposed of Off-site. As a result, there will be a potential increase in the amount of waste sent to the landfill site.	Local	Long term	likely	Moderate	Moderate	Moderate	Low	Yes	Yes	All permanent buildings must be removed from the site. Removals should be phased so that rehabilitation can begin and soil surfaces are not exposed for too long. All rubble must be removed to a licensed waste disposal facility. Alternative uses for all waste materials should be sorted and recycling should take place where possible.  Infrastructure removal must be phased in order to reduce soil exposure and the risk of soil erosion. Rehabilitation should begin as soon as buildings are removed to ensure that	Low	4

**9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE**

Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
										soil is stabilised as soon as possible. Any fuel required on site must be stored in a bunded area with walls high enough to contain 110% of the total volume of the hazardous material. Care must be taken not to contaminate soils on site. A full rehabilitation plan needs to be compiled in order for the soils to be adequately rehabilitated to their original state		
Decommissioning activities causing erosion.	Local	Long term	Likely	Moderate	Moderate	Low	High	Yes	Yes	The site will need to be rehabilitated and re-vegetated preventing any possible erosion once decommissioning is complete. Control measures must be implemented during decommissioning and care should be taken to prevent any rubble or other waste material entering the river or wetland.	Low	4

**9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE**

Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
Construction rubble / waste entering the water course could lead to increased sedimentation and impact on water quality.	Local	Long term	Mode rate	Substantial	Mode rate	Low	High	Yes	Yes	Control measures must be implemented during decommissioning and care should be taken to prevent any rubble or other waste material entering the water course.	Low	4
Increase waste to Landfill site.	Local	Long term	Mode rate	Substantial	Mode rate	Low	High	No	Yes	Waste streams will be separated and recycled where possible to limit amount of waste added to the landfill site. Skip bins must be placed on site during the decommissioning phase to accommodate rubble and other waste. As with the construction and operating phases, separating and recycling of waste must be made a priority. All other waste must	Low	4

**9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE**

Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
										be removed to the Landfill site.		
Air pollution impacts	Local	Long term	Moderate	Substantial	Moderate	Moderate	Moderate	Yes	No	Dust created during the removal of the buildings and associated infrastructure could potentially adversely affect nearby landowners. This potential issue must be managed through the damping down of exposed soils. The rehabilitation of the site must be made a priority in order to avoid dust becoming an issue in the surrounding areas.	Low	4
Flora and Fauna Impacts	Local	Long term	Definite	High	Moderate	Low	High	Yes	Yes	Care must be taken during the decommissioning phase to take account and not disturb any fauna which may have re-inhabited the area since the inception of the camp. No fauna must be harmed through the process. Indigenous vegetation must be	Low	4

**9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE**

Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
										utilised for the rehabilitation of the site. Vegetation similar to that of the surrounding areas should be used. A full rehabilitation plan is recommended in this regard to ensure that the site is returned to its original state. Any exotic species must be removed immediately during the rehabilitation process. The process should be carried out as quickly as possible to ensure that the disturbance of fauna is kept to a minimum.		
Socio-economic Impacts	Local	Long term	Definite	Moderate	High	Low	High	No	No	Employees working on the Integrated Human Settlement must be given sufficient notification of the closure of the Human Settlement in order for them to search for alternative employment. All employees must	Moderate	3

**9.7 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING PHASE**

Nature of Impacts	Extent of impact	Duration of impacts	Probability of impacts	Consequences	Significance of impacts	Reversibility of impacts	Irreplaceability of receiving environment	Can impact be avoided?	Can impact be mitigated?	Potential mitigation	Significance of residual impact	Ranking of impact/risk
										be compensated for accordingly.		

## 9.8 Impact Assessment Methodology

Briefly describe the methodology utilized in the rating of significance of impacts

### 1) METHODOLOGY OF IMPACT ASSESSMENT

According to the DEA IEM Series guideline on "Impact Significance" (2002), there are a number of quantitative and qualitative methods that can be used to identify the significance of impacts resulting from a development. The process of determining impact significance should ideally involve a process of determining the acceptability of a predicted impact to society. Making this process explicit and open to public comment and input would be an improvement of the BA process. Lesekha Consulting approach to determining significance is generally as follows:

- Use of expert opinion by the specialists ("professional judgment"), based on their experience, a site visit and analysis, and use of existing guidelines and strategic planning documents and conservation mapping(e.g. SANBI biodiversity databases);
- Our approach is more a qualitative approach - we do not have a formal matrix calculation of significance as is sometimes done.

### 2) SPECIALIST CRITERIA FOR IMPACT ASSESSMENT

The following methodology has been provided by the Lesekha Consulting for incorporation into assessments:

#### Assessment of Potential Impacts

The assessment of impact significance is based on the following conventions:

**Nature of Impact** - this reviews the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"

**Spatial Extent** - this should indicate whether the impact will be:

- Site specific;
- Local (<2 km from site);
- Regional (within 30 km of site); or
- National.

**Duration** - The timeframe during which (lifetime of) the impact will be experienced:

- Temporary (less than 1 year);
- Short term (1 to 6 years);
- Medium term (6 to 15 years);
- Long term (the impact will cease after the operational life of the activity); or



- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

**Intensity** - it should be established whether the impact is destructive or innocuous and should be described as either:

- High (severe alteration of natural systems, patterns or processes such that they temporarily or permanently cease);
- Medium (notable alteration of natural systems, patterns or processes; where the environment continues to function but in a modified manner); or
- Low (negligible or no alteration of natural systems, patterns or processes); can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.

**Probability** - this considers the likelihood of the impact occurring and should be described as:

- Improbable (little or no chance of occurring);
- Probable (<50% chance of occurring);
- Highly probable (50 – 90% chance of occurring); or
- Definite (>90% chance of occurring).

**Reversibility** - this considers the degree to which the adverse environmental impacts are reversible or irreversible. For example, an impact will be described as low should the impact have little chance of being rectified to correct environmental impacts. On the other hand, an impact such as the nuisance factor caused by noise impacts from wind turbines can be considered to be highly reversible at the end of the project lifespan. The assessment of the reversibility of potential impacts is based on the following terms:

- High - impacts on the environment at the end of the operational life cycle are highly reversible;
- Moderate - impacts on the environment at the end of the operational life cycle are reasonably reversible;
- Low - impacts on the environment at the end of the operational life cycle are slightly reversible; or
- Non-reversible - impacts on the environment at the end of the operational life cycle are not reversible and are consequently permanent.

**Irreplaceability** - this reviews the extent to which an environmental resource is replaceable or irreplaceable. For example, if the proposed project will be undertaken on land that is already transformed and degraded, this will yield a low irreplaceability score; however, should a proposed development destroy wetland systems for example, these may be considered irreplaceable and thus be described as high. The assessment of the degree to which the impact causes irreplaceable loss of resources is based on the following terms:

- High irreplaceability of resources (this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (this is the most favourable assessment for the environment).

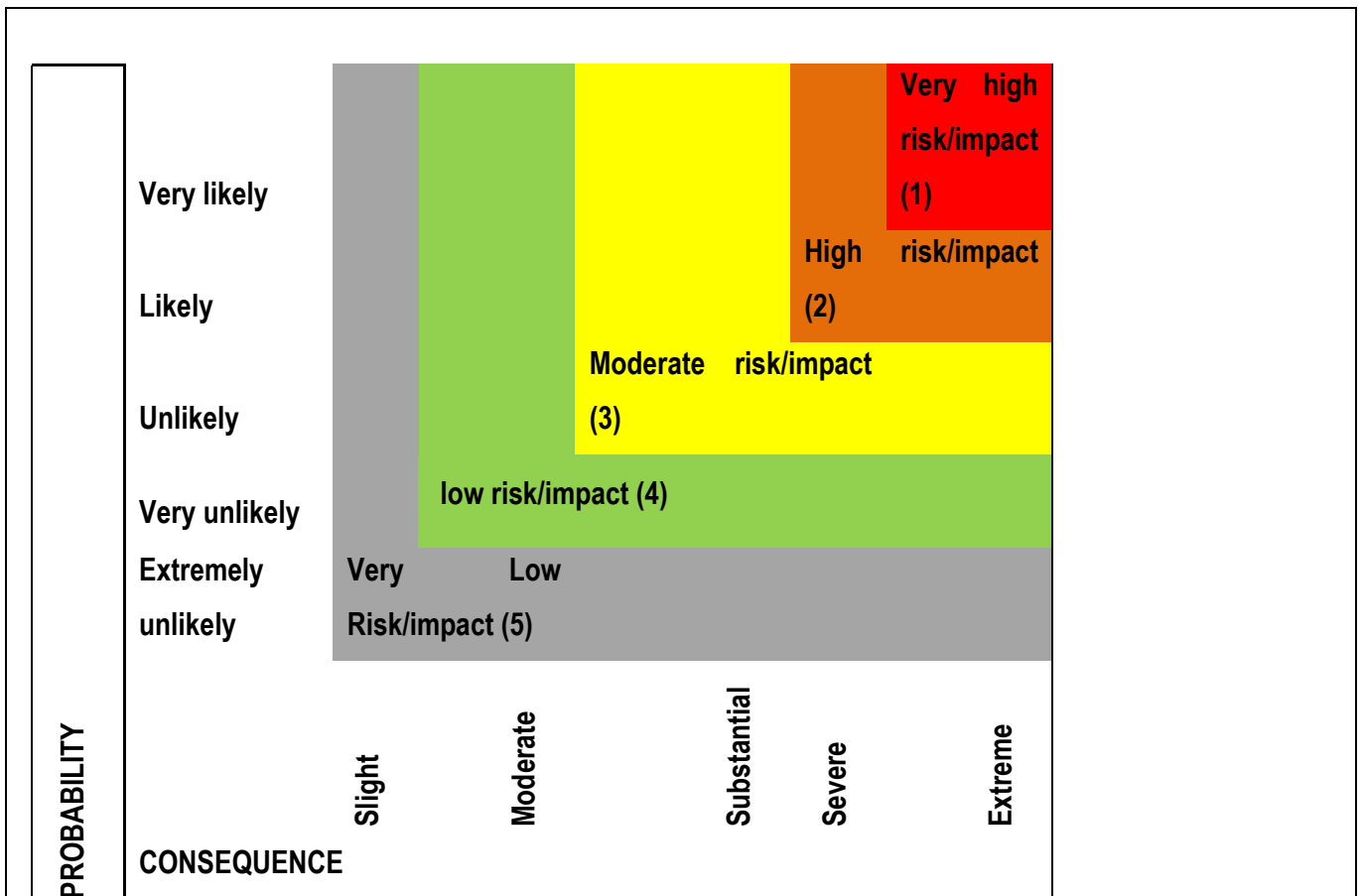


Figure 8: Guide to assessing risk/impact significance as a result of consequence and probability.

The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

**Status of the impact:** A description as to whether the impact will be:

- Positive (environment overall benefits from impact);
- Negative (environment overall adversely affected); or
- Neutral (environment overall not affected).

**Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as:

- High;
- Medium; or
- Low.

Based on the above considerations, the specialist provides an overall evaluation of the significance of the potential impact, which should be described as follows:

- **Low to very low:** the impact may result in minor alterations of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated;
- **Medium:** the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated; or
- **High:** Where it could have a “no-go” implication for the project unless mitigation or re-design is practically achievable. Furthermore, the following must be considered:
  - Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
  - All impacts should be evaluated for the construction, operation and decommissioning phases of the project, where relevant.
  - The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.

#### **Management Actions:**

- Where negative impacts are identified, mitigatory measures will be identified to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated.
- Where positive impacts are identified, augmentation measures will be identified to potentially enhance these.
- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.

#### **Monitoring:**

Specialists should recommend monitoring requirements to assess the effectiveness of mitigation actions, indicating what actions are required, by whom, and the timing and frequency thereof.

#### **Cumulative Impact:**

Consideration is given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts are evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

#### **Mitigation:**

The objective of mitigation is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on the receiving environment and

to maximise re-vegetation and rehabilitation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potentially negative impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested. Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts. Feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. The No-Go alternative will be considered.

### **9.9. Summary of positive and negative impacts identified**

The proposed Integrated Human Settlement results in both positive and negative impacts on the environment and the surrounding community. This draft EIAR and the draft EMPr aims to ensure that the positive impacts of the proposed development are enhanced, while the negative impacts are avoided or minimized. In instances where the negative impacts cannot be avoided nor minimized, with robust consultations with the various specialists measures are put in place that further assist in ensuring that the best practicable methods are applied.

The positive impacts of the proposed development are as follows:

- Temporary/short term employment opportunities, which turns to skills development within the surrounding community.
- Provision of housing to curb the housing backlog within the JBMLM.
- Creation of open spaces to be incorporated into the development.
- Provision of bulk infrastructure for the JBMLM on implementation of the proposed bulk services works.

#### **The negative impacts of the proposed development are as follows:**

- The development will cause pressure on the municipality's capacity of bulk services; this would be the result on not implementing the proposed bulk service activities.

- The activities associated with the construction phase of the development will result in loss of both Flora and Fauna.
- The activities to be undertaken during the construction phase have potential to impact surface and groundwater resources.
- Construction activities are more likely to cause changes in air quality within the surrounding immediate environment.
- The development will result in a change of land use, which could alternatively be used for agricultural activities.
- Increased traffic and noise due to construction activities.
- For the whole duration of the construction phase, there will be visual impacts as a result of the construction activities.
- There is Health safety risks associated with the construction phase.
- Increase in the generation of waste as a result of construction activities.
- Destruction of the Heritage sites and graves.

It is important to emphasize that the negative impacts can be avoided or minimized through implementation of the EMP during the project life cycles of the proposed development.

#### **9.10 The possible mitigation measures that could be applied and the level of risk.**

The following mitigation measures are some of the proposed methods to manage the proposed Integrated Human Settlement activities at the site in order to prevent and mitigate potential environmental impacts:

- 1) **Air Quality:** The project's main potential effect on air quality will be dust emission during the construction phase. Wet suppression will be employed on the haul roads and stockpiles areas. The objective will be to maintain a **low** risk.
- 2) **Soil, Land Capability and Land Use:** The risk of causing a significant degradation of topsoil quality and associated loss of land capability after rehabilitation will be minimized to a **low** level by:
  - a. Taking care to strip and stockpile topsoil, subsoil and overburden layers selectively and to prevent mixing of especially topsoil with any of the other layers;

b. Analysing the topsoil, fertilising it appropriately and re-vegetating it with local indigenous flora to re-establish the pre-project land use, which was natural veld.

3) **Ecology:** Successful restoration of the land capability will encourage natural re-colonisation of the rehabilitated area by Red data species, but it may require re-introduction of some species over time in order to reduce the risk of a low-functioning or unbalanced ecosystem to a **low** level.

4) **Cultural and Heritage aspects:** The graves sites that have been identified must be fenced and protected. The rubbing stones must not be disturbed and be fenced off. Unless unknown graves are unearthed, the expected impact on cultural and heritage resources is likely to be of **negligible** significance;

5) **Socio-economics:** The Integrated Human Settlement will provide, given the levels of unemployment in the area, the impact is expected to be of **moderate** significance.

Other methods to manage the proposed sand mining activities at the site in order to prevent and mitigate potential environmental impacts:

- Spillages must be cleaned appropriately;
- Implement strict housekeeping measures;
- Store raw materials inside a roofed structure that is not prone to wind-blown dust;
- Make staff aware of potential environmental impacts;
- Waste (general and hazardous) must be correctly managed to prevent nuisance conditions or environmental pollution.
- Develop and implement a waste management plan;
- Appropriate bonding and containment measures will be implemented to prevent contamination of stormwater due to spillages of hazardous substances.
- Restrict the area of impact to as small an area as possible;
- Ensure health and safety of employees during the Construction phase.
- Prevent soil erosion, contamination and undertake appropriate remedial actions.
- Where possible limit the removal of riparian vegetation.
- Dust mask/Face mask will be provided to all employees working in the likely dusty areas.
- Proper maintenance of vehicles will be done, which minimize the pollutants.
- Vehicles should be covered by tarpaulin to reduce spillage on roads.
- Regular checking & Maintenance of vehicles, trucks, dumpers etc, will be conducted and pollution under control (PUC) vehicle will be used during transportation.
- Periodically, water will be sprinkled on haul roads to wet the surface.

## **9.11 Description of the process undertaken to identify, assess and rank the impacts**

### **1) Project screening and understanding the baseline environment**

In order to identify and fatal environmental or social flaws that the project may encounter, an initial project screening was conducted where all knowledge sources of the area are assessed and analysed. Site visits to determine the possible impacts the proposed project may have, and highlights which impacts need to be studied further. The description of the baseline environmental and socio-economic conditions above provides information on receptors and resources that have been identified as having the potential to be significantly affected by the proposed project. It also describes baseline conditions that have been used to make the assessment. The description of the baseline is aimed at providing sufficient detail to meet the following objectives:

- To identify the key conditions and sensitivities in areas potentially affected by the proposed Integrated Human Settlement Project;
- To provide a basis for extrapolation of the current situation, and development of future scenarios without the proposed Project;
- To provide data to aid the prediction and evaluation of possible impacts of the proposed project;
- To understand public concerns, perceptions and expectations regarding the proposed project;
- To allow the proposed Project to develop appropriate mitigation measures; and
- To provide a benchmark to assess future changes and to assess the effectiveness of mitigation measures.

### **2) Public Participation**

The key principle of consultation is to ensure that the views of the public are taken into. The objective is to ensure the assessment is robust, transparent and has considered the full range of issues or perceptions, and to an appropriate level of detail.

### **3) Specialist studies**

Specialist studies were commissioned to provide the information necessary to respond to the key issues associated with the proposed project. The Specialist studies were used to address issues raised during scoping and provide sufficient information that can be used by decision-makers.

### **4) Assessment of Impacts and Mitigation**

Please see **(VI)** for the Impact Assessment Methodology used to identify, assess and rank the potential impacts associated with the development.

**10. Summary of the findings and recommendations of specialist report.**



**Summary of the findings and recommendations of any specialist report**

<b>Specialist study</b>	<b>Method</b>	<b>Findings</b>	<b>Recommendations</b>
<b>Heritage Impact Assessment</b>	<ul style="list-style-type: none"> <li>• Desktop study and a site visit of the area done.</li> </ul>	<ul style="list-style-type: none"> <li>• Cemetery was used over a long period of time. Though most graves have no tombstones or dates it seems that the cemetery was at least used from the 1950's to modern times.</li> <li>• Near the farm workers area a possible single grave was recorded at S26° 19' 50.43" &amp; E26° 48' 14.11".</li> <li>• Remains of a farm settlement were recorded at S26° 20' 02.56" &amp; E 26° 48' 08.52.</li> <li>• On a rocky outcrop at S26° 19' 56.02" &amp; E 26° 47' 35.24 is an extensive animal rubbing site visible as well as on a number of other boulders.</li> </ul>	<ul style="list-style-type: none"> <li>• The JB Marks heritage site is protected by Act and should be maintained in good condition.</li> <li>• The animal rubbing stones should be protected, fenced in and retained as part of an open space development.</li> <li>• The farm workers area can be demolished.</li> <li>• The large cemetery should be cleaned and fenced in and maintained in a good condition.</li> <li>• The possible single grave should be investigated by a heritage specialist in a separate report on before any decisions are taken.</li> </ul>
<b>Biodiversity Assessment Study</b>	<ul style="list-style-type: none"> <li>• Desk study</li> <li>• Site visit</li> </ul>	<ul style="list-style-type: none"> <li>• immense degradation of the site has occurred because of uncontrolled veld fires, illegal dumping and overflowing sewage,</li> </ul>	<ul style="list-style-type: none"> <li>• ensure the protection and conservation of specific critical biodiversity areas and thus supporting</li> </ul>

**Summary of the findings and recommendations of any specialist report**

Specialist study	Method	Findings	Recommendations
		<p>therefore no ecological significant species were identified</p> <ul style="list-style-type: none"> <li>• no Red data species were recorded on the site.</li> <li>• The evidence of dung moderately modified. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged and spoor suggests that animals were present in the area although very few were recorded during the surveys.</li> <li>• The wetland is</li> </ul>	<p>biodiversity in close proximity of facilities.</p> <ul style="list-style-type: none"> <li>• Ensure activities associated with the development do not disrupt ecological services, rehabilitation ecosystems supporting and contribute to improving habitat for endangered species by supporting habitat restoration.</li> <li>• Wetlands and water courses in close proximity of the development must be guarded against direct or indirect pollution of all water courses, especially water and soil pollution through spillage, run-off, stormwater must be prevented, pollution needs to be contained.</li> <li>• Adhere to all environmental legislation, consider monitoring of water bodies of high natural ecological value also</li> </ul>

Summary of the findings and recommendations of any specialist report			
Specialist study	Method	Findings	Recommendations
			be ensuring that water flow is not disrupted.
<b>Geo-Hydrological Study</b> (Hydro-Geo Engineers (Pty) Ltd)	<ul style="list-style-type: none"> <li>• Desktop study</li> <li>• Site visit which include site assessment, water sampling</li> <li>• GIS mapping</li> <li>• Impact Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Based on a review of the project description and activities, the project will have additional land clearings during the construction of houses and other amenities. The following project activities are likely to cause an impact to surface water during the construction and operational phases: <ul style="list-style-type: none"> <li>• Site clearing, including the removal of existing housing shakes;</li> <li>• Construction of additional culverts, bridges and roads; and</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Upgrading and new drainage structures such as culverts and drains is anticipated to improve drainage of water through the proposed integrated human settlement thereby implying a limited source for water quantity impacts limited to construction phase.</li> </ul>
<b>Flood line study</b> (Hydro-Geo Engineers (Pty) Ltd)	<b>Rational Method</b> The conservation of mass and is applicable for catchment areas below 15 km <sup>2</sup> . Aerial and time distributions of rainfall in this method are assumed to be uniform throughout the catchment. Flood	Refer to the map on page 21 of the Flood line Study.	<ul style="list-style-type: none"> <li>• A detailed design studies be undertaken in more detail for design purposes of road that any supporting structures located within the flood-lines are designed to withstand</li> </ul>

**Summary of the findings and recommendations of any specialist report**

<b>Specialist study</b>	<b>Method</b>	<b>Findings</b>	<b>Recommendations</b>
	peaks and empirical hydrographs can be determined by this method.		the flow velocities. This will necessitate more detailed elevation data to a good resolution even up to 0.5 / 1m.
<b>Geo-technical Study</b>	<ul style="list-style-type: none"> <li>• Desktop Study</li> <li>• Field Work</li> <li>• Site visit</li> <li>• Lab testing</li> </ul>	<ul style="list-style-type: none"> <li>• The slope falls from approximately 1502 in the southeast to approximately 1495 in the northwest. Outcrops, scattered outcrops and sub-outcrops were not encountered across the site.</li> <li>• The soil profile comprises of a relatively variable thickness of transported material varying between 0.3 m and greater than 3.0 m in thickness, overlying pedogenic soils derived from the transported and residual granite.</li> <li>• The transported soils and the Plasticity Index (PI whole) of these samples ranges between non-plastic conditions and 12% with the Liquid Limit (LL) between non-plastic conditions and 51%, the</li> </ul>	

**Summary of the findings and recommendations of any specialist report**

<b>Specialist study</b>	<b>Method</b>	<b>Findings</b>	<b>Recommendations</b>
		<p>clay percentage is between 7% and 35% and the Linear Shrinkage between 0% and 10%. These results indicate soils with low to medium potential expansiveness</p>	
<p><b>Traffic Impact Assessment</b></p>	<ul style="list-style-type: none"> <li>• A site visit to observe current travel patterns, road geometry and to gain an understanding of the study area,</li> <li>• Trip generation, trip distribution and assignment,</li> <li>• Traffic Counts,</li> <li>• Capacity analysis,</li> <li>• Sites access,</li> <li>• Throat lengths,</li> <li>• Conceptual layouts,</li> <li>• All findings, recommendations and conclusion captured in the report.</li> </ul>	<ul style="list-style-type: none"> <li>• The road network and intersections operations will still be highly acceptable during the operational phase of the Integrated Human Settlement.</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-development A to obtain 2 intersections off R30 that will provide access to site. First to be situated at approximately 600m to the north of the intersection of R30/N14, the second access to be at approximately 700m from the first intersection. Access to be as per the SANRAL specification.</li> <li>• Sub-development B and C to obtain one intersection off R30 that will provide access to both developments. The access to be situated at approximately 800m to the south of the intersection of</li> </ul>

Summary of the findings and recommendations of any specialist report			
Specialist study	Method	Findings	Recommendations
			<p>R30/N14. Access to be as per SANRAL specification.</p> <ul style="list-style-type: none"> <li>• Sub-development D to obtain access off Letsibaba Street.</li> <li>• A 1,5m paved sidewalk to be constructed within the internal property roads on the properties frontage to cater for NMT.</li> </ul>

**10.1 Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.**

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this study are included within an EMPr.

The EMPr must be used to ensure compliance with environmental specifications and management measures. The implementation of the EMPr for the life cycle phases of the project is considered to be vital in achieving the appropriate environmental management standards as detailed for this project. The proponent is not negated from complying with any other statutory requirements that is applicable to the undertaking of the activity. Relevant key legislation that must be complied with by the proponent includes inter alia:

- Provisions of the National Environmental Management Waste Act (No. 59 of 2008);
- Provisions of the National Water Act, 1998 (Act No 36 of 1998);
- Provisions of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- Provisions of the National Environmental Management: Biodiveristy Act, 2004 (Act 10 of 2004)
- Provisions of the National Environmental Management :Protected area Act , 2003 ( Act 57 of 2003)

In addition, the following key conditions should be included as part of the authorisation:

- The proponent must appoint a suitably experienced (independent) Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation / rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the EMPr.
- The site falls under CBA type 1, ideally, the landscape must be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity capability of the areas is lost and the conservation targets cannot be met therefore they must.
- A scientifically calculated buffer of 33m is considered appropriate for this site. The delineated wetlands, together with the buffer zones should be considered as a sensitive area and excluded from the development footprint. It is further important to take the position of the watercourse within landscape (Figure 7 of the Biodiversity Study) into consideration when planning development as this is the area where water will flow and accumulate.
- Wetlands and water courses in close proximity of the development must be guarded against direct or indirect pollution of all water courses, especially water and soil pollution through spillage, run-off, storm-water must be prevented, pollution needs to be contained. All sensitive sites will be rehabilitated.
- The topography of the site is undulating and the site is prone to ponding and flooding therefore Storm water reticulation design and construction of storm water infrastructure should ensure that overall development of the study area does not increase the rate of storm water runoff above that which the natural ground can safely accommodate at any point in the sub catchments thus post development runoff should be equal or less than the pre-development runoff. It is expected that the retention pond(s) will be required to act as a flood control measure to attenuate peak storm water runoff into natural water courses.
- Steeper watercourses (especially in portion 206 IP) should be protected from erosion through the use of appropriate channel linings or controlled drops to dissipate flow energy. Stone pitching should also be used to reinforce channel inverts on such slopes.
- The site is underlain by relatively variable material comprising mainly sandy clayey silts and sandy –silty clays. Localised areas of the site are anticipated to be underlain by soils that may exhibit low bearing pressures with low plasticity. These soils may be prone to settlement under structural load and special foundation must be design for various areas.
- A large cemetery that was recorded at site 3 with 38 graves should be cleaned and fenced in and maintained in a good condition. The JB Marks heritage site is protected by Act 25 of 1999 and should be maintained in good condition.

## **10.2 Description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed**

- All information provided by Lesekha Consulting and their specialist consultants was correct and valid at the time it was provided;
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process;
- All data from an unpublished research is valid and accurate; and
- The scope of this investigation is limited to assessing the potential environmental impacts associated with the Proposed Integrated Human Settlement in Ventersdorp.
- These assumptions, uncertainties and knowledge gaps are inclusive of the limitations of each specialist study conducted for the proposed development.

### **10.1 A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;**

An Environmental Assessment Practitioner (EAP) has found that the proposed Integrated Human Settlement in Ventersdorp can continue on the basis that the buffer zones as per the specialist's reports and all the mitigation measures in this report and the EMPr will be implemented on site. The studies conducted for the proposed development show that the vegetation on site has been disturbed because the land was previously cultivated and informal settlements. All the cultural heritage of the site will be protected as outlined in the Heritage Impact Assessment as it pertains to the cemetery within the study area.

From the outcomes of this assessment it is the view of the EAP that a positive environmental authorisation be issued for this project since it will have positive social and economic contribution, It is however acknowledged that there will be impacts on the biophysical environment; conversely with the implementation of the mitigation measures outlined in this report and the EMPr as well as through adequate environmental monitoring and enforcement those impacts can be successfully mitigated.



## EAP DECLARATION AND UNDERTAKING

I Lesego Senna herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties and inputs and recommendation from specialist have been correctly recorded in the report.

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Signature of the environmental assessment practitioner:

Date: 12 February 2017

## REFERENCE

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