

ENVIRONMENTAL IMPACT ASSESSMENT  
DRAFT SCOPING REPORT  
LEEUFONTEIN X24 PROJECT

30 AUGUST 2016

**TEXTURE**  
ENVIRONMENTAL CONSULTANTS



LEEUFONTEIN X 24 DRAFT SCOPING REPORT

DATE: 30 AUGUST 2016

Compiled by:

Texture Environmental Consultants

PO Box 36593

MENLOPARK

Pretoria

0102

Contact Person Details:

Mientjie Coetzee

Tel 083 253 2246

Fax 086 675 4026

Email: [mientjie@peopletexture.co.za](mailto:mientjie@peopletexture.co.za)

Client/Proponent:

MR AUST SANDWERKE CC

P.O Box 15485

Lynn East

0039

Contact Person Details:

Mr Herman Aust

Cell : 083 561 1299

Email : austsand@mweb.co.za

## Table of contents

---

Table of contents .....	4
Figures.....	5
Tables.....	5
Annexures .....	6
Acronyms.....	6
Glossary of Terms .....	7
1 Introduction .....	10
1.1 Background .....	10
1.2 Approach to the Environmental Impact Assessment Process .....	10
2 Details of Environmental Assessment Practitioner.....	14
3 Locality and Nature of Activity.....	15
3.1 Project Locality and Extent.....	15
3.2 Site Description and Surrounding Land Uses.....	18
3.3 Project Description .....	20
3.4 Civil Services .....	21
4 Need and Desirability.....	21
5 Legal Framework .....	21
5.1 The Constitution of South Africa.....	21
5.2 National Legislation and Regulations .....	21
5.3 Provincial Policies.....	29
5.4 Local Policies.....	31
6 Project Alternatives .....	31
6.1 Land Use Alternatives .....	31
6.2 Layout Alternatives .....	33
6.3 No Go Alternative .....	33
7 Description of Receiving Environment .....	33
7.1 Physical Environment.....	33
7.2 Biological Environment.....	36
7.3 Social Environment.....	46
8 Public Participation Process.....	53
8.3 Site Notification.....	55
8.4 Advertising.....	55
8.6 Background Information Document (BID).....	55
8.7 Public Meeting/Open day .....	56
8.8 Issues Register.....	56
8.9 Public Review of the Scoping Report .....	56
8.10 Final Scoping Report.....	56
9 Potential Impacts associated with the project .....	56
9.1 Construction Phase .....	56
9.2 Operational Phase.....	58
9.3 Decommissioning phase .....	59
9.4 Cumulative Impacts .....	59

10	Plan of Study for Environmental Impact Assessment.....	59
10.1	Approach to undertaking the EIA Phase of the Project .....	59
10.2	Public Participation during the EIA Phase .....	63
11	Conclusions and Recommendations.....	64

## Figures

---

Figure 1:	Locality Map (Wider context)
Figure 2:	Locality Map (Local)
Figure 3:	Locality Map (Google Earth)
Figure 4:	Aerial Map
Figure 5:	Surrounding Townships and Access
Figure 6:	Layout Plan
Figure 7:	Watercourses in the region
Figure 8:	Delineated watercourses
Figure 9:	Ridges Map
Figure 10:	Critical Biodiversity Areas (CBA)
Figure 11:	Location of the cultural sites

## Tables

---

Table 1:	Scoping Report Structure
Table 2:	EAP Details
Table 3:	Land Use Details
Table 4:	Listed Activities
Table 5:	Priority Flora Species per 1:50 000 Grid Reference
Table 6:	Veldtype status
Table 7:	Ecosystem Status: Simplified explanation of categories used
Table 8:	Alien plants identified in the study area
Table 9:	Red Data Faunal Species likely to occur in the area
Table 10:	Floristic sensitivity analysis
Table 11:	Faunal sensitivity analysis
Table 12:	Ecological Sensitivity analysis
Table 13:	Classification of ridges in Gauteng Province
Table 14:	Unemployment figures of municipalities
Table 15:	Key stakeholders
Table 16:	Issues and impacts identified during the Construction Phase
Table 17:	Issues and impacts identified during the Operational Phase
Table 18:	Criteria to be used for rating of impacts
Table 19:	Significance Rating of Classified Impacts

## Annexures

---

Appendix A:	Company Profile
Appendix B:	Public Participation
Appendix C:	Figures

## Acronyms

---

CBA	Critical Biodiversity Area
CMA	Catchment Management Agencies
CoT	City of Tshwane
C-Plan	Conservation Plan
CR	Critically Endangered
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
FSR	Final Scoping Report
GAPA	Gauteng Agricultural Potential Atlas
GDARD	Gauteng Department of Agriculture and Rural Development
IDP	Integrated Development Plan
HGM	Hydrogeomorphic
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IBA	Important Bird Areas
IEM	Integrated Environmental Management
KLM	Kungwini Local Municipality
LT	Least Threatened
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMWA	National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)
NEMAQA	National Environment Management: Air Quality Act (No.39 of 2004)
NFEPA	National fresh water ecosystem priority areas
NLM	Nokeng Tsa Taemane Local Municipality
NPAES	National protected areas expansion strategy
NWA	National Water Act (Act 36 of 1998)
PDA	Primary Drainage Area
PES	Present Ecological State
PPP	Public Participation Process
PoS	EIA Plan of Study for Environmental Impact Assessment
QDA	Quaternary Drainage Areas
QDS	Quarter Degree Square
REMC	Recommended Ecological Management Class
SR	Scoping Report
SAHRA	South African Heritage Resources Agency
SWSA	Strategic water source areas of South Africa
VU	Vulnerable
WMA	Water Management Areas

## Glossary of Terms

---

**Activity (Development)** – an action either planned or existing that may result in environmental impacts through pollution or resource use.

**Alternative** – a possible course of action, in place of another, of achieving the same desired goal of the proposed project. Alternatives can refer to any of the following but are not limited to: site alternatives, site layout alternatives, design or technology alternatives, process alternatives or a no-go alternative. All reasonable alternatives must be rigorously explored and objectively evaluated.

**Applicant** – the project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

**Biodiversity** – the diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.

**Construction** – means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

**Cumulative Impacts** – 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 to produce a greater impact or different impacts.

**Direct impacts** – impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.

**Ecosystem** – a dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous.

**Environment** – In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), “Environment” means the surroundings within which humans exist and that are made up of:

- a) the land, water and atmosphere of the earth;
- b) micro-organisms, plants and animal life;
- c) any part or combination of (i) of (ii) and the interrelationships among and between them; and
- d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

**Environmental Assessment (EA)** – the generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.

**Environmental Authorisation** – an authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

**Environmental Assessment Practitioner** – the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental

management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

**Environmental Impact** – a change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisations, activities, products or services.

**Environmental Impact Assessment (EIA)** – the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

**Environmental Issue** – a concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.

**Environmental Management** - ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

**Environmental Management Programme** - A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMP focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

**Expansion** - means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

**Fatal Flaw** – issue or conflict (real or perceived) that could result in developments being rejected or stopped.

**General Waste** – household water, construction rubble, garden waste and certain dry industrial and commercial waste which does not pose an immediate threat to man or the environment.

**Hazardous Waste** – waste that may cause ill health or increase mortality in humans, flora and fauna.

**Indirect impacts** – indirect or induced changes that may occur as a result of the activity. These types of impacts include all of 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.

**Integrated Environmental Management** – a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity – at local, national and international level - that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision support systems or advisory councils).

**Interested and Affected Party** – for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in Section 24(4)(a)(v), and which includes - (a) any person, group of persons or organisation interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.



**Mitigate** – the implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.

**No-Go Option** – in this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.

**Open Space** – environmentally sensitive areas which are not suitable for development and consist of watercourses, buffers, floodplains, steep slopes, sensitive biodiversity and/or areas of cultural or heritage significance.

**Rehabilitation** – a measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.

**Scoping** – the process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addresses in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.

**Sensitive environment** – any environment identified as being sensitive to the impacts of the development.

**Significance** – significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).

**Stakeholder engagement** – the process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.

Sustainable Development – development which meets the needs of current generations without hindering future generations from meeting their own needs.

**Watercourse** – means:

- a) a river or spring;
- b) a natural channel or depression in which water flows regularly or intermittently;
- c) a wetland, lake or dam into which, or from which, water flows; and
- d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

**Wetland** – means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

# 1 Introduction

---

## 1.1 Background

MR Aust Sandwerke CC proposes the development of a mixed-use township development on Portions 47, 49 & 50 of the farm Nooitgedacht 333 JR to be known as Leeuwfontein X 24. The study area is approximately 142 ha in extent and falls within Tshwane Metropolitan Municipality, Gauteng Province. Access to the site will be obtained from the Moloto road (K54/R573) situated on the western boundary of the site. The proposed access road traverses Portion 46 of the farm Nooitgedacht 333 JR.

Portions 47, 49 & 50 of the farm Nooitgedacht 333 JR is currently being utilized for the mining of sand, hard rock and clay. There is an existing mining right on the property in the name of MR Aust Sandwerke CC.

MR Aust Sandwerke CC appointed **Texture Environmental Consultants** as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed Leeuwfontein X 24 project.

## 1.2 Approach to the Environmental Impact Assessment Process

The environmental impacts associated with the proposed project require investigation in compliance with the Environmental Impact Assessment Regulations (2014) published in Government Notice No. R. 982, R. 983, R. 984 and R. 985 read with Section 24 (5) of the National Environmental Management Act (NEMA Act No 107 of 1998) (as amended).

The Gauteng Department of Agriculture and Rural Development (GDARD) is the lead authority for this Environmental Impact Assessment (EIA) process and the development needs to be authorised by this Department in accordance with the National Environmental Management Act 107 of 1998 (NEMA) (as amended).

The required environmental process to be followed is being undertaken in two phases:

- **Phase 1: Scoping Phase**  
Scoping Report (SR) including Plan of Study for EIA
- **Phase 2: EIA Phase**  
Environmental Impact Assessment Report (EIAR) and Environmental Management Programme (EMPr).

### 1.2.1 Scoping Phase

The SR provides a description of the receiving environment and how the environment may be affected by the development of the proposed project. Desktop studies making use of existing information will be used to highlight and assist in the identification of potential significant impacts (both biophysical and social) associated with the proposed project.

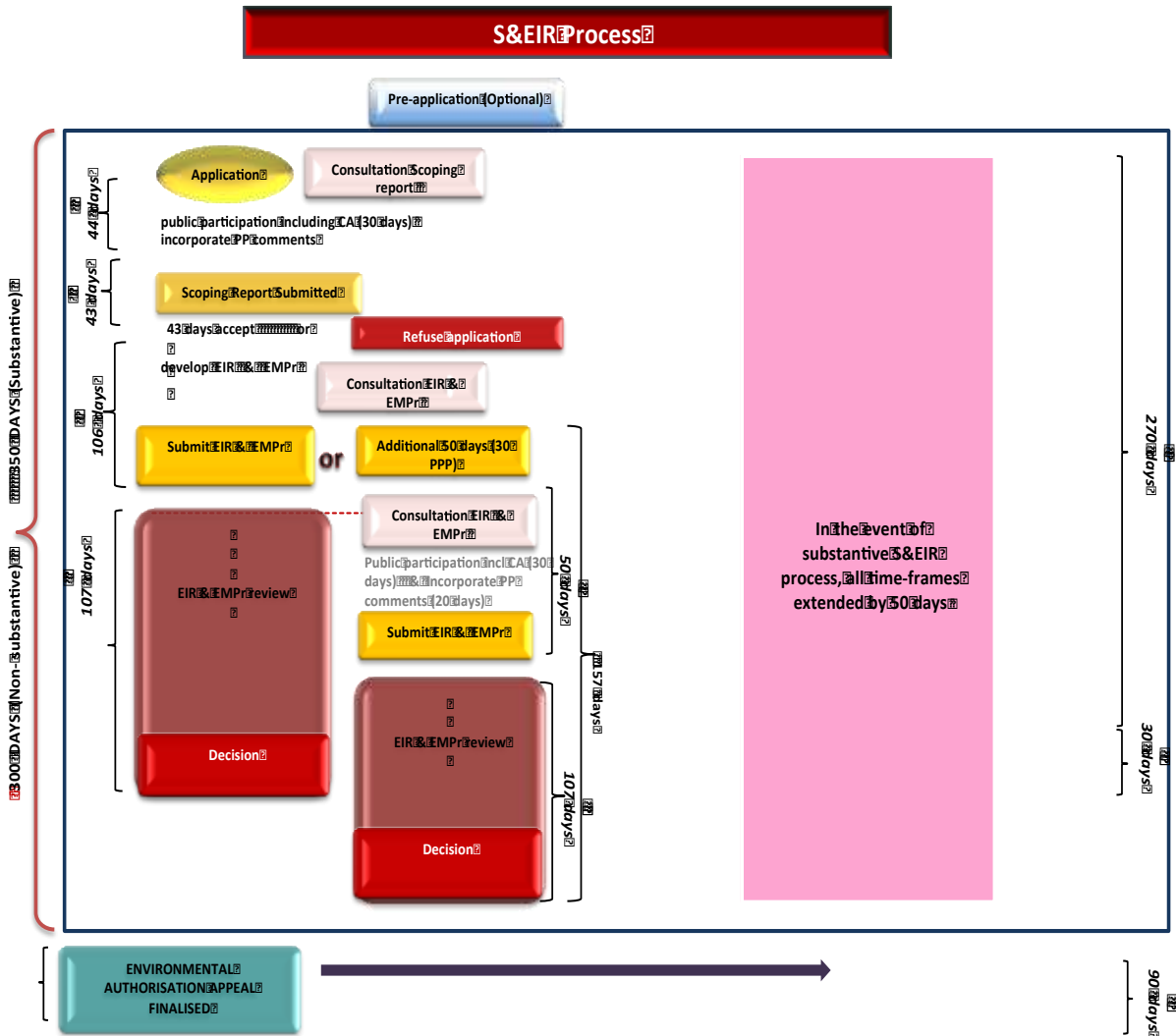
Additional issues for consideration will be extracted from feedback from the public participation process, which commenced at the beginning of the Scoping Phase, and will continue throughout the duration of the project. All issues identified during this phase of the study will be documented within the SR. Thus, the SR will provide a record of all issues identified as well as any fatal flaws, in order to make recommendations regarding the project and further studies required to be undertaken within the EIA phase of the proposed project.

### 1.2.2 Environmental Impact Assessment Phase

The Environmental Impact Assessment Report will aim to achieve the following:

- to provide an overall assessment of the biophysical and social environments of the affected area;
- to undertake a detailed assessment of the preferred site/alternatives in terms of environmental criteria including the rating of significant impacts;
- to identify and recommend appropriate mitigation measures (to be included in an EMPr) for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded and commented on and addressed in the EIA process.

The EIA process is represented diagrammatically in the Schedule below:





### 1.3 Scoping Report Structure

This Scoping Report was compiled in accordance with Section 21(3) of NEMA's 2014 EIA Regulations (GN R. 982), and consists of the following:

**Table 1: Scoping Report Structure**

<b>SECTION</b>	<b>CONTENT</b>
SECTION 1 Introduction	Introduction and overview of the application.
SECTION 2 Details of EAP	Presents information regarding the EAP involved in the proposed project.
SECTION 3 Locality and nature of the project	Provides detailed information regarding the proposed project and associated required infrastructure.
SECTION 4 Project motivation	Presents the need and desirability of the proposed project.
SECTION 5 Legal framework	Includes an explanation on all applicable legislation.
SECTION 6 Project Alternatives	Consideration of alternatives (locality, land use, layout and No-Go) for the project.
SECTION 7 Receiving environment	Provides the baseline information of the biophysical and social environments being impacted by the development proposal.
SECTION 8 Public participation process	Provides an overview of the Public Participation Process for the Scoping Phase of the project, and describes the process and activities that will be undertaken during the EIA Phase in terms of public participation.
SECTION 9 Potential impacts associated with the development	A description of the environmental impacts on the biophysical and social environments.
SECTION 10 Plan of study for EIA	Details the Plan of Study and specialist investigations that will be undertaken during the EIA Phase.
SECTION 11 Conclusion	Conclusions and recommendations of the Environmental Scoping Study.

### 1.4 Assumptions and Limitations

This report is based on currently available information and, as a result, the following limitations and assumptions are implicit –

- The report is based on the project description provided by Urban Consult Town Planners. The proposed township development proposal may still undergo further iterations and refinements before the development proposal can be regarded as definitive. A project description based on the final development proposal will be provided in the EIA Phase;
- Descriptions of the biophysical and social environments are based on specialist fieldwork and investigations, engineering team reports, available literature and GIS support tools. More information

will be provided in the EIA phase based on the outcomes of the specialist studies and public involvement.

- This Scoping Report has identified the potential environmental impacts associated with the proposed township application. However, the scope of impacts presented in this report could change, should new information become available during the EIA Phase, or additional information is provided to the EAP.

## 2 Details of Environmental Assessment Practitioner

As per the requirements of the National Environmental Management Act: NEMA, 1998 (Act No. 107 of 1998), (NEMA) and the EIA Regulations, December 2014, the following information is pertinent with regards to the Environmental Assessment Practitioner (EAP) that has been appointed for the Environmental Assessment Phase, for the proposed Leeuwfontein X 24 development.

**Texture Environmental Consultants** is a specialist-consulting organisation focusing on key and pressing issues related to the environment. Texture has been in operation since 2006 and has successfully completed dozens of projects on behalf of numerous clients.

As an organisation Texture can either deliver one set of specialist services or deliver a broader solution that encompasses a number of specialist disciplines. Since 2006 we have built core competencies in a number of areas drawing on expertise our people have developed over the past 20 years. Our ability to synthesize various specialist disciplines into well-integrated analyses and findings forms the basis of our value proposition. As a consulting entity we often provide our clients with an end-to-end set of services that significantly mitigate the delivery and operational risk.

The multi-disciplinary structure of Texture engenders a sound holistic approach to environmental management and sustainability, which keeps abreast of the latest trends in the global environmental arena through personal development initiatives.

In order for the company to meet the emerging environmental challenges, Texture has assembled a team of professionals, consisting of a core of environmental experts with extensive experience in environmental assessments. The team includes environmentalists, various specialists, and public participation experts. A range of township developments as well as linear projects including water pipelines and power lines have been successfully completed over the years. **Refer to Company Profile attached as Appendix A.**

**Texture Environmental Consultants** has no vested interest in the proposed Leeuwfontein X 24 development and hereby declares its independence as required by the EIA Regulations.

**Table 2: EAP Details**

Detail	Texture Environmental Consultants (Pty) Ltd	
Contact Persons	Ria Pretorius	Mientjie Coetzee
Postal Address	PO Box 36593 MENLOPARK Pretoria 0102	PO Box 36593 MENLOPARK Pretoria 0102
Telephone	082 568 6344	083 253 2246
Facsimile	086 689 1515	086 689 1515
E-mail	ria@peopletexture.co.za	mientjie@peopletexture.co.za
Qualification	Masters in Research Psychology (Environmental) Member IAIAA, Environmental Law Society	Master of Science Member IAIAA
Experience	Ria Pretorius is a career professional	Mientjie Coetzee has 14 years experience in

	<p>Environmental Specialist with 30 years subject matter expertise in researching, consulting and managing interventions in Environmental Management and Sciences. Since 2004 she has specialized in Environmental Impact assessments and has successfully completed multiple projects for numerous clients. She has extensive experience in the conducting of Environmental impact assessments, inclusive of the required public participation, EMPs etc. A range of township development as well as linear projects including water pipelines and power lines have been successfully completed over the years.</p>	<p>the Environmental Sector and has gained experience as environmental consultant and project manager working on a wide range of projects including residential, mixed land-use, industrial, roads and filling stations. Her primary skills include Environmental Screening Assessments, Environmental Impact Assessments (EIAs), Waste Management License Applications, Public Participation and Environmental Management Programmes (EMPs).</p>
--	--	---

### 3 Locality and Nature of Activity

#### 3.1 Project Locality and Extent

The project is situated to the north-east of Mahube Valley and Mamelodi and located on Portions 47, 49 & 50 of the farm Nooitgedacht 333 JR within Tshwane Metropolitan Municipality, Gauteng Province. The access road is proposed to traverse Portion 46 of the farm Nooitgedacht 333 JR situated on the western boundary of the site. Access to the site will be obtained from the Moloto road (K54/R573). *Please see Figure 1: Locality Map (wider context), Figure 2: Locality Map (local) and Figure 3: Aerial Map.*

The GPS coordinates of the centre of the site is 25°40'25.10" S; 28°26'19.59" E and the 21 digit Surveyor General Codes for the properties are T0JR00000000033300047, T0JR00000000033300049 and T0JR00000000033300050. The study area is approximately 142,7981 ha in extent.



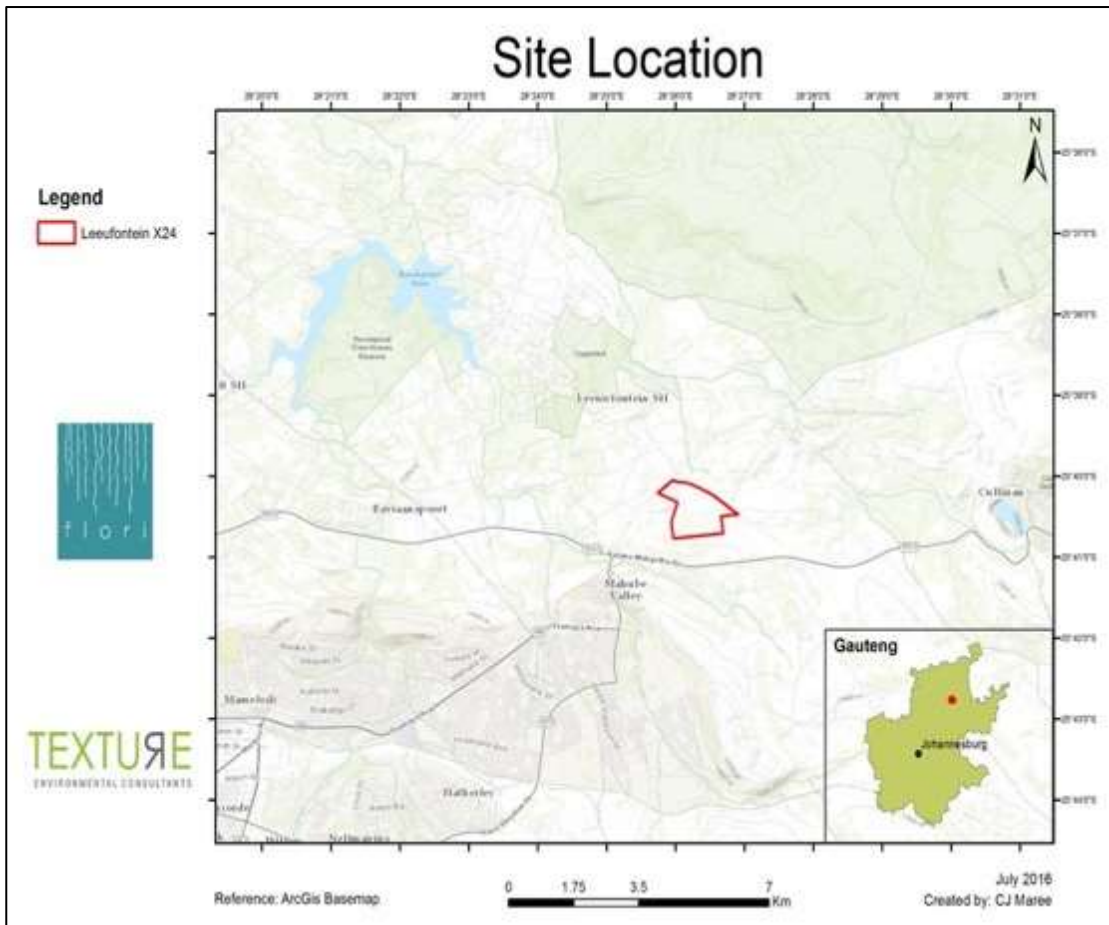


Figure 1: Locality Map (wider context)

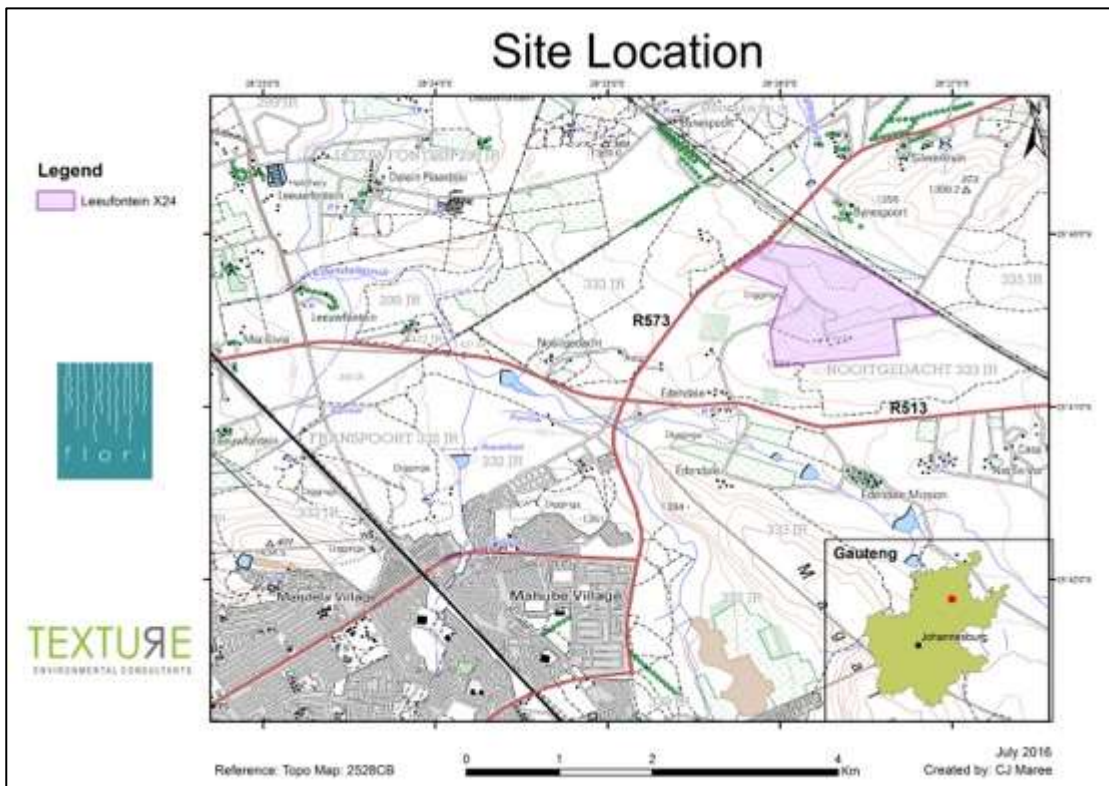


Figure 2: Locality Map (local)





Figure 3: Locality Map (Google Earth)



Figure 4: Aerial Map (Google Earth)

## 3.2 Site Description and Surrounding Land Uses

### 3.2.1 Site Description

The study area is currently being utilized for the mining of sand, hard rock and clay. There is an existing mining right on the property in the name of MR Aust Sandwerke CC. An existing old order mining license for the mining of sand was approved on 7 May 2003 under the name of MR Aust Sandwerke CC with reference number ML10/2003. The mining right was for the Remaining extent of Portion 1 of the farm Nooitgedacht 333-JR in the Cullinan District, which is now subdivided into 15 smaller portions and includes Portions 47, 49 and 50 of the farm Nooitgedacht 333-JR. The mineral that was initially applied for is Sand (General) only. A Section 102 Application in terms of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) was made for an increase in the mining area to include portions of Portions 49 and 50 and to include Hard Rock and Clay. The mining area would increase to 142,7981 hectares. Not all of this area will be mined though and some has already been rehabilitated while others will be conserved as open space. The Environmental Management Plan (EMP) submitted for the converted new order mining right was completed and approved by the Department of Mineral Resources (DMR) on 21 January 2013. An application will be made for the closure of the mine which will include the decommissioning and rehabilitation of the mine. The existing mine infrastructure include fixed and mobile screens, a processing plant, workshops, stores, general office buildings and staff accommodation.

Portions of the study area are used for agricultural purposes (crops and cattle). A Telkom mast is situated on the ridge situated on the southern boundary.

Images of the study area illustrating views and existing land uses:



1. View from existing entrance



2. MR Aust Sandwerke Office Buildings



3. View from the entrance to the south-west



4. View from north-western boundary



5. View of quarry in south-western section



6. View to the ridge on southern boundary





7. Agricultural infrastructure in southern section



8. Mining activities



9. Slimes Dam associated with mining

### 3.2.2 Surrounding Land Uses

The surrounding area is rural and consists mainly of farms and smallholdings. The predominant land uses are mining and small-scale farming. Agricultural related activities include abattoirs and processing plants, feedlots (Kameeldrift Voere), processing plants feedlot), residential (existing and proposed). The Cullinan Mine Conservancy is situated on the eastern boundary.

A new residential development is currently being constructed across the existing access to the study area. A number of new residential developments had already been approved to the west of the site i.e. Glenway Estate, Leeufontein X 21. Existing residential developments in Mahube Valley and Mamelodi are located to the south-west.

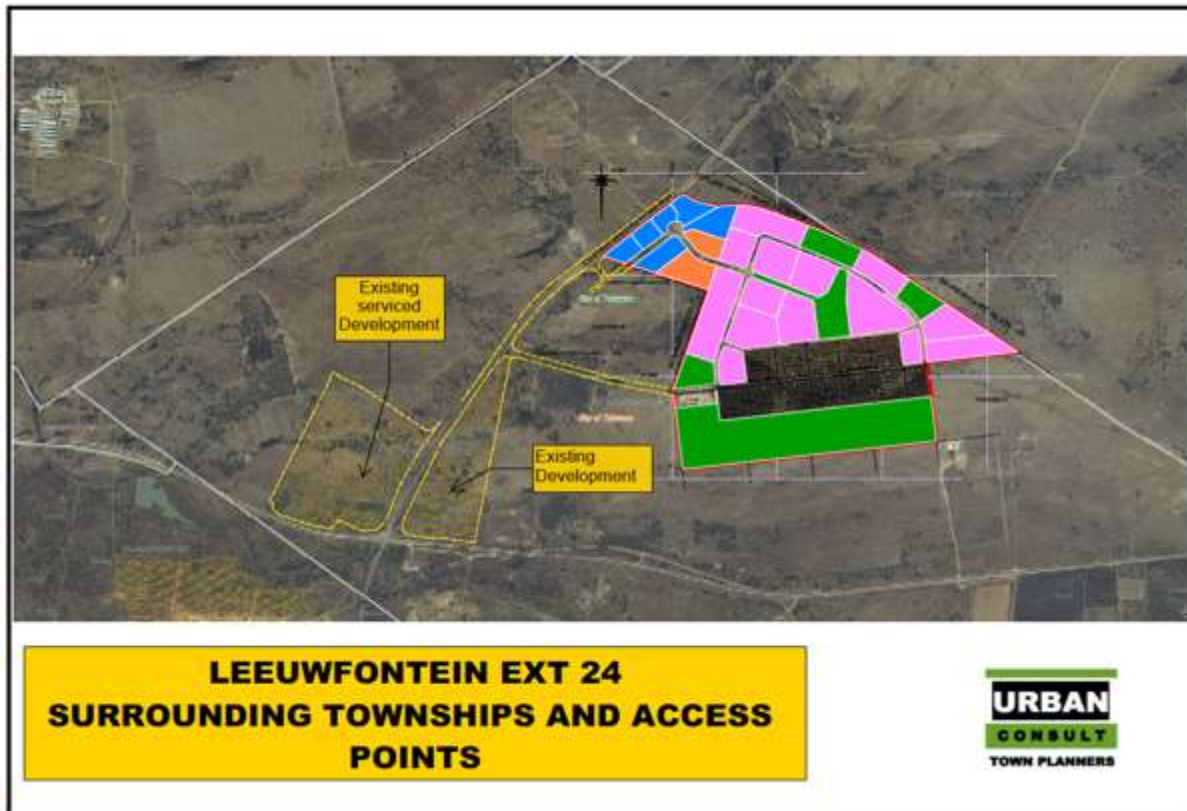


Figure 5: Surrounding Townships and Access Points

### 3.3 Project Description

The Applicant, MR Aust Sandwerke CC, proposes the establishment of a mixed use township consisting of the following land uses: Special mixed uses (commercial, business, light industrial); Residential 2 (30 units/ha); Residential 3 (60 units/ha); Community Facilities and Public Open Space. The township will be known as Leeuwfontein X 24. Refer to Figure 6: Proposed Layout Plan.

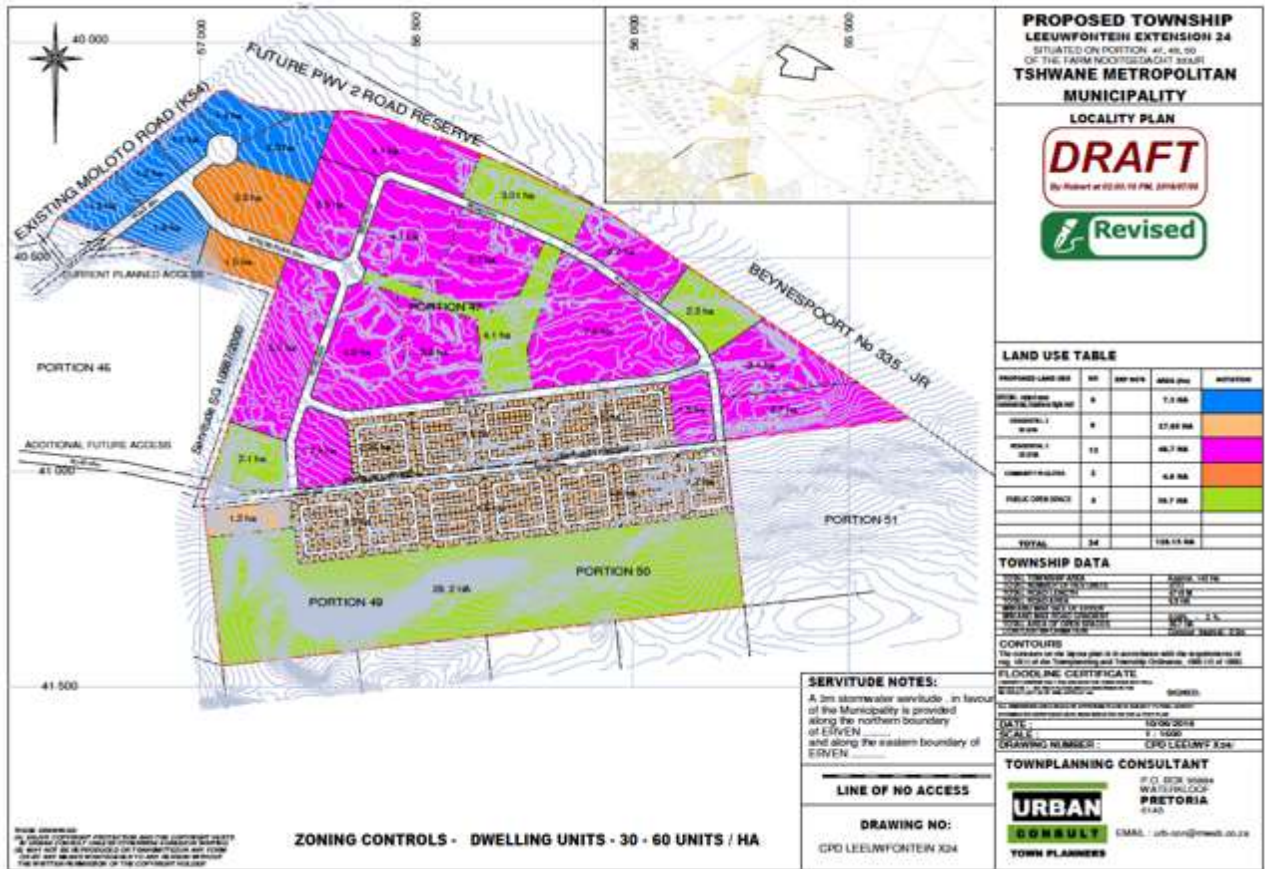
Urban Consult had been appointed to submit the Town Planning Application for the proposed Leeuwfontein X 24 development.

The proposal includes the construction of a mixed use development consisting of the following land uses:

**Table 3: Land Use Details**

Proposed Land Use	No of erven	Area
Special mixed uses (commercial, business, light industrial)	6	7.3 ha
Residential 2 (30 units/ha)	8	27.65 ha
Residential 3 (60 units/ha)	13	48.7 ha
Community Facilities	2	4.8 ha
Public Open Space	5	39.7 ha
<b>Total</b>	<b>34</b>	<b>128.15</b>

**Figure 6: Layout Plan**



### 3.4 Civil Services

Civil and Electrical engineers will be appointed to conduct Civil Services (water, sewer, stormwater, roads) and Electrical Services Reports. The availability of civil services and electricity must be confirmed and the required upgradings must be determined.

A Traffic Impact Assessment must be conducted and the necessary road upgradings to accommodate the proposed development must be determined.

## 4 Need and Desirability

---

The proposed development will provide a mixed land use with a variety of densities to cater for a broad spectrum of housing types and housing needs. There is a demand for entry level housing nationally and locally. The development is ideally situated in close proximity to Mamelodi and extensions and a well-developed road infrastructure.

An extensive motivation in terms of need and desirability as well as land development objectives will be included in the Motivating Memorandum in the EIR.

The proponent wishes to attain the following goals associated with the Leeuwfontein X 24 Township:

- The provision of different housing typologies;
- The provision of commercial, business and light industrial space;
- The provision of community facilities for use by inhabitants; and
- Ensure proper access to services for inhabitants of the proposal.

The site is located in an area where there is a strong demand for affordable housing. The proposed development will assist to alleviate the housing shortage in this area.

## 5 Legal Framework

---

### 5.1 The Constitution of South Africa

Section 24 of the Constitution of South Africa (No. 108 of 1996) states that "...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 (c) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in the National Environmental Management Act (Act No. 107 of 1998) (as amended) and given further expression.

### 5.2 National Legislation and Regulations

The national legislations and regulations listed here are applicable to the proposed development and the requirements and obligations therein have been considered during the scoping process:

### 5.2.1 National Environmental Management Act, Act 107 of 1998 and EIA Regulations 2014

National Environmental Management Act, Act 107 of 1998: The Environmental Impact Assessment Regulations 2014: The NEMA EIA 2014 regulations and the listing notices thereto are relevant.

In terms of the EIA Regulations (GN R. 983, 984 and 985) of December 2014, a number of listed activities, as summarised in the table below, have been identified that may be triggered by the proposed project, and which will subsequently require environmental authorisation from GDARD:

**Table 4: Listed activities for the proposed Leeuwfontein x 24 (to be confirmed):**

Relative Notice	Activity No	Description (Verbatim and applicability to the project)
GN R983/2014	9	<p>The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-</p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more; 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</p> <p>(b) where such development will occur within an urban area.</p> <p><i>Applicability</i> <i>Will be confirmed during the EIA Phase</i></p>
GN R983/2014	10	<p>The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, processwater, waste water, return water, industrial discharge or slimes</p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more; excluding where-</p> <p>(a) such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve; or</p> <p>(b) where such development will occur within an urban area.</p> <p><i>Applicability</i> <i>Will be confirmed during the EIA Phase</i></p>
GN R983/2014	19	<p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from –</p> <p>(i) a watercourse;</p> <p>(ii) the seashore; or</p> <p>(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater –</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving –</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or falls within the ambit of activity 21 of this Notice, in which case that activity applies.</p> <p><i>Applicability</i> <i>Will be confirmed during the EIA Phase</i></p>
GN R983/2014	22	<p>The decommissioning of any activity requiring -</p> <p>(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or</p>



		<p>(ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.</p> <p><i>Applicability</i> A closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) is required for the existing mining activity on the study area</p>
GN R983/2014	24	<p>The development of-</p> <p>(i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</p> <p>(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding-</p> <p>(a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or</p> <p>(b) roads where the entire road falls within an urban area.</p> <p><i>Applicability</i> The proposed development will take place on land used for sand mining</p>
GN R983/2014	25	<p>The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.</p> <p><i>Applicability</i> Will be confirmed during the EIA Phase</p>
GN R983/2014	26	<p>Residential, retail, recreational, tourism, commercial or institutional developments of 1000 square metres or more, on land previously used for mining or heavy industrial purposes;</p> <p>- excluding -</p> <p>(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or</p> <p>(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or</p> <p>(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.</p> <p><i>Applicability</i> The proposed development will take place on land previously used for sand mining</p>
GN R983/2014	27	<p>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for –</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><i>Applicability</i> Will be confirmed during the EIA Phase</p>
GN R983/2014	28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture 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  (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;  excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p> <p><i>Applicability</i>  A portion of the study area is being used for agriculture</p>
GN 984/2014	15	<p>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-  (i) the undertaking of a linear activity; or  (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><i>Applicability</i>  Will be confirmed during the EIA Phase</p>
GN 985/2014	1	<p>The development of billboards exceeding 18 square metres in size outside urban areas, mining areas or industrial complexes  (c) In Gauteng:</p> <ol style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy Focus Areas;</li> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li>iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No.10 of 2004);</li> <li>vi. Important Bird and Biodiversity Areas (IBA);</li> <li>vii. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> <li>viii. Sites or areas identified in terms of an International Convention</li> <li>ix. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003);</li> <li>x. Sites designated as nature reserves within municipal SDFs; or</li> <li>xi. Sites zoned for conservation or public open space or equivalent zoning.</li> </ol> <p><i>Applicability</i>  Will be confirmed during the EIA Phase</p>
GN 985/2014	4	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.  (c) In Gauteng:</p> <ol style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy Focus Areas;</li> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li>iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No.10 of 2004);</li> <li>vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> </ol>



		<p>vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;</p> <p>viii. Important Bird and Biodiversity Area (IBA);</p> <p>ix. Sites or areas identified in terms of an International Convention;</p> <p>x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003);</p> <p>xi. Sites designated as nature reserves within municipal SDFs; or</p> <p>xii. Sites zoned for a conservation or public open space or equivalent zoning.</p> <p><i>Applicability</i> <i>Will be confirmed during the EIA Phase</i></p>
GN 985/2014	12	<p>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.</p> <p>(a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces:</p> <p>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>ii. Within critical biodiversity areas identified in bioregional plans;</p> <p>iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or</p> <p>iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p> <p><i>Applicability</i> <i>Will be confirmed during the EIA Phase</i></p>

## 5.2.2 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. In terms of the Biodiversity Act, the developer has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations).
- Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.
- National Spatial Biodiversity Assessment, The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

*An ecological specialist was appointed to undertake the flora and fauna biodiversity assessment, with specific attention to Red Data Listed species, habitats and biodiversity. The specialist study is aligned to*

requirements of this act. The proposed development aligns to the purpose of this Act and the above-mentioned specialist report.

The sustainable utilisation of indigenous biological resources, i.e. indigenous vegetation species will be reintroduced to the newly created urban open spaces as far as possible, thereby resulting in an ecological urban regeneration strategy.

### 5.2.3 National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

This Act (NEM:PAA) aims to provide for a national system of protected areas in South Africa as a part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure protection of the entire range of biodiversity, referring to natural landscapes and seascapes.

The Act makes express reference to the need to move towards Community Based Natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas.

The purpose of the Act is:

- To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity;
- To conserve biodiversity in those areas;
- To protect South Africa's rare species;
- To protect vulnerable or ecologically sensitive areas;
- To assist in ensuring the sustained supply of environmental goods and services;
- To provide for the sustainable use of natural and biological resources;
- To create or augment destinations for nature-based tourism;
- To manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- To contribute to human, social, cultural, spiritual and economic development; and
- To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures, which must be followed before any of the kinds of protected areas are declared.

*The Biodiversity Assessment Study took the NEM:PAA into consideration. The study area does not fall within any national priority areas.*

### 5.2.4 National Environmental Management Waste Act (NEMWA), 2008 (Act No. 59 of 2008) (as amended)

The NEM: Waste Act (NEMWA) was accented to on 10 March 2009 and came into effect on 01 July 2009. This Act repeals the sections in the Environment Conservation Act, Act 73 of 1989. The Act was established to regulate waste management for the protection of human health and the environment.

NEMWA seeks to reform the law on waste management by making provision for various measures for the prevention of pollution and ecological degradation, as well as ecologically sustainable development in order to protect health and the environment through waste management. The objectives of NEMWA include

minimising the consumption of natural resources; avoiding and minimising the generation of waste; reducing, re-using, recycling and recovering waste; treating and safely disposing of waste as a last resort; promoting and ensuring the effective delivery of waste services; remediating land where contamination presents or may present a significant risk of harm to health or the environment; and achieving integrated waste management reporting and planning.

National Waste Act, 2008 (Act No. 59 of 2008): National Domestic Waste Collection Standards.

This legislation aims to enforce an integrated approach to waste management, with emphasis on prevention and reduction of waste at source and, where this is not possible, to encourage reuse and recycling in preference to disposal.

*The proposed project does not include an activity listed under NEMWA, and therefore does not require a waste management license.*

### **5.2.5 National Water Act, 1998, Act 36 of 1998**

The act defines certain environmental elements, such as water courses and riparian habitats, and activities, such as waste. It also states that any act or omission, which pollutes or is likely to pollute a water resource is an offence and it indicates what activities are also subject to license applications that must be considered during the environmental authorisation process.

Section 21 of the National Water Act, 1998 (Act 36 of 1998) lists activities that require a license or registration if permissible under General Authorisation.

Section 19 of the National Water Act, Act 36 of 1998 and Section 28 of the National Environmental Management Act, Act 107 of 1998 imposes a duty of care on all responsible persons whose operations has the potential to cause water pollution or environmental degradation to take reasonable measures to prevent it from occurring, continuing or recurring.

The Act requires that (where applicable) the 1:50 and 1:100 year flood line be indicated on all the development drawings that are being submitted for approval.

*The erven of the proposed town do not fall within the 1:100 year flood line as described in the Water Act. The proposed project does not include any activity listed under the National Water Act that require a water use license.*

### **5.2.6 National Environmental Management: Air Quality Act, Act 39 of 2004**

The National Environment Management: Air Quality Act (No.39 of 2004) provides the basis for the management of air pollution in South Africa. The remaining provisions of NEMAQA came into effect on 1 April 2010 in terms of GN 220 of 26 March 2010. Section 21 of the Act enables the Minister to publish a list of activities which result in atmospheric emissions for which an atmospheric emission license is required. Such a list and associated emissions standards have been published in GN 248 (in GG 33075) also commenced with effect from 01 April 2010.

The emission of dust is addressed in Government Notice No.1210 (in GG 32816), which sets National Ambient Air Quality Standards in terms of Section 9(1) of the Air Quality Act. Dust is addressed in terms of the standards set for the emission of particulate matter (PM10) in Regulation 3.1 of GN1210.

Part 6 of the Air Quality Act addresses measures in respect of dust. Section 32 enables the Minister to prescribe measures for the control of dust in specified places or areas.

*The proposed project does not require an atmospheric emission license.*

### **5.2.7 Water Services Act, 1997, Act 108 of 1997**

This Act sets requirements for entering into services agreements with the water services provider and determination of the capacity of the services provider to accommodate the proposed development.

*The Department of Water and Sanitation will receive a copy of this draft scoping report, for their review and input. This input will assist with the EIA phase of the development.*

### **5.2.8 National Heritage Resources, Act, 1999, Act 25 of 1999**

The Act sets requirements for assessment of impacts on the cultural and heritage assets, the processes to be followed in notifying the competent authority and the elements of a report on the assessment. The protection of archaeological and palaeontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, palaeontological material and meteorites are the property of the State. "Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority".

A Heritage Impact Assessment must be done under the following circumstances:

- a. Any development or other activity that will change the character of a site and exceed 5 000m<sup>2</sup> or involve three or more existing erven or subdivisions thereof
- b. Re-zoning of a site exceeding 10 000 m<sup>2</sup>

*The size of this site qualifies for a Heritage Impact Assessment (HIA). A Cultural Heritage Consultant was appointed to conduct a HIA.*

### **5.2.9 Occupational Health and Safety Act, 1993, Act 85 of 1993**

The objective of this Act is to provide for the health and safety of persons at work. The considerations of the Act must be incorporated into the construction phase environmental management programme during the EIA process.

### **5.2.10 Sustainable Development**

The principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (Act No. 108 of 1996) and given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations.

Therefore, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;

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

*The proposed development will incorporate sustainable design principles.*

### 5.3 Provincial Policies

The provincial policies and guidelines listed here are applicable to the proposed development and the requirements and obligations therein have been considered during the Scoping process:

#### 5.3.1 Gauteng Conservation-Plan 3.3 (2011)

According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area is outside of any Critical Biodiversity Areas (CBAs), but with Ecological Support Areas (ESAs) in the south and west. These demarcated ESAs are ridges.

*The Gauteng C-Plan 3.3 (2011) will be taken into consideration in the layout of the proposed development.*

#### 5.3.2 Gauteng Draft Ridges Policy

The quartzite ridges of Gauteng are one of the most important natural assets in the northern provinces of South Africa. This is because these ridges, and the area immediately surrounding the ridges, provide habitat for a wide variety of fauna and flora, some of which are Red List, rare or endemic species or, in the case of certain of the plant species, are found nowhere else in South Africa or the world. The ridges also fulfill functions that are necessary for the sustainability of ecosystems such as the recharging of groundwater, wetlands and rivers, wildlife dispersal and providing essential habitat for pollinators. Ridges also have a socio-cultural role in that they provide aesthetically pleasing environments that are valued by residents, tourists and recreational users. Human activities such as urbanisation, mining and the planting of alien vegetation may undermine the contribution that ridges make to the environment. The conservation of ridges falls within the ambit of the environmental right and this policy comprises one of the measures that GDARD has taken to give effect to the environmental right in respect of ridges, therefore ensuring that:

- The use of ridges is sustainable;
- Members of the public are able to make informed decisions regarding proposals for development on ridges and the use of ridges;
- Officials make consistent decisions in respect of planning and environmental applications that involve negative impacts on ridges; and
- The Department's responsibility in respect of the protection of the environment is carried out in an efficient and considered manner.

*Two ridges were identified on the study area. In terms of the categories for ridges in Gauteng, the two ridges in the study area would be classified as Class 1 ridges. The Gauteng Draft Ridges Policy will have to be taken into consideration in the layout of the proposed development.*

### 5.3.3 The Gauteng Draft Red Data Policy

The primary purpose of the Draft Red Data Policy is to protect red data plant species in Gauteng Province. The Red Data plant policy is based on the following basic principles:

- Species endemic to the province of Gauteng must be afforded the utmost protection, as they occur nowhere else in the world. As the relevant provincial agency, this Department's responsibility towards Gauteng endemics is absolute;
- Conservation of only one population essentially ignores the lowest level of biodiversity that is genetic diversity. It is therefore imperative that all populations of Red Data plant species are protected;
- In situ conservation is preferable to ex situ conservation. Removing a population from its natural habitat and placing it under artificial conditions results in the erosion of the inherent genetic diversity and characteristics of that species;
- In order to ensure the persistence of a population, it is imperative that the ecological processes maintaining that population persist;
- In order to ensure the persistence of a plant population, it is vital that pollinators are conserved. To conserve pollinators, the habitat must be managed to provide appropriate nest sites for pollinators and a seasonal succession of suitable forage and host plants. Pollinators must be protected from herbicide and pesticide application and soil disturbance must be prevented;
- Translocation of Red Data species is an unacceptable conservation measure since the translocated species may have undesirable ecological effects;
- Rural parts of the province should be protected from insensitive developments and urban sprawl/encroachment should be discouraged. Policy guiding developments should therefore be less lenient in rural areas;
- Red Data plant species historically recorded on a site, but not located during searches within species flowering seasons may be dormant (as a seed bank or subterranean structures such as bulbs/tubers/etc.) due to unfavourable environmental conditions;
- Suitable habitat adjacent to known populations of Red Data plant species has a high probability of being colonized;
- In order to protect a plant population that occurs in a fragmented landscape from edge effects, it is necessary to protect it with a buffer zone that extends from the edge of the population; and
- The transformation of natural vegetation to crops is considered as permanent as urbanization and may cause the extinction of Red Data plant populations and their pollinators.

*No red data fauna or flora species were identified on the site during the Biodiversity Assessment Study.*

### 5.3.4 Protection of Agricultural Land in Gauteng Revised Policy (June 2006)

The purpose of this policy is to protect land that has been identified as high agricultural potential from development, for the exclusive use of agricultural production to:

- Feed the nation;
- Provide upcoming farmers with access to productive land; and
- Meet national targets set in this regard.

Land with high agricultural potential is a scarce non-renewable resource and the need to protect it is a high priority for GDARD. GDARD applies a risk averse and cautious approach when development of such land for purposes other than agricultural production is proposed. The risk averse and cautious approach should be the basis of decision-making on the transformation of high potential agricultural land and land deemed as irreplaceable in terms of meeting Agri-BBBEE and national food security targets and thus legally protected from transformation. GDARD is not in support of development on high potential agricultural land that resides outside the urban edge. Seven agricultural hubs have been identified in the Gauteng Province. All the hubs



are located outside the urban edge. The hubs are regarded as areas with a large amount of high agricultural potential land that should be preserved for agricultural use and will accordingly be planned and managed as a holistic agricultural unit. Each of the hubs will be developed to align with its agricultural potential and preferred land use and will be supported by current economic indicators.

*It will be confirmed if the proposed development site, according to the Gauteng Agricultural Potential Atlas (GAPA Version 3), is situated within a region delineated as an Agricultural Hub.*

## 5.4 Local Policies

### 5.4.1 City of Tshwane Regional Spatial Development Framework (2013)

The City of Tshwane Regional Spatial Development Framework (2013) is applicable to the proposed development and the requirements and obligations therein have been considered during the Scoping process.

## 6 Project Alternatives

---

In terms of the EIA Regulations, Section.28 (1) (c) feasible alternatives are required to be considered as part of the environmental investigations. In addition, the obligation that alternatives are investigated is also a requirement of Section 24(4) of the National Environmental Management Act (Act No. 107 of 1998) (as amended). An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity (as defined in GNR 982 of the EIA Regulations, 2014), which may include alternatives to:

- the property on which or location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity;
- the operational aspects of the activity; and
- the option of not implementing the activity.

### 6.1 Land Use Alternatives

#### 6.1.1 Mixed use development (Proposal and Preferred Alternative)

The present proposed mixed use township will consist of the following land uses: Special mixed uses (commercial, business, light industrial); Residential 2 (30 units/ha); Residential 3 (60 units/ha); Community Facilities and Public Open Space.

Included in the proposed township, are large pockets of green public open spaces. Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities, shops, community facilities, etc. and want their living environment, such as residential townships to be placed at strategic positions with good access routes in close proximity to these amenities.

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 include supporting community facilities, as well as some retail or commercial activities;

- Commercial erven can accommodate a shopping centre, to service the residents of the proposed township as well as surrounding development;
- 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 neighbourhood quality;
- The business and light industrial node will provide job opportunities.

### 6.1.2 Residential development

By providing only a residential development, mixed income development and social integration across race and income levels, cannot be achieved. The Community facilities node on site 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. A large number of job opportunities will be provided in the commercial, business and light industrial nodes. By restricting a township 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.

### 6.1.3 Agricultural use

The topography of the area, low-nutrient sandy soils and rockiness of many of the soils are not ideal for high-yield, commercial crop production. The study site has now for many years being mined for its clay and sandy soils. There is no to little quality topsoil left in the area, therefore, even after rehabilitation the area will not be ideal for cultivation (crop production).

The soils presently found on the site are of medium to low agricultural potential (in terms of dryland and irrigated cropping) due to a number of reasons. These are:

- The soils are generally sandy and nutrient-poor. Which is the reason it is an ideal sand works area.
- The lack of naturally good cultivation soils, within a small area, makes the agricultural potential of the study site, in terms of crop-yields and economic value low.
- Most of the area has been extremely degraded and transformed with all topsoils removed during mining. Even after rehabilitation the area will not be ideal for cultivation.

The study area is large enough to carry low numbers of cattle or sheep, but too small for any meaningful commercial livestock production in terms of grazing lands. Areas in the south and west of the study site are rocky slopes and ridges with difficult terrain for livestock, not to mention the very low carrying capacity in terms of fodder.

The study area does not have natural water sources for livestock such as streams, rivers or ponds. Borehole water is an option, however, the strength and extent of the underground water in the area is not known.

The study area as a single unit has medium/low to low agricultural potential. Nearly all of the land in the study site has been calculated as being of ‘low potential arable land’ Due to the low richness of the soils, nature of the present mining activities and rocky ridges. The agricultural potential in terms of cattle farming is therefore ‘low potential grazing land’.

Agricultural is therefore not regarded as the preferred land use for the study area.



## 6.2 Layout Alternatives

Layout Alternatives will be investigated during the EIA phase. The preferred layout alternative will take all the environmental constraints into consideration.

## 6.3 No Go Alternative

The No-Go alternative will entail leaving the site in its present state, utilized for mining of sand, hard rock and clay.

There was an existing mining license for the mining of sand, approved on 7 May 2003 under the name of MR Aust Sandwerke CC, with reference number ML10/2003. The Mining Right was for the Remaining extent of Portion 1 of the farm Nooitgedacht 333-JR in the Cullinan District, which is now subdivided into 15 smaller portions and includes Portions 47, 49 and 50 of the farm Nooitgedacht 333-JR. The mineral that was initially applied for is Sand (General) only.

A Section 102 Application was made for an increase in the mining area to include portions of Portions 49 and 50 and to include hard rock and clay. The mining area would increase to 142,7981 hectares. Not all of this area will be mined though, some has already been rehabilitated and others will be conserved as open space. The EMPr submitted for the converted new order mining right was completed and approved by the DMR on 21 January 2013.

The No-Go alternative will be comparatively assessed against the above-mentioned alternatives during the EIA phase, and will act as a baseline against which all the other development alternatives are measured.

# 7 Description of Receiving Environment

---

## 7.1 Physical Environment

### 7.1.1 Climate

The study area is situated within the summer rainfall region of South Africa and within the high rainfall band of 600+mm to 800mm per annum.

The climate is moderate to hot during the summer months and moderate to cold in winter. There are days of colder temperatures with light frost and occasional severe frost. The study site is situated within the temperate interior climatic zone of South Africa.

### 7.1.2 Topography

The topography of the immediate region and the study site is that of lowlands, hills and mountains with moderate to high relief. The study area is situated within a narrow band of lowlands between parallel hills, which are oriented in an east-west direction (Barnard, 2000). The majority of the site, which is lowlands, is at an average height above sea level of 1 307m, with an average slope of 2,9%. There are higher laying areas of ridges to the west and south. The highest points on these ridges, within the study area are approximately 1 346m and 1 383m, respectively.

The general downward slope of the site is from south to north, while from east to west the downward slope tends to be into the middle.

### 7.1.3 Geology and Soils

The study area is situated directly on the Rayton Formation, which occurs northeast of Pretoria and reaches a stratigraphic thickness of approximately 1200 m and is composed of four quartzite layers alternating with four shale layers. These sediments have been intruded by diabase sills (Visser, 1989).

The Silverton Formation is the thickest of all the shale formations within the Pretoria ~ Group and varies between 300 m and 600 m in the Pretoria area and up to 3 000 m in Mpumalanga Province. Topographically it is responsible for the formation of long broad valleys. In places the shale is graphitic while in others, large portions have been converted to hornfels as a result of numerous intrusive diabase sills (Visser, 1989).

The Magaliesburg Formation attains a stratigraphic thickness of 300 m in the Pretoria region. It is a typical ortho-quartzite, often displaying cross-bedding and ripple marks. The dip is averages 20- 30 degrees towards the inner basin (Visser, 1989).

The shales and quartzites of the Pretoria Group (Transvaal Supergroup) are dominant in the region of the study area. Soils are mainly vertic melanic clays with some dystrophic or mesotrophic plinthic catenas and, in the case of the study area, freely drained, deep sandy soils and gravels. Land types mainly Ea, Ba and Ae.

### 7.1.4 Hydrology

#### 7.1.4.1 Surface Water

No major perennial or non-perennial rivers or streams are present on the study area. **Refer to Figure 7.**

There are no natural watercourses on the study site, including wetlands and pans. A number of dams are present on the study site.

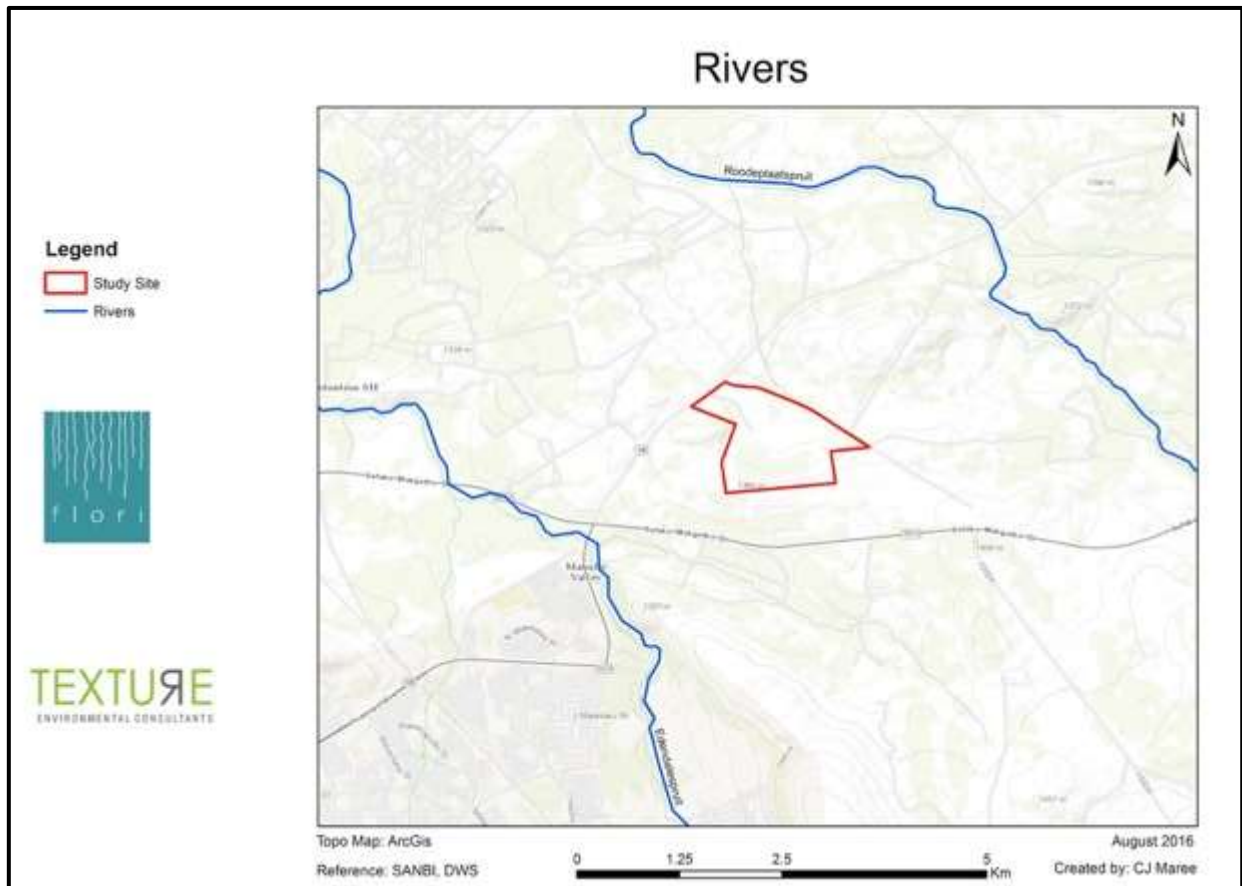


Figure 7: Watercourses in the region

#### 7.1.4.2 Ground Water

According to the depth of the boreholes registered with the Department of Water Affairs, the regional water table is expected to be in the order of 30 to 40m below surface.

The site is underlied by Quartzite, which is a poor aquifer and in general has a low groundwater potential and requires geophysical techniques to locate potentially high yielding boreholes. According to the DWA database, boreholes are expected to yield less than 1 litre /second.

Sand mining uses no chemicals when mining or processing that have the ability to pollute groundwater resources. In 2007, two samples were taken from dams on the property, the first in the western and the second in the central portion. The low electrical conductivity and neutral pH indicated that the water encountered at the mine has its origin directly as rainwater.

The sample results indicated that the manganese concentration of one of the samples exceeded the Class 1 (Acceptable) limit but still made the Class 2 (Maximum Allowable) limits of the standard. At this concentration manganese will cause increasingly severe staining and taste problems, but will not have any adverse health effects on people drinking the water.

In general, however, the quality of the surface water at the sand mine was good. Overall the water has a low salt load.

### 7.1.5 Agricultural Potential

Agriculture is (and was) a prominent, although not dominant, landuse in the region. There are still numerous small patches of cultivated lands and grazing lands across the area. However, the area is not an important, or dominant, agricultural area of Gauteng or South Africa.

The true agricultural potential of a small study area is difficult to gauge accurately, as it is qualitative in nature rather than quantitative. Soil form and depth and chemical analyses need to be conducted to firstly determine the true potential of the soils.

A small area in the north of the study area is presently being used for dryland maize production. The soils in this area are medium/low to medium in terms of agricultural potential.

#### Crop production

The topography of the area, low-nutrient sandy soils and rockiness of many of the soils are not ideal for high-yield, commercial crop production. The study site has now for many years being mined for its clay and sandy soils. There is no to little quality topsoil left in the area, therefore, even after rehabilitation the area will not be ideal for cultivation (crop production).

The soils presently found on the site are of medium to low agricultural potential (in terms of dryland and irrigated cropping) due to a number of reasons. These are:

- The soils are generally sandy and nutrient-poor. Which is the reason it is an ideal sand works area.
- The lack of naturally good cultivation soils, within a small area, makes the agricultural potential of the study site, in terms of crop-yields and economic value low.
- Most of the area has been extremely degraded and transformed with all topsoils removed during mining. Even after rehabilitation the area will not be ideal for cultivation.

#### Cattle production

The study area large is enough to carry low numbers of cattle or sheep, but too small for any meaningful commercial livestock production in terms of grazing lands. Areas in the south and west of the study site are rocky slopes and ridges with difficult terrain for livestock, not to mention the very low carrying capacity in terms of fodder.

The study area does not have natural water sources for livestock such as streams, rivers or ponds. Borehole water is an option, however, the strength and extent of the underground water in the area is not known. The study area as a single unit has medium/low to low agricultural potential. Nearly all of the land in the study site has been calculated as being of '**low potential arable land**' due to the low richness of the soils, nature of the present mining activities and rocky ridges. The agricultural potential in terms of cattle farming is therefore '**low potential grazing land**'.

## 7.2 Biological Environment

A Biodiversity Assessment was conducted by Texture Environmental Consultants.

### 7.2.1 Terrestrial Ecology

#### 7.2.1.1 Vegetation

The study area and the surrounding region fall within the Savanna Biome, which is also known as the Bushveld Biome. Savanna vegetation types (veldtypes) tend to have a mix of a lower grassy layer, middle

shrub layer and an upper woody layer. The mix and ratio of the three layers varies from veldtype to veldtype within the Savanna Biome.

The Savanna Biome is subdivided into six bioregions, namely, Central Bushveld; Mopane; Lowveld; Sub-Escarpment Savanna; Eastern Kalahari Bushveld; and Kalahari Duneveld. The study site is situated within the Central Bushveld Bioregion.

According to the vegetation classification of Mucina & Rutherford (2006) the study site is situated within Marikana Thornveld and Gold Reef Mountain Bushveld. The study area is predominantly Marikana Thornveld, which tends to be in the lower, valley areas of the site, while the granite ridges in the south and west of the study area are Gold Reef Mountain Bushveld.

#### Vegetation of the study site

The vegetation in most of the study area is badly disturbed or totally transformed, especially in the central area where the vegetation has been totally removed during excavation operations of the sand works. On the outlying areas of the study area are more intact patches of Marikana Thornveld, with the typical Acacia-dominated veld. The Acacia thornveld is predominantly present in the lowlands and valleys of the site.

The vegetation on the ridges in the south and west of the study area is typical of Gold Reef Mountain Bushveld found on the quartzite ridges in the region. The upper tree layer is more that of mixed broad-leaved vegetation, while that of the lowlands is fine-leaved vegetation. The dominant, upper layer (woody) vegetation on the ridges is that of *Combretum – Protea* in some areas and *Combretum – Searsia – Celtis* in other areas, often depending on the depth of soil, rockiness and slope orientation.

The thornveld vegetation in the lowlands is highly disturbed, but the broad-leaved vegetation on the ridges is still in fairly pristine condition.

#### Priority Floral Species

**No red data (endangered & threatened) species were observed during field investigations.** According to the SANBI database, no red data species have been collected or recorded in the greater area of the study site. This however, is not to say for certain that none occur. The summaries of priority floral species per Quarter Degree Square (QDS) grid reference are tabled below. Most of the priority floral species listed in Table 5 are succulents and most occur in rocky areas and ridges. These plants are predominantly found along slopes or on ridges.

Most of the study area is lowland, sandy and clayey soil. It is highly unlikely that any of these species are present in the lowland sandy areas. But is highly likely that some of these species are found on the ridges in the study area

**Table 5: Priority Floral Species per 1:50 000 Grid Reference**

Grid reference & Priority Category	No. of species	Name of species
<b>2528CB</b>		
Critically endangered (CR)	0	-
Endangered (EN)	0	-
Vulnerable (VU)	4	<i>Kalanchoe longiflora</i> , <i>Leucadendron cinereum</i> , <i>Erica nematophylla</i> , <i>Bowiea volubilis</i>
Near threatened (NT)	8	<i>Searsia gracillima</i> <i>Habenaria kraenzliniana</i> <i>Stenostelma umbelluliferum</i> <i>Trachyandra erythrorrhiza</i> <i>Adromischus umbraticola</i> <i>Argyrobium campicola</i> <i>Argyrobium megarrhizum</i>

		<i>Lithops lesliei</i>
--	--	------------------------

### Conservation status

The conservation status of the two vegetation units (veldtypes) that occur on site are summarised in the Table 6 below. Marikana Thornveld is endangered. Although Gold Reef Mountain Bushveld is not endangered, the veldtype is restricted to ridges which in Gauteng are viewed as sensitive and in need of protection.

**Table 6: Veldtype status**

Veldtype	Status	Info
Marikana Thornveld	EN	Less than 1% is statutorily conserved in areas such as Magaliesberg Nature Area. More conserved in addition in other reserves, mainly in De Onderstepoort Nature Reserve. Considerably impacted, with 48%+ transformed, mainly through cultivated and urbanised areas. Most agricultural development is in the western regions of the veldtype towards Rustenburg, while in the east (near Pretoria) industrial development is a greater threat of land transformation.
Gold Reef Mountain Bushveld	LT	Approximately 22% is statutorily conserved, mainly in the Magaliesberg Nature Area and much smaller proportions in the Rustenburg, Wonderboom and Suikerbosrand Nature Reserves. At least an additional 1% is conserved in other reserves. About 15% transformed mainly by cultivation and urbanisation.

The study area is situated within vulnerable, threatened ecosystems or veldtypes.

The Biodiversity Act (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or protected. The main purpose for the listing of threatened ecosystems is an attempt to reduce the rate of ecosystem and species destruction and habitat loss, leading to extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems (SANBI).

**Table 7: Ecosystem Status: Simplified explanation of categories used**

STATUS	% Transformed	Effect on Ecosystem
Least Threatened (LT)	0-20% (<20% loss)	No significant disruption of ecosystem functions
Vulnerable (VU)	20-40% (>20% loss)	Can result in some ecosystem functions being altered
Endangered (EN)	40-60% (>40% loss)	Partial loss of ecosystem functions
Critically Endangered (CR)	>60% or BT Index for that specific veldtype	Species loss. Remaining habitat is less than is required to represent 75% of species diversity

Source: South African National Spatial Biodiversity Assessment Technical Report. Volume 1: Terrestrial Component. 2004. SANBI. Mucina & Rutherford (eds) (2010).

Note: BT stands for the Biodiversity Threshold and is an index value that differs for each veldtype. In other words, because the composition, recovery rate, etc. differs for each veldtype there will be a different threshold (in this case percentage transformed) at which species become extinct and ecosystems breakdown. That is, at which point the veldtype is critically endangered. For the grassland vegetation units discussed the index value (BT) is broadly given as 60% and greater.

### Plants identified during field investigations

The dominant plant species identified during field investigations are listed in the appendices. Field investigations were limited to a few days only and plants lists are not comprehensive.

No red data species were observed during field investigations. None are expected to occur in the thornveld lowlands and sand works areas, but it is highly likely that some occur on the ridges to the south and west.

### Alien plants identified in the Study Area

There are a number of alien plants in the study area. The herbaceous plants are especially prevalent in disturbed areas. Tree species such as syringa are also present. Alien plant species, some of which are invasive, occur scattered throughout the area, especially in disturbed areas. The alien plant species encountered in the study area are recorded, along with their category rating, in Table 8. The categories are as set out in the Conservation Act of Agricultural Resources Act, 1983 (CARA) (Act 43 of 1983).

**Table 8: Alien plants identified in the study area**

Botanical Name	Common Name	Category
<i>Acacia mearnsii</i>	Blackwattle	2
<i>Argemone ochroleuca</i>	White-flowered Mexican poppy	1
<i>Bidens pilosa</i>	Blackjacks	-
<i>Cereus jamacaru</i>	Queen-of-the-night	1
<i>Conyza canadensis</i>	Horseweed fleabane	-
<i>Datura ferox</i>	Large thorn-apple	1
<i>Eucalyptus</i> spp & cultivars	Gum trees; Eucalyptus	2
<i>Lantana camara</i>	Lantana	1
<i>Macfadyena unguisati</i>	Cat's claw creeper	1
<i>Melia azedarach</i>	Syringa	3
<i>Opuntia ficus-indica</i>	Prickly pear	1
<i>Solanum elaeagnifolium</i>	Silverleaf bitter apple	1
<i>Tagetes minuta</i>	Khakibos, kahki weed	-

### Protected tree species identified in the study area

No nationally or provincially protected tree species were observed within the study area during field investigations.

#### 7.2.1.2 Fauna

No large- or medium-sized mammals or other wild faunal species were observed during field investigations, except for red rock rabbits in the ridges to the south. Most of the study area is an active, mining operation, which not only seriously limits ideal habitat, but the continual noise and movement of people and vehicles also means that most wild animals tend to avoid the area. The most ideal habitats are found within the ridges, but this type of habitat is not suited to all faunal species.

Red Data faunal species most likely to traverse the area occasionally are listed below in Table 9. However, due to the amount of human activity and general urbanisation, their presence will be very limited.

The habitats present in the study area are not ideal for most of the species listed in Table 9, except for the riparian and watercourse areas.

**Table 9: Red Data Faunal Species likely to occur in the area**

Species	Common Name	Red Data Status	Preferred Habitat	Habitat Restrictions	Present in Study area?
<b>Frogs</b>					



<i>Pyxicephalus adspersus</i>	Giant bullfrog	Threatened	Grassland; savanna	Temporary floodplains, pans	Highly likely
<b>Mammals</b>					
<i>Atelerix frontalis</i>	SA hedgehog	Near threatened	Most, broad	Broad	Highly likely
<i>Manis temmincki</i>	Pangolin (Scaly anteater)	Vulnerable	Grassland, savanna	Woody savanna, ants, termites	Possibly
<i>Mellivora capensis</i>	Honey badger (Ratel)	Near threatened	Most, broad	Broad	Possibly
<i>Cloeotis percivali</i>	Short-eared trident bat	Critically endangered	Savanna	Caves and subterranean habitat	Not likely
<i>Pipistrellus rusticus</i>	Rusty bat	Near threatened	Most, broad	Woody savanna, large trees	Not likely
<b>Snakes</b>					
<i>Python natalensis</i>	Southern African python	Vulnerable	Ridges, wetlands	Rocky areas; open water	Highly likely

### 7.2.2 Aquatic Ecology

The aquatic ecology focuses on the open waterbodies found within the study area. These watercourses include rivers, streams, wetlands, pans, lakes and manmade dams. In reality, a pan is actually a type of wetland and must be approached as such. The focus is to delineate watercourses and limit any impact the project might have on these watercourses.

#### Wetlands

'Wetland' is a broad term and for the purposes of this study it is defined according the parameters as set out by the Department of Water & Sanitation (DWS) in their guideline (A practical field procedure for identification and delineation of wetlands and riparian areas, 2005).

According to the DWS document and the National Water Act (NWA) a wetland is defined as, "*land which is transitional between terrestrial and aquatic systems where the water table is usually at or near surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.*"

Furthermore, the guidelines stipulate that wetlands must have one or more of the following defining attributes:

- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation;
- The presence, at least occasionally, of water loving plants (hydrophytes); and
- A high water table that results in saturation at or near surface, leading to anaerobic conditions developing in the top 50cm of the soil.

During the site investigations the following indicators were used to determine whether an area needed to be defined as a wetland or not, namely:

- Terrain unit indicator;
- Soil form indicator;
- Soil wetness indicator; and
- Vegetation indicator.

## Riparian Zones

Riparian vegetation is typically zonal vegetation closely associated with the course of a river or stream and found in the alluvial soils of the floodplain. According to the National Water Act (NWA) riparian habitat is defined as including *“The physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.”*

It is important to note that the NWA states that the riparian zone has a floral composition distinct from those of adjacent areas. The NWA also defines riparian zones as areas that *“commonly reflect the high-energy conditions associated with the water flowing in a water channel, whereas wetlands display more diffuse flow and are lower energy environments.”*

### **Rivers and streams**

A stream or river is a watercourse that is characterised by a very distinct channel. Most, but not all streams and rivers have an associated floodplain and / or riparian zone. Although wetlands and rivers are both watercourses, the legal implications differ in terms of development, buffer zones, etc.

### **Watercourses in the study area**

No major perennial or non-perennial rivers or streams are present on the study area.

There are no natural watercourses on the study site, including wetlands and pans. A pan is a type of wetland, but is often differentiated in the literature. A number of dams are present on the study site.

### **Classification of watercourses in the study area**

Watercourses observed during field investigations are classified along different hydrogeomorphic (HGM) types or units, up to Level 4, in terms of various levels as refined for South Africa by Kleynhans, *et. al.* (2005) and used in the Classification System for Wetlands user manual – SANBI Series 22 (Ollis *et. al.*, 2013).

There are however, no watercourses within the study area including rivers, streams, distinct drainage lines or wetlands (including pans). A number of manmade impoundments are present. These are water retention dams and settling ponds that are used during the sand washing process at the sand works. The excavated sand needs to be washed to rinse out mud and other impurities. This water and mud or silt, flows into a settling pond (or dam). After which, the water is released to gravity-flow into another dam, out of which the ‘cleaned’ water is reused to wash more sand.

Water in the dams originates from underground water pumped into the dams, as well as surface and sub-surface stormwater run-off that flow into the dams. Just outside of the northern boundary of the study area are a small valley bottom wetland and a small semi-perennial stream.

### **Drainage regions**

South Africa is divided up into a number of naturally occurring primary and quaternary drainage areas (QDA) or regions. The different regions fall under the authority of different water management areas (WMA) and Catchment Management Agencies (CMA).

The study area is situated within the primary drainage area (PDA) of A, and the quaternary drainage areas (QDAs) of A23A and A23B.

The study area is within the Crocodile (West) & Marico West Management Area (WMA 3) and under the jurisdiction of the newly proposed Limpopo Catchment Management Agency (CMA 1). Currently not all CMAs are operational.

The study area is within the Wetland Vegetation Ecoregion of Central Bushveld Group 2. Wetland vegetation ecoregions are similar to terrestrial bioregions, but with the focus on the water environment and catchment areas.

### Strategic water source areas of South Africa (SWSA)

Strategic Water Source Areas (SWSA) are those areas that supply a disproportionate amount of mean annual runoff to a geographical region of interest. These areas are important because they have the potential to contribute significantly to overall water quality and supply, supporting growth and development needs that are often a far distance away (SANBI). These areas make up 8% of the land area across South Africa, Lesotho and Swaziland but provide 50% of the water in these countries.

At a national level, Strategic Water Source Areas form the foundational ecological infrastructure on which a great deal of built infrastructure for water services depends. Investing in Strategic Water Source Areas is also an important mechanism for long-term adaptation to the effects on climate change on water provision growth and development (SANBI).

The study area falls outside of any SWSA strategic water areas. This been said, it is still important to realise that all water environments need to be viewed as sensitive and need to be well managed.

### Delineation of watercourses in the study area

All watercourses within the study area were delineated during field investigations (Figure 7). The only naturally occurring watercourse is a small semi-perennial stream outside of the northern boundary of the study area. Linked to this little stream is a small valley bottom wetland at the upper source of the stream. There were no watercourses within the study area to delineate. However, the numerous dams (manmade impoundments) on the site were identified and delineated. Some of these dams are just quarries that have collected rainwater and surface stormwater runoff over the years. Most of these quarries and dams will disappear during the mine-closure, rehabilitation process.

All watercourses, no matter how degraded, are viewed as sensitive and must be treated as such. It is recommended that the demarcated areas (in blue) in the map below be completely avoided and protected (Figure 8).

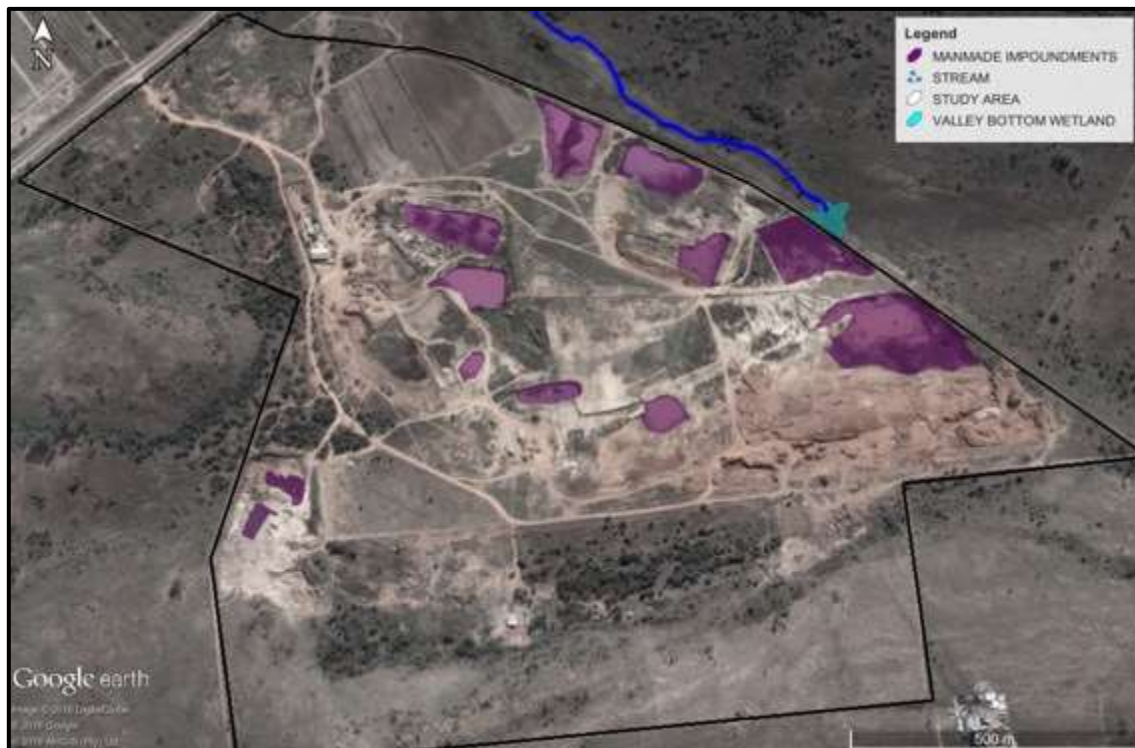


Figure 8: Delineated watercourses

### Methodology (PES)

The Present Ecological State (PES) is the current (present) ecological condition (state) in which the watercourse is found, prior to any further developments or impacts from the proposed project. The PES of watercourses found in the study area is just as important to determine, as are the potential impacts of the proposed development. The PES of a watercourse is assessed relative to the deviation from the Reference State (also known as the Reference Condition).

The reference state is the original, natural or pre-impacted condition of the system. The reference state is not a static condition, but refers to the natural dynamics (range and rates of change or flux) prior to development. The PES Method (DWA, 2005) was used to establish the present state (integrity) of the unnamed drainage line in the study area. The methodology is based on the modified Habitat Integrity approach of Kleynhans (1996, 1999).

### PES and EIS of watercourses in the study area

The assessment criteria and structure to determine the PES of watercourses is based on the modified Habitat Integrity approach of Kleynhans (1996, 1999). The PES is calculated by looking at the hydrology, geomorphology, water quality and biota of each watercourse. Of importance is the overall PES of the system. **There are no naturally occurring watercourses in the study area.** The dams and ponds cannot be assessed either. The small semi-perennial stream and wetland just outside of the study area were assessed although not completely relevant to the project.

The PES values of the watercourses were determined to be High (Category - B), due to their fairly pristine state, however their associated EIS values were determined to be Moderate (Category - C). The recommended ecological management class for both watercourses (REMC) or (REC) is recommended as Class B. They are largely natural, with few negative impacts and disturbances. It is important to ensure that activities on the study site do not have any negative impact on these watercourses.

### 7.2.3 Sensitivity Assessment

The sensitivity assessment identifies those areas and habitats within the study site that have a high conservation value and that may be sensitive to disturbance. All watercourses, including seasonal streams and drainage lines are always deemed to be sensitive, even if they are badly degraded. Areas or habitats have a higher conservation value (or sensitivity) based on threatened ecosystems, ideal habitat for priority species (including red data species), etc.

Most of the central area of the study area is a sand works operation, while acacia-dominated thornveld is found in patches or on the outer skirts. A large, long ridge is present in the south and a small rounded ridge present in the west. The distinctive habitats within the study area consist of thornveld, ridges and sand works. The floral and faunal sensitivity analyses are shown in the tables 10 and 11 below.

**Table 10: Floristic sensitivity analysis**

Criteria	Distinctive habitats in the study area		
	Thornveld	Ridges	Sand Works
Red Data Species	4	8	1
Habitat Sensitivity	5	8	1
Floristic Status	5	7	1
Floristic Diversity	5	7	1
Ecological Fragmentation	6	7	5
Sensitivity Index	50%	74%	18%
Sensitivity Level	Medium	Medium/High	Low
Development Go Ahead	Go-But	Go-But	Go

**Table 11: Faunal sensitivity analysis**

Criteria	Distinctive habitats in the study area		
	Thornveld	Ridges	Sand Works
Red Data Species	3	7	2
Habitat Sensitivity	5	8	1
Floristic Status	5	6	2
Floristic Diversity	5	6	1
Ecological Fragmentation	6	8	4
Sensitivity Index	48%	70%	20%
Sensitivity Level	Medium	Medium/High	Low
Development Go Ahead	Go-But	Go-But	Go

### Ecological Sensitivity Analysis

The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. The highest calculated sensitivity unit of the two categories is taken to represent the sensitivity of that ecological unit, whether it is floristic or faunal in nature (Table 12).

**Table 12: Ecological Sensitivity analysis**

Ecological community	Floristic sensitivity	Faunal sensitivity	Ecological sensitivity	Development Go-ahead
Thornveld	Medium	Medium	Medium	Go-But
Ridges	Medium/High	Medium/High	Medium/High	Go-But
Sand Works	Low	Low	Low	Go

According to the analyses of the floristic, faunal and overall ecological sensitivities there are no high sensitivity areas or habitats. In other words, there are no 'No-Go' areas within the study area.

Eventhough the sensitivity of the ridges were only calculated to be Medium/High, the sensitivity should be raised to High sensitivity. The ridges on the study site are in fairly pristine condition, furthermore, all ridges in Gauteng Province are considered by the provincial authorities to be sensitive and important areas.

### Priority areas

The study area does not fall within any national priority areas. These priority areas include formal and informal protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National fresh water ecosystem priority areas (NFEPA) and National protected areas expansion strategy (NPAES) focus areas.

### Sensitive areas identified during field investigations

During field investigations sensitive areas were identified. As previously mentioned, most of the central area of the study site is a highly disturbed, transformed sand works mine and processing plant. However, in the south and west are two ridge formations that are considered to be sensitive (Figure 9). The ridges and their vegetation / ecosystems are fairly pristine, with little disturbances or weed infestations.

Ridges within the Gauteng Province create unique, islands of biodiversity. These ridges are often bushveld type ecosystems within a grassland biome. The unique ecosystems are not just in terms of plant communities, but also in terms of faunal communities. These ridges are home to numerous lizards, snakes and invertebrate species, many of which are priority species of conservation concern.



The following extract is taken from GDARD's policies and guidelines regarding ridges (Pfab, 2001):  
*"In the light of the motivations presented in section 3 of this document and due to the extremely limited distribution, rarity and threatened status of the ridges in Gauteng, it is imperative that the Department adopts a strict no-go or low impact development policy for these systems. However, this policy, by necessity, will have to be adapted according to the current transformed status of some of these ridges."*

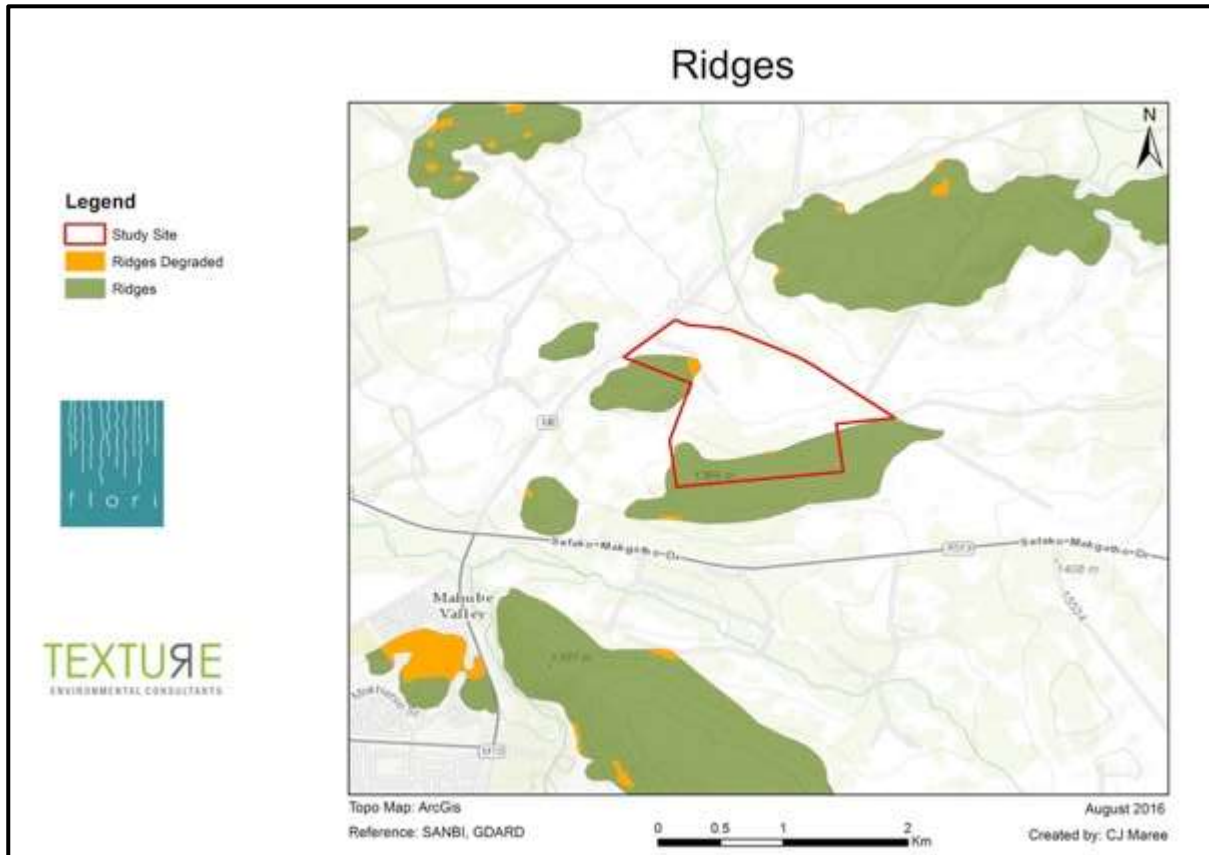


Figure 9: Ridges Map

Table 13 gives a description of the various class categories for ridges in Gauteng. In terms of the categories the two ridges in the study area would be classified as **Class 1 ridges**.

Table 13: Classification of ridges in Gauteng Province

Category	Transformed	Description
Class 1	< 5%	Ridges of which <b>5% or less</b> of their surface area has been converted to urban development, quarries and/or alien vegetation. (Approximately 51% of ridges currently fall within Class 1, including the Suikerbosrand and parts of the Magaliesberg.)
Class 2	> 5% but < 35%	Ridges of which <b>more than 5%, but less than 35%</b> , of their surface area has been converted to urban development, quarries and/or alien vegetation. (Approximately 28% of ridges currently fall within Class 2, including parts of the Magaliesberg, ridges falling within the Cradle of Humankind World Heritage Site, the Klipriviersberg, the Bronberg and the Skurweberg.)
Class 3	> 35% but < 65%	Ridges of which <b>35% or more, but less than 65%</b> , of their surface area has been converted to urban development, quarries and/or alien vegetation. (Approximately 9% of ridges currently fall within Class 3, including the ridge that traverses the Northcliff, Roodepoort and Krugersdorp areas).



Class 4	65% +	Ridges of which <b>65% or more</b> of their surface area has been converted to urban development, quarries and/or alien vegetation. (Approximately 11% of ridges currently fall within Class 4, including the Melville Koppies and the Linksfield Ridge).
---------	-------	---

**Gauteng Conservation Plan (C-Plan v.3.3)**

According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area is outside of any Critical Biodiversity Areas (CBAs), but with Ecological Support Areas (ESAs) in the south and west. These demarcated ESAs, as shown in the map below, are ridges (Figure 10). It is the opinion of the specialist that these ridges should actually be demarcated as CBAs.

Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007).

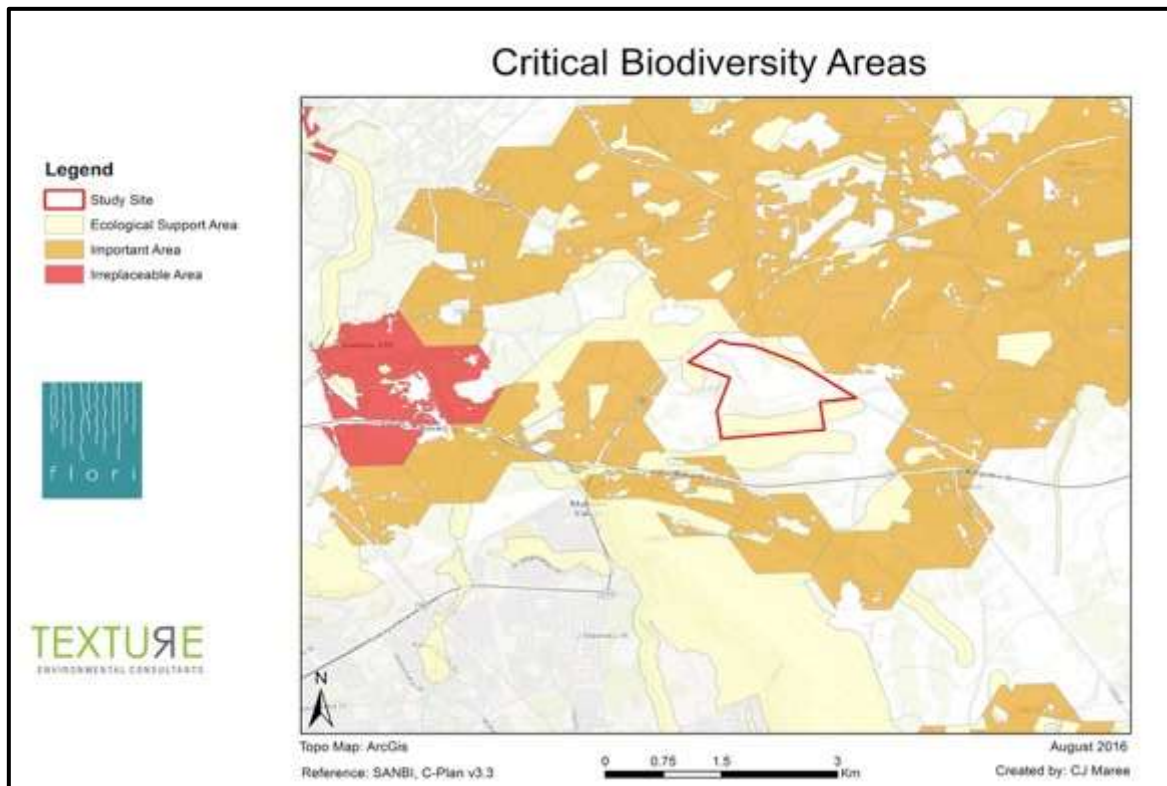


Figure 10: Critical Biodiversity Areas (CBA)

The terrestrial and aquatic ecology will be assessed in the EIA Report and mitigation measures will be supplied in the EMP.

**7.3 Social Environment**

**7.3.1 Socio-Economic Environment**

Population Demographics

The following information was obtained from the Integrated Development Plan (IDP) for the City of Tshwane (CoT) for the period 2011 – 2016.

According to the Stats SA 2007 Community Survey, the population in CoT has since 2001 grown by 18.3, whilst the CoT's Household Survey 2008 indicates a growth of 3.4% between 2007 and 2008.<sup>103</sup> The number of households has also increased with approximately 22% since 2001.<sup>104</sup> The population of Kungwini Local Municipality (KLM) has been growing at an estimated 4,5% per annum. According to the Demarcation Board's Capacity Assessment Report Nokeng Tsa Taemane Local Municipality (NLM) had a decrease in population of 7,8% in the past six years.<sup>105</sup> After the incorporation of KLM and NLM the CoT will have a population of approximately 2,5 million. The city is characterised by a rapidly growing population (a projected annual growth of 4,1%). The situation is exacerbated by immigration, resulting in an increase of informal settlements and an estimated 26.8% of all households residing in informal housing. The population of the municipalities is scattered all over with the highest density of people to be found within the previously disadvantaged areas, such as Atteridgeville, Mamelodi, Olievenhoutbosch, Soshanguve, Garankuwa in CoT, Ekangala, Zithobeni and Rethabiseng in KLM and Refilwe, Onverwacht and Jakaranda Park in NLM.

### Employment

A large number of residents in the Kungwini area are currently employed outside the area. This implies that economic activities within the area are limited. The unemployment figures of each municipality are as follows:

**Table 14: Unemployment figures of municipalities**

Municipality	Unemployment	Earn less than R1 600 pm	Households on Indigent Register
CoT	20%	18%	Households on Indigent Register
KLM	19%		1 587 (± 4 309 households underreported)
NLM	12%	56%	870

In order to assist those households that are not able to pay for municipal services, all three municipalities adopted a social package policy, known as the Indigent Policy, which allows for citizens to register as indigents. According to the principles set out in the Indigent Policy the first 50 units of electricity and 6kl of water will be provided free of charge to all registered indigent consumers. CoT has subsequently provided the first 100 units of electricity and 12kl of water free to registered indigent consumers.

#### **7.3.1 Heritage and Cultural Value**

A Cultural Heritage Impact Assessment was done by Archaetnos Culture and Cultural Resource Consultants. According to the cultural heritage consultant five sites of cultural heritage significance were located in the study area.

##### **Site No 1: Historical/ Late Iron Age stone walling**

GPS: 25.67705°S; 28.43484°E

The site consists of low circular stone packed walling and terraces. It seems as if walls have been robbed and accordingly the site is in a very poor state (Photo 1). No midden or cultural artefacts were identified.

It therefore has medium cultural significance and receives a field rating of General protection B (IV B). This means that the site should be recorded after which it may be demolished. Recording would consist of complete photographic recording and drawing a site plan.



**Photo 1: Section of stone walling at Site no. 1.**

### **Site No 2: Grave Yard**

GPS: 25.67751°S; 28.43517°E

The site consists of at least 6 graves with stone dressings. No headstones are found (Photo 2). Therefore, no surnames or dates or death could be identified. This means that the graves are unknown, which has to be handled similar to heritage graves (older than 60 years).

Graves always are regarded as having a high cultural significance and receives a field rating of Local Grade IIIB. It should be included in the heritage register, but may be mitigated.

Two possibilities exist. The first option would be to fence the graves in and have a management plan drafted for the sustainable preservation thereof. This should be written by a heritage expert. This usually is done when the graves are in no danger of being damaged, but where there will be a secondary impact due to the activities of the proposed development.

The second option is to exhume the mortal remains and then to have it relocated. This usually is done when the graves are in the area to be directly affected by the mining activities. For this a specific procedure should be followed which includes social consultation. For graves younger than 60 years only an undertaker is needed. For those older than 60 years and unknown graves an undertaker and archaeologist is needed. Permits should be obtained from the Burial Grounds and Graves unit of SAHRA. This procedure is quite lengthy and involves social consultation.



**Photo 2: Some of the graves at Site no. 2.**

The graves are outside of the area of direct impact. This means that the graves will be impacted on indirectly as dust from groundwork activities and blasting may have an effect on them. Access for descendants also may be an issue.

### **Site No 3: Grave Yard**

GPS: 25.67663°S; 28.43859°E

The site consists of at least 5 graves with stone dressings. No headstones are found (Photo 3). Therefore, no surnames or dates or death could be identified. This means that the graves are unknown, which has to be handled similar to heritage graves (older than 60 years).

Graves always are regarded as having a high cultural significance and receives a field rating of Local Grade IIIB. It should be included in the heritage register, but may be mitigated.

The graves are outside of the area of direct impact. This means that the graves will be impacted on indirectly as dust from groundwork activities and blasting may have an effect on them.

Two possibilities exist. The first option would be to fence the graves in and have a management plan drafted for the sustainable preservation thereof. This should be written by a heritage expert. This usually is done when the graves are in no danger of being damaged, but where there will be a secondary impact due to the activities of the proposed development.

The second option is to exhume the mortal remains and then to have it relocated. This usually is done when the graves are in the area to be directly affected by the mining activities. For this a specific procedure should be followed which includes social consultation. For graves younger than 60 years only an undertaker is needed. For those older than 60 years and unknown graves an undertaker and archaeologist is needed. Permits should be obtained from the Burial Grounds and Graves unit of SAHRA. This procedure is quite lengthy and involves social consultation.





**Photo 3: Some of the graves at Site no. 3.**

#### **Site No.4: Historical military stone walling**

GPS: 25.67879°S; 28.43456°E

This is a stone wall which had a military origin, dating to the Anglo-Boer War (1899-1902). It can be linked to the Battle of Diamond Hill and is a defensive fortification wall (Photo 4). A survey done in 2007 also identified the site as well as .303 ammunition from this period (Van Druten 2007: 74). Van Vollenhoven (1995 & 2010) has described various such cartridges and fortifications.

The site is regarded as having a high cultural significance. It receives a field rating of Local Grade IIIA. It should be included in the heritage register and may not be mitigated.

There will be no direct impact from the development on the site, but since residential units will be erected nearby there will definitely be an indirect impact. Therefore, the site needs to be protected. A cultural management plan should be drafted and implemented to preserve and protect the site. The plan should also include measures for the sustainable utilization of the structure (e.g. walking trails and information panels). The body corporate of the new development will have to assume responsibility for the implementation of the plan in the future. Such a plan should be drafted by a heritage expert and should be completed before the development may commence.



**Photo 4: Military stone walling at site no. 4.**

#### **Site No. 5: Historical military stone walling**

GPS: 25.67749°S; 28.43372°E

This is a low stone wall which had a military origin, dating to the Anglo-Boer War (1899-1902). It can be linked to the Battle of Diamond Hill and is a defensive fortification wall (Photo 5).

The site is regarded as having a high cultural significance. It receives a field rating of Local Grade IIIA. It should be included in the heritage register and may not be mitigated.

There will be no direct impact from the development on the site, but since residential units will be erected nearby there will definitely be an indirect impact. Therefore, the site needs to be protected. A cultural management plan should be drafted and implemented to preserve and protect the site. The plan should also include measures for the sustainable utilization of the structure (e.g. walking trails and information panels). The body corporate of the new development will have to assume responsibility for the implementation of the plan in the future. Such a plan should be drafted by a heritage expert and should be completed before the development may commence.





**Photo 5: Military stone walling at site no. 5.**

The location of the five identified sites are indicated in Figure 11.



**Figure 11: Location of the five cultural sites identified**

The five identified cultural sites will be assessed in the EIA Report and mitigation measures will be supplied in the EMP.

### 7.3.2 Visual aspects

The proposed development site lies in a macro area where the visual quality of the macro area could be rated as medium as a result of the pleasant rural character of the surrounding areas.

The visual environment of the wider area in which the development is proposed consists of a mix of natural and anthropogenic components which means that the area will be likely to be visually influenced by differing visual factors. The site is currently used for sand mining. The visual character of the wider area to the south west can be described as largely urban in nature, but this reflects a recently changing baseline from a much more rural visual character that previously existed in the area.

The visual character of the area to the west and south west of the site has changed in the last number of years due to residential developments. The landscape has not completely changed, however, and there are significant parts of the landscape in the vicinity of the site that are natural in character – i.e. open grasslands typical of this part of Gauteng to the east of site.

Large areas surrounding the site are still undeveloped, engendering the area with a partly natural visual component.

The terrain in the wider study area is undulating in nature, consisting of broad valleys. The presence of sloping ground typically entails that aspect is important in determining the viewshed that is visible to a viewer located at a certain point within the landscape.

The visual impact of the loss of open space must be considered in context with the existing land use that is sand mining. The change in land use to residential would be significant; however, it should be noted that this would involve significant rehabilitation of the site (especially the mined areas) to its natural habitat.

The loss of open space must also be considered in context with the conservation status of the site. As described in the ecological assessment the site is not a pristine portion of land anymore.

Impact on surrounding property values could be affected should the development not take place in a sensitive site-responsive and responsible manner with the necessary attention to architectural design and landscaping.

Light pollution could occur at night as a result of residential development in an area that is presently being experienced as rural.

## 8 Public Participation Process

---

Public participation is a process that is designed to enable all interested and affected parties (I&APs) to voice their opinion and/ or concerns which enables the practitioner to evaluate all aspects of the proposed development, with the objective of improving the project by maximising its benefits while minimising its adverse effects. I&APs include all interested stakeholders, technical specialists, and the various relevant organs of state who work together to produce better decisions.

The primary aims of the public participation process are:

- to inform interested and affected parties (I&APs) and key stakeholders of the proposed application and environmental studies;
- to initiate meaningful and timeous participation of I&APs;

- to identify issues and concerns of key stakeholders and I&APs with regards to the application for the development (i.e. focus on important issues);
- to promote transparency and an understanding of the project and its potential environmental (social and biophysical) impacts (both positive and negative);
- to provide information used for decision-making;
- to provide a structure for liaison and communication with I&APs and key stakeholders;
- to ensure inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process);
- to focus on issues relevant to the project, and issues considered important by I&APs and key stakeholders; and
- to provide responses to I&AP queries.

The public participation process must adhere to the requirements of Regulations (GNR 982) under the NEMA.

For the purposes of the scoping phase, the PPP aims to ensure that the full range of stakeholders is informed about project scope. In order to achieve this, a number of key activities have taken place and will continue to take place. These included the following:

- The identification of stakeholders is a key deliverable at the outset, and it is noted that there are different categories of stakeholders that must be engaged, from the different levels and categories of government, to relevant structures in the NGO sector, to the communities of wards of residential dwellings which surround the works;
- The development of a living and dynamic database that captures details of stakeholders from all sectors;
- The convening of focused and general meetings with stakeholders at different times throughout the EIA process;
- The engagement of public leaders to whom the public generally turn for information, keeping such individuals well informed about process and progress;
- The fielding of queries from I&APs and others, and providing appropriate information;
- The convening of specific stakeholder groupings/fora as the need arises;
- The preparation of reports (both baseline and impact assessment) based on information gathered throughout the EIA via the PPP and feeding that into the relevant decision-makers; and
- The PPP includes distribution of pamphlets or Background Information Documents and other information packs.

Specifically, the proposed Leeuwfontein Scoping Phase PPP has entailed the following activities:  
*Refer to Appendix B*

### **8.1 Authority Consultation**

The competent authority, which is the GDARD, is required to provide an environmental authorisation (whether positive or negative) for the project. The GDARD is consulted, and will be engaged throughout the project process.

### **8.2 Consultation with Other Relevant Stakeholders**

Consultation with other relevant key stakeholders were and will continue to be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the Environmental Scoping Phase. A Public meeting / Open Day will be held during the EIA phase.

The identified stakeholders of this project include:

**Table 15: Key Stakeholders contacted as part of Public Participation Process**

Gauteng Heritage Authority	Department of Mineral Resources	Gautrans	City of Tshwane Metropolitan Municipality
SA Heritage Resources Agency	Department of Rural Development and Land Reform	South African National Roads Agency SOC Ltd	Eskom Distribution and Transmission
Department of Water and Sanitation	National Department of Agriculture, Forestry and Fisheries		

*Refer to Appendix B1 for proof of correspondence*

### 8.3 Site Notification

The NEMA EIA Regulations require that a site notice be fixed at a place conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates and at points of access or high through traffic. The purpose of this is to notify the public of the project and to invite the public to register as stakeholders and inform them of the PP Process. Texture Environmental Consultants erected two site notices at various noticeable locations around the perimeter of the site on 28 July 2016 (*refer to Appendix B2*).

### 8.4 Advertising

In compliance with the EIA Regulations (2014), notification of the commencement of the EIA process for the project was advertised in a local and provincial newspaper as follows:

Beeld - 29 July 2016

Tshwane Sun Mamelodi - 1 August 2016

*(Refer to Appendix B3).*

Interested and affected parties (I&APs) were requested to register their interest in the project and become involved in the EIA process. The primary aim of these advertisements was to ensure that the widest group of I&APs possible was informed and invited to provide input and questions and comments on the project.

### 8.5 Identification of Interested and Affected parties

I&APs were identified primarily through an existing database as well as from responses received from the notices mentioned above. E-mails were sent to key stakeholders and other I&APs on the existing database, informing them of the application for the project, the availability of the draft Environmental Scoping Report (ESR) for review and indicating how they could become involved in the project. The contact details of all identified I&APs are updated on the project database, which is included in *Appendix B4*.

This database will be updated on an on-going basis throughout the EIA process

### 8.6 Background Information Document (BID)

A briefing paper or Background Information Document (BID) for the project was compiled in English (*refer to Appendix B5*). The aim of this document is to provide a brief outline of the application and the nature of the development. It is also aimed at providing preliminary details regarding the EIA process, and explains how I&APs could become involved in the project.



The briefing paper was distributed to all identified I&APs and stakeholders, together with a registration / comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the project.

### **8.7 Public Meeting/Open day**

A public meeting or open day will be held during the EIA phase of the project when all specialist studies will be available for review.

### **8.8 Issues Register**

Issues and concerns raised in the public participation process during the EIA process have been and will continue to be compiled into an Issues Register. The Scoping Phase Issues Register is attached as *Appendix B6*, in which all comments received and responses provided have been captured.

### **8.9 Public Review of the Scoping Report**

All registered I&APs were notified of the availability of the report electronically.

The draft SR, together with the Plan of Study for EIA was made available for authority and public review for a total of 30 days from 30 August 2016 to 3 October 2016. The report was submitted to all I&APs and electronic copies could be downloaded with a link from the Texture website.

### **8.10 Final Scoping Report**

Subsequently the Final Scoping Report will be submitted to the GDARD, thereafter the CA review of the report will begin. The FSR will include all concerns raised to the draft SR and the responses thereto. The Consultants (EAPs) will ensure that all concerns raised are addressed in appropriate detail in the final Scoping Report.

## **9 Potential Impacts associated with the project**

---

This Environmental Scoping Report (ESR) aims to identify the potential positive and negative impacts (both biophysical and social) associated with the proposed Leeuwfontein X 24 development. The potential impacts have been identified through baseline investigations and below are summaries per phase.

### **9.1 Construction Phase**

The construction phase of this project refers to the land which is to be developed and lasts only while the proposed development is being constructed. The following potential impacts will be considered in the Impact Assessment Phase:

**Table 16: Issues and Impacts identified during the Construction Phase of the proposed Leeuwfontein X24 development**

AFFECTED ENVIRONMENT	ANTICIPATED IMPACT
<b>BIOPHYSICAL IMPACTS</b>	
Topography	<ul style="list-style-type: none"> <li>Alteration of topography due to stockpiling of soil, building material, debris and waste material on site.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Stability of structures due to underlying geology and mining activities</li> </ul>
Soils	<ul style="list-style-type: none"> <li>Possible contamination of soils due to spillage, leakage, incorrect storage and handling of chemicals, oils, lubricants, fuel and other hazardous material.</li> </ul>
Surface and Ground Water	<ul style="list-style-type: none"> <li>The construction of the development has the potential to affect water quality adversely within the streams on the site and further downstream.</li> <li>Sediment is especially likely to be created during the excavation of foundations, the laying of access tracks, digging of trenches, soil stripping and stockpiling to create temporary areas of hard-standing.</li> <li>Pollution could arise from the spillage or leaking of diesel, lubricant and cement.</li> </ul>
Terrestrial Ecology	<ul style="list-style-type: none"> <li>Loss of natural vegetation through clearing of land</li> <li>Loss and destruction of habitat</li> <li>Damage to sensitive ridges</li> </ul>
Aquatic Ecology	<ul style="list-style-type: none"> <li>Impact on wetland and watercourse adjacent to property</li> </ul>
<b>SOCIO ECONOMIC IMPACTS</b>	
Cultural heritage & archaeology	<ul style="list-style-type: none"> <li>Potential destruction of objects of heritage value</li> <li>Excavation of objects known or expected to exist in the area.</li> <li>Mitigation measures must be proposed in the EMPPr.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Disturbance from noise generated from activities such as drilling, blasting, digging of foundations and vehicle movement.</li> </ul>
Traffic, road safety & material transport	<ul style="list-style-type: none"> <li>Potential impacts are largely associated with the location of access to the site and, during construction, the movement of heavy vehicles and machinery on the smaller feeder roads located within the study area.</li> <li>Transporting materials and construction equipment to the site by long and/or slow moving vehicles could cause traffic congestion in the study area.</li> </ul>
Waste	<ul style="list-style-type: none"> <li>The potential waste streams for the project include general, hazardous and sewage waste.</li> <li>General waste generated on site include domestic waste and building rubble. General waste will not have a significant impact on the environment provided that the correct waste streams are used for the disposal of waste.</li> <li>Hazardous waste will be generated through the spillage of diesel. All material cleared after spillage must be treated as hazardous waste and disposed of at a hazardous waste disposal site.</li> <li>Generation and disposal of sewage waste of temporary construction toilets.</li> </ul>
Health and Safety	<ul style="list-style-type: none"> <li>The safety of the construction staff could be compromised unless adequate safety measures are implemented.</li> <li>The safety measures outlined in the draft EMPPr must be adhered to during construction.</li> </ul>



Air Quality	<ul style="list-style-type: none"> <li>Construction related air quality impacts relate to dust generation. Mitigation measures must be proposed in the EMPr.</li> </ul>
Social	<ul style="list-style-type: none"> <li>In-migration to the area by job seekers</li> <li>Provision of employment opportunities</li> <li>Safety of people as a result of increased traffic</li> <li>Health concerns for nearby communities as a result of construction labour force</li> <li>Economic spin-offs as a result of procurement of services from the local community</li> </ul>
Visual	<ul style="list-style-type: none"> <li>Visual disturbance of the landscape during construction will be caused by construction activity and the presence of very large machinery. However, these visual impacts are already present on the site due to the existing mining activities.</li> </ul>

## 9.2 Operational Phase

The following potential environmental impacts have been considered for the operational phase:

**Table 17: Issues and Impacts identified during the Operational Phase of the proposed Leeuwfontein X 24 development**

AFFECTED ENVIRONMENT	ANTICIPATED IMPACT
<b>BIOPHYSICAL IMPACTS</b>	
Surface and groundwater	This issue is related to storm water management during the operational phase. The impermeable, hard surfaces associated with development, will result in increased storm water generation from the site. The storm water management plan proposed at the onset of this application, must be approved by the regulating authorities, and implemented on site. Attenuation ponds must be landscaped and engineered to ensure no drowning incidents.
Vegetation	<ul style="list-style-type: none"> <li>Destruction of the sensitive ridges</li> <li>Introduction of alien vegetation</li> </ul>
<b>SOCIO ECONOMICAL</b>	
Traffic	Traffic congestion
Waste Management	The proposal will generate significant amounts of waste due to the number of people who will be occupying structures proposed. The handling and disposal of this waste must be investigated the EIA in order to ensure that capacity to handle and dispose of this waste is available from the Relevant Authority.
Cultural	Potential destruction of objects of heritage value. Mitigation measures must be proposed in the EMPr.
Visual Impact	Multiple storey high rise buildings will alter the present visual landscape of the study area. This visual impact must be further investigated in the EIA.
Employment	The completion of the development will lead to the stimulation of direct and indirect job creation.
Provision of infrastructure	<ul style="list-style-type: none"> <li>Availability of services to be confirmed</li> <li>The project will result in the upgrade of infrastructure and services</li> <li>Increased stress on municipal bulk services</li> </ul>
Economic loss due to closure of mining activity	<ul style="list-style-type: none"> <li>Job losses due to the closure of the mine</li> <li>Economic impact of closure of mine</li> </ul>
Loss of agricultural land	Agricultural land will be lost due to the proposed development however

only small portions of the property is used for agricultural purposes.
--

### 9.3 Decommissioning phase

At this point of the project planning process the necessity for and timing of decommissioning of the proposed project is not known. However, like construction impacts, de-commissioning impacts are inherently temporary in duration. Impacts related to de-commissioning and rehabilitation activities (demolition, landscaping, compaction etc.) will be addressed within the EIA phase and in the EMPr.

### 9.4 Cumulative Impacts

Cumulative impacts associated with the project will be further investigated in detail during the EIA study.

## 10 Plan of Study for Environmental Impact Assessment

Potential environmental impacts (biophysical and social) associated with the proposed Leeuwfontein X 24, have been identified in the Scoping Report (SR).

No fatal flaws or highly significant impacts have been identified to date. All potentially significant and cumulative impacts will be further investigated and assessed within the Environmental Impact Assessment (EIA) phase of the project.

Mitigation measures will be contained in the Environmental Management Programme (EMPr) to be compiled during the EIA phase. Mitigation measures recommended in the SR will also be included in the EMPr.

The EIA phase will aim to adequately assess and address all potentially significant environmental issues in order to provide the GDARD with sufficient information to make an informed decision regarding the proposed project.

### 10.1 Approach to undertaking the EIA Phase of the Project

The following points below outline the proposed approach to undertaking the EIA phase of the project. It is believed that the proposed approach will adequately fulfill the competent authority's (GDARD) requirements, the requirements of the EIA Regulations (2014) and the objectives of environmental best practice, so as to ensure transparency and to allow an informed decision regarding the project to be made.

#### 10.1.1 Authority Consultation

On-going consultation with GDARD, the Municipality (City of Tshwane), Ward Councillors and all other authorities identified during the Scoping phase of the project (and further authorities that may be identified during the EIA phase) will continue throughout the duration of the project. Authority consultation is therefore seen as a continuous process that takes place until completion of the environmental investigations.

The GDARD assessing officer will be updated on a regular basis, so as to ensure their continued understanding of the proposed project and to ensure that all requirements are met by the environmental team.

### 10.1.2 Aims of the Environmental Impact Assessment

The EIA will aim to achieve the following:

- to supplement, where necessary, the assessment of the biophysical and social environments affected by the development during the Scoping study;
- to assess impacts on the study area in terms of environmental criteria;
- to identify and recommend appropriate mitigation measures for potentially significant environmental impacts;
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded and addressed; and
- to complete an Environmental Management Programme (EMPr) for the inclusion of proposed mitigation measures.

### 10.1.3 Detailed Studies to be undertaken in the EIA Phase – Specialist Studies

The following studies have been commissioned and will play a crucial role in the EIA process:

- Biodiversity Specialist Assessment
- Wetland Assessment
- Heritage Impact Assessment
- Geotechnical Study
- Traffic Impact Assessment
- Engineering Civil Services Study

### 10.1.4 Impact Assessment Methodology

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- Nature: A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- Extent: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- Duration: Indicates what the lifetime of the impact will be;
- Intensity: Describes whether an impact is destructive or benign;
- Probability: Describes the likelihood of an impact actually occurring; and
- Cumulative: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Table 18: Criteria to be used for rating of impacts

Criteria	Description			
<b>Extent</b>	<b>National (4)</b> The whole of South Africa	<b>Regional (3)</b> Provincial and parts of neighbouring provinces	<b>Local (2)</b> Within a radius of 2 km of the construction site	<b>Site (1)</b> Within the construction site
<b>Duration</b>	<b>Permanent (4)</b> Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	<b>Long-term (3)</b> The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be nontransitory	<b>Medium-term (2)</b> The impact will last for the period of the construction phase, where after it will be entirely negated	<b>Short-term (1)</b> The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
<b>Intensity</b>	<b>Very High (4)</b> Natural, cultural and social functions and processes are altered to extent that they permanently cease	<b>High (3)</b> Natural, cultural and social functions and processes are altered to extent that they temporarily cease	<b>Moderate (2)</b> Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	<b>Low (1)</b> Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
<b>Probability of occurrence</b>	<b>Definite (4)</b> Impact will certainly occur	<b>Highly Probable (3)</b> Most likely that the impact will occur	<b>Possible (2)</b> The impact may occur	<b>Improbable (1)</b> Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

**Table 19: Significance rating of classified impacts**

<b>Low impact (4 - 6 points)</b>	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
<b>Medium impact (7 - 9 points)</b>	Mitigation is possible with additional design and construction inputs.
<b>High impact (10 - 12 points)</b>	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
<b>Very high impact (13 - 16 points)</b>	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
<b>Status</b>	Denotes the perceived effect of the impact on the affected area.
<b>Positive (+)</b>	Beneficial impact.
<b>Negative (-)</b>	Deleterious or adverse impact.
<b>Neutral (/)</b>	Impact is neither beneficial nor adverse.

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary will be included in an EMP. The EMP will form part of the Environmental Impact Report (EIR).

### 10.1.5 Environmental Impact Report

The EIA Report (EIAR) will contain the following:

- Details of the EAP who compiled the report and their expertise to carry out an EIA;
- Detailed description of the activity(ies);
- A description of the environment that might be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- Details of the public participation process conducted during the Scoping Phase and the on-going consultation during the EIA phase;
- Description of the need and desirability of the activity including advantages and disadvantages that the activity may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A summary of the findings and recommendations of any specialist report or report on a specialised process;
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;

- An assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources and the degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- An opinion as to whether the 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 impact statement which contains a summary of the key findings of the environmental impact assessment; and a comparative assessment of the positive and negative implications of the activity.
- A draft Environmental Management Programme (EMPr) and
- Copies of any specialist reports and reports on specialised processes.

### 10.1.6 Draft Environmental Management Programme (EMPr)

During the compilation of the EIA, a draft EMPr will be compiled in accordance with the EIA Regulations (2014). The draft EMPr will provide the actions for the management of identified environmental impacts emanating from the project and a detailed outline of the implementation programme to minimise and/or eliminate the anticipated negative environmental impacts. The draft EMPr will provide strategies to be used to address the roles and responsibilities of environmental management personnel on site, and a framework for environmental compliance and monitoring.

The EMPr will include the following:

- Details of the person who prepared the EMPr and the expertise of the person to prepare an EMPr;
- Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in the EIA Report, including environmental impacts or objectives in respect of operation or undertaking of the activities, rehabilitation of the environment and closure where relevant;
- A detailed description of the aspects of the activity that are covered by the draft EMPr;
- An identification of the persons who will be responsible for the implementation of the measures;
- Where appropriate, time periods within which the measures contemplated in the draft EMPr must be implemented;
- Proposed mechanisms for monitoring compliance with the EMPr and reporting thereon;
- An environmental awareness plan; and
- Procedures for managing incidents which have occurred as a result of undertaking the activity and rehabilitation measures.

## 10.2 Public Participation during the EIA Phase

The public participation process during the EIA phase will include the following:

### 10.2.1 Advertising

The primary aim of advertisements in the EIA phase is to provide information regarding the availability of reports for public review, as well as, if necessary, the advertisement of dates of public meetings.

### 10.2.2 Identification of and Consultation with Key Stakeholders

The identification of I&APs and key stakeholders will continue into the EIA phase of the project as the public participation process is a continuous process that runs throughout the duration of an environmental study.



### 10.2.3 I&AP Database

All I&AP information (including contact details), together with dates and details of consultations and a record of all issues raised is recorded within a comprehensive database of I&APs. This database will be updated on an on-going basis throughout the project, and will act as a record of the communication/involvement process.

### 10.2.4 Consultation and Public Involvement

Consultation with I&APs is considered to be critical to the success of any EIA process. Therefore the necessary consultation (via telephone calls, fax and emails) and a public meeting during the EIA phase will be undertaken.

The aim of this process will be to provide I&APs with details regarding the process and to obtain further comments regarding the project. Minutes of all meetings held will be compiled and forwarded to all attendees. These minutes will also be included in the EIA Report.

### 10.2.5 Issues Register

All issues, comments and concerns raised during the public participation process of the EIA study will be compiled into an Issues register. This Issues register will be incorporated as part of the EIA Report.

### 10.2.6 Public Review of the Draft Environmental Impact Report

The draft EIA Report will be made available for public review and comment. A 30 day period will be allowed for this review process. An advertisement indicating the availability of this report for public scrutiny will be placed in the local newspaper. I&APs registered on the project database will be notified of the availability of this report by correspondence.

### 10.2.7 Authority Review of the Environmental Impact Report

After the public review period, all relevant comments received from the public will be considered and included into a final EIA report. This final document will be submitted to GDARD for final review and decision-making.

### 10.2.8 Environmental Authorisation

On receipt of the environmental authorisation (positive or negative) for the project, I&APs registered on the project database will be informed and its associated terms and conditions by correspondence.

## 11 Conclusions and Recommendations

---

This Environmental Scoping Report (ESR) for the proposed Leeuwfontein X 24 project has been undertaken in accordance with the Environmental Impact Assessment Regulations (2014) published in Government Notice Regulation 982 of 4 December 2014 read with Section 44, of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended).

In line with Regulations 21-24 (Chapter 4) of the EIA Regulations, this issues-based SR aimed to identify and provide:

- A description of the on-going activity;

- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, and economic aspects of the environment may be affected by the proposed activity;
- The identification of all legislation and guidelines applicable to the development;
- A description of environmental issues and potential impacts, including cumulative impacts, that have been identified;
- Details of the public participation process conducted to date; and
- A Plan of Study for Environmental Impact Assessment (refer to Section 10 of this document) including the methodology that will be adopted in assessing the potential impacts that have been identified, including specialist studies or specialised processes that will be undertaken.

The information contained in this SR provides a comprehensive description of the aim, purpose and benefit of the proposed development. In addition, the SR provides a basic description of the predevelopment environment in which this development is planned and which will be impacted upon, positively as well as negatively.

The aim of the environmental investigations and in particular the EIA Phase is to ensure that the positive impacts are enhanced and the negative impacts are eliminated or reduced as far as possible. The Plan of Study for the EIA contained in this report, describes the proposed way in which this will be done.

Based on the SR undertaken, it can be concluded that at this point there appears to be no fatal flaws associated with the project.

From the outcomes of the Scoping phase, it is the view of the EAP that all possible environmental red flags/sensitivities have been identified. The most significant issues identified during the Scoping phase are the following:

- Presence of two Class 1 ridges on the study area
- Cultural objects identified on the study area
- Availability of services

The full extent of bio-physical and socio-economic impacts associated with the proposed development however needs to be determined and assessed in the EIA phase. It is further the view of the EAP that although positive spin offs are associated with the development (i.e. job creation, etc.), the EIA phase must carefully consider all aspects of the environment equally (social, environmental and economical) to determine a way forward for the development.

It is anticipated that the process followed during the detailed EIA phase will meet the requirements of the legislation to ensure that the regulatory authorities receive sufficient information to enable informed decision-making.