

Environmental Impact Assessment  
Draft Environmental Impact Assessment Report



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SUNSHINE VIEW TOWNSHIP DEVELOPMENT AND  
ASSOCIATED INFRASTRUCTURE ON REMAINING  
EXTENT OF PORTION 42, PORTION 43 AND PORTION  
47 OF THE FARM VALSCHFONTEIN 33 JS  
DR JS MOROKA LOCAL MUNICIPALITY  
NKANGALA DISTRICT MUNICIPALITY  
MPUMALANGA PROVINCE  
REFERENCE: 1/3/1/16/1N-341

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## ACRONYMS

CBA	Critical Biodiversity Area
DARDLEA	Department of Agriculture, Rural Development, Land and Environmental Affairs
DRJSMLM	Dr JS Moroka Local Municipality
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
ESA	Ecological Support Area
FSR	Final Scoping Report
IDP	Integrated Development Plan
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
LUDS	Land Use Development Support
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)
NEMPAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NPAES	National Protected Areas Expansion Strategy
NWA	National Water Act (Act 36 of 1998)
SWSA	Strategic water source areas of South Africa
VU	Vulnerable
WMA	Water Management Areas
WWTW	Waste Water Treatment Works
PES	Present Ecological State
PIA	Palaeontological Impact Assessment
PPP	Public Participation Process
PoS	EIA Plan of Study for Environmental Impact Assessment

SDF	Spatial Development Framework
SR	Scoping Report
SAHRA	South African Heritage Resources Agency

## 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:

- the land, water and atmosphere of the earth;
- micro-organisms, plants and animal life;
- any part or combination of (i) of (ii) and the interrelationships among and between them; and
- 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).

**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.

**Registered interested and affected party** – in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42 of the 2014 EIA Regulations.

**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 judgments 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

Setala Environmental (Pty) Ltd has been appointed as the independent environmental assessment practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed Sunshine View township development and associated infrastructure on the Remaining Extent of Portion 42, Portion 43 and Portion 47 of the farm Valschfontein 33 JS (herein after referred to as “the site”), Dr JS Moroka Local Municipality in Nkangala District Municipality, Mpumalanga Province. A bulk water pipeline crossing the Kgobokwane stream, within the road reserve on Portion 31 and Portion 35 of the farm Valschfontein 33 JS, is proposed as part of the bulk civil services. The township development site is 68.77 hectares in extent and is situated on the eastern boundary of the Dr JS Moroka LM next to the Siyabuswa and Kgobokwane settlements along the R573 Moloto Road. It is located approximately 115 km northeast of the City of Tshwane CBD, 25 kilometres southwest of Marble Hall and 30 kilometres west of Groblersdal.

The applicant is Lesiba Peter Sebothoma.

### 1.2 Approach to the Environmental Impact Assessment Process

Application for authorisation of the above project is to be submitted to the Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA), in terms of the National Environmental Management, 1998 (Act 107 of 1998), and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations (as amended on 7 April 2017) promulgated in Government Gazette 40772 and Government Notice (GN) R327, R326, R325 and R324.

The proposed project is a listed activity in terms of Sections 24(2) and 24(d) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended). The Environmental Impact Assessment (EIA) Regulations, 2017 promulgated in terms of Chapter 5 of the NEMA provide for the control of certain activities that are listed in Government Notice Regulation (GN R.) No. 327, 325 and 324. Activities listed in these notices must comply with the regulatory requirements listed in GN R. 326, which prohibits such activities until written Authorisation is obtained from the Competent Authority. Such Environmental Authorisation (EA), which may be granted subject to conditions, will only be considered once there has been compliance with the EIA Regulations of 2017. GN R. No. 326 sets out the procedure and documentation that need to be compiled with undertaking a Basic Assessment Process.

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

- Phase 1: Scoping Phase (Completed)  
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 (Completed)

The SR provided a description of the receiving environment and how the environment may be affected by the proposed development. Desktop studies making use of existing information were 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 were 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 were documented within the SR. Thus, the SR

provided 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.

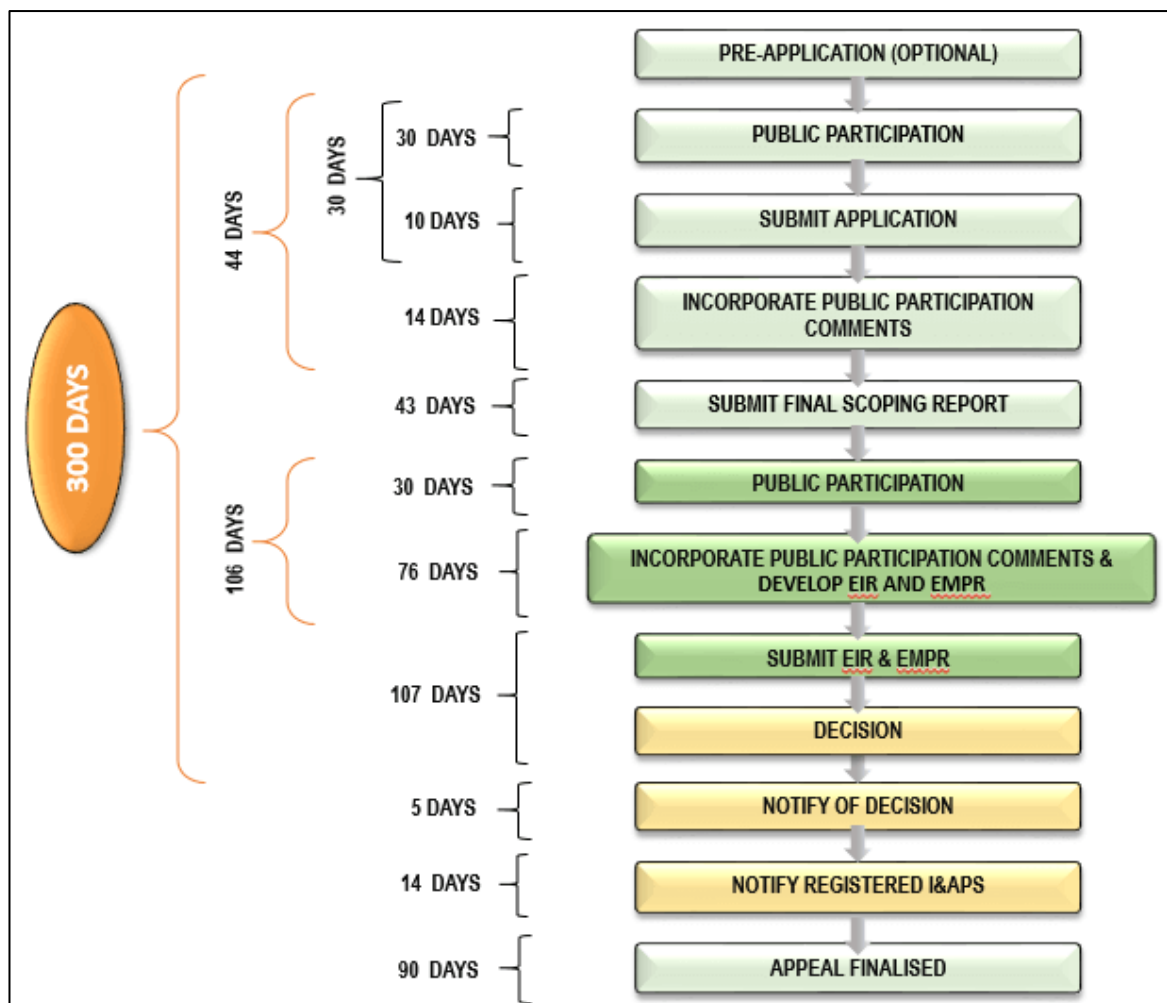
The Final Scoping Report (FSR) was approved by Mpumalanga DARDLEA on 23 November 2022. The letter of acceptance authorised the applicant to proceed with undertaking the EIA for the proposed Sunshine View development, in accordance with the tasks outlined in the Plan of Study for Environmental Impact Assessment.

### 1.2.2 Environmental Impact Assessment Phase

The EIAR has aimed 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 Content and Structure of the EIA Report

This report represents the Draft EIAR and was compiled in accordance with Government Notice No. R. 326 of 7 April 2017, Appendix 2(1). In terms of Government Notice No. R. 326 of 7 April 2017, Appendix 2(1) an EIAR must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—

(a) details of—

- the EAP who prepared the report; and
- the expertise of the EAP, including a curriculum vitae;

(b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:

- the 21 digit Surveyor General code of each cadastral land parcel;
- where available, the physical address and farm name; and
- where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—

- a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;
- on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(d) a description of the scope of the proposed activity, including—

- all listed and specified activities triggered and being applied for; and
- a description of the associated structures and infrastructure related to the development;

(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;

(g) a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;

(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:

- details of the development footprint alternatives considered;
- details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;
- a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;
- the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—
  - can be reversed;
  - may cause irreplaceable loss of resources; and
  - can be avoided, managed or mitigated;
- the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

- positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
  - the possible mitigation measures that could be applied and level of residual risk;
  - if no alternative development footprints for the activity were investigated, the motivation for not considering such; and
  - a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;
- (i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including—
- a description of all environmental issues and risks that were identified during the environmental impact assessment process; and
  - an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;
- (j) an assessment of each identified potentially significant impact and risk, including—
- cumulative impacts;
  - the nature, significance and consequences of the impact and risk;
  - the extent and duration of the impact and risk;
  - the probability of the impact and risk occurring;
  - the degree to which the impact and risk can be reversed;
  - the degree to which the impact and risk may cause irreplaceable loss of resources; and
  - the degree to which the impact and risk can be mitigated;
- (k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;
- (l) an environmental impact statement which contains—
- a summary of the key findings of the environmental impact assessment;
  - a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and
  - a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;
- (m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;
- (n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- (o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;
- (p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;
- (q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- (r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;
- (s) an undertaking under oath or affirmation by the EAP in relation to
- the correctness of the information provided in the reports;

- the inclusion of comments and inputs from stakeholders and I&APs;
  - the inclusion of inputs and recommendations from the specialist reports where relevant; and
  - any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;
- (t) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;
- (u) an indication of any deviation from the approved scoping report, including the plan of study, including–
- any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and
  - a motivation for the deviation;
- (v) any specific information that may be required by the competent authority; and
- (w) any other matters required in terms of section 24(4)(a) and (b) of the Act.

This report has been structured to comply with the format required by the NEMA. The contents are as follows:

**TABLE 1: REPORT STRUCTURE**

SECTION	CONTENT
SECTION 1 Introduction	Introduction and background to the project.
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 Receiving environment	Provides the baseline information of the biophysical and social environments being impacted by the development proposal. Key findings of the specialist studies conducted.
SECTION 7 Project Alternatives	Consideration of alternatives (locality, land use, layout, designs, energy uses and No-Go) for the project.
SECTION 8 Public participation process	Provides an overview of the Public Participation Process conducted to date.
SECTION 9 Environmental Impact Assessment	The impacts identified are rated by significance.
SECTION 10 Environmental Impact Statement	Conclusions and recommendations of the Environmental Impact Assessment.

## 2 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

### 2.1 Legislative requirements for environmental assessment practitioners

Section 13 of Government Notice No. R. 326 of 7 April 2017 provides the following requirements for environmental assessment practitioners (EAPs):

- An EAP must be independent;
- An EAP must have expertise in conducting environmental impact assessments or undertake specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the activity.
- An EAP must ensure compliance with these Regulations;

- An EAP must perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- An EAP must take into account, to the extent possible, the matters referred to in regulation 18 of Government Notice No. R. 326 of 7 April 2017 when preparing the application and any report, plan or document relating to the application; and
- An EAP must disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing –
  - any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or
  - the objectivity of any report, plan or document to be prepared by the EAP or specialist in terms of these Regulations for submission to the competent authority.

## 2.2 Details of the expertise of relevant Environmental Assessment Practitioner

The members of Setala have combined expertise and a proven track record of initiating and completing major projects. We have experience of more than 15 years in EIA applications.

In order for the company to meet the emerging environmental challenges, Setala 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 development as well as linear projects including water pipelines and power lines, agricultural development, including dams have been successfully completed over the years as indicated in our Experience Record.

The team is especially proficient in assisting the Client in understanding and determining environmental responsibility, potential impacts and giving guidance as to alternative approaches or identifying unforeseen environmental impacts.

Areas of expertise:

- Environmental Impact Assessment (EIA)
- Strategic Environmental Assessments (SEA)
- Environmental Compliance (incl. ECO)
- Public participation
- Specialist studies (Fauna, Flora, Avifauna, Wetland)
- Water related expertise and services i.e. Water Use Licence Applications, Integrated Water and Waste Management Plans, water use, and water quality assessments.

Refer to Table 2 and **Appendix A** for EAP details and experience.

**TABLE 2: EAP DETAILS AND EXPERIENCE**

Company	Setala Environmental (Pty) Ltd
Contact Persons	Mientjie Coetzee
Postal Address	44 Melrose Blvd Melrose Arch Johannesburg 2196
Telephone	083 253 2246
Facsimile	086 689 1515
E-mail	mientjie@peopletexture.co.za

Qualification	Master of Science
Professional Registrations	EAPASA Registration number 2019/1774 IAIAsa Membership number 3359
Experience	Mientjie Coetzee has 18 years' experience in the Environmental Sector and has gained experience as Environmental Assessment Practitioner 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 (EMPrs).

Setala Environmental has no vested interest in the proposed development and hereby declares its independence as required by the EIA Regulations.

### 3 LOCALITY AND NATURE OF ACTIVITY

#### 3.1 Project Locality and Extent

The proposed project is located on the Remaining Extent of Portion 42, Portion 43 and Portion 47 of the farm Valschfontein 33 JS, Dr JS Moroka Local Municipality in Nkangala District Municipality, Mpumalanga Province. The Property Co-ordinates are 25.107074 South, 29.098872 East. The Surveyor-general 21-digit site (erf/farm/portion) reference numbers of the three portions are TOJS00000000003300042, TOJS00000000003300043, TOJS00000000003300047. A bulk water pipeline crossing the Kgobokwane stream, within the road reserve on Portion 31 and Portion 35 of the farm Valschfontein 33 JS, is proposed as part of the bulk civil services. The Surveyor-general 21-digit site (erf/farm/portion) reference numbers of the two portions are TOJS00000000003300031 and TOJS00000000003300035 (*refer to Figure 3*).

The site is located at the Mpumalanga/Limpopo Provincial Boundary, within the Dr JS Moroka Local Municipality. It is positioned east of Siyabuswa and Maganabuswa, north of the Elshadai Combined School and adjacent to the north-east corner of the R573 split/fork. It is located approximately 115 km northeast of the City of Tshwane CBD, 25 kilometres southwest of Marble Hall and 30 kilometres west of Groblersdal.

The existing R573 bordering the site to the west and the south provide important fixed points of direct vehicular access to the site.

The proposed development is indicated in red on the Locality Maps below.

The site is 68,77 hectares in extent.



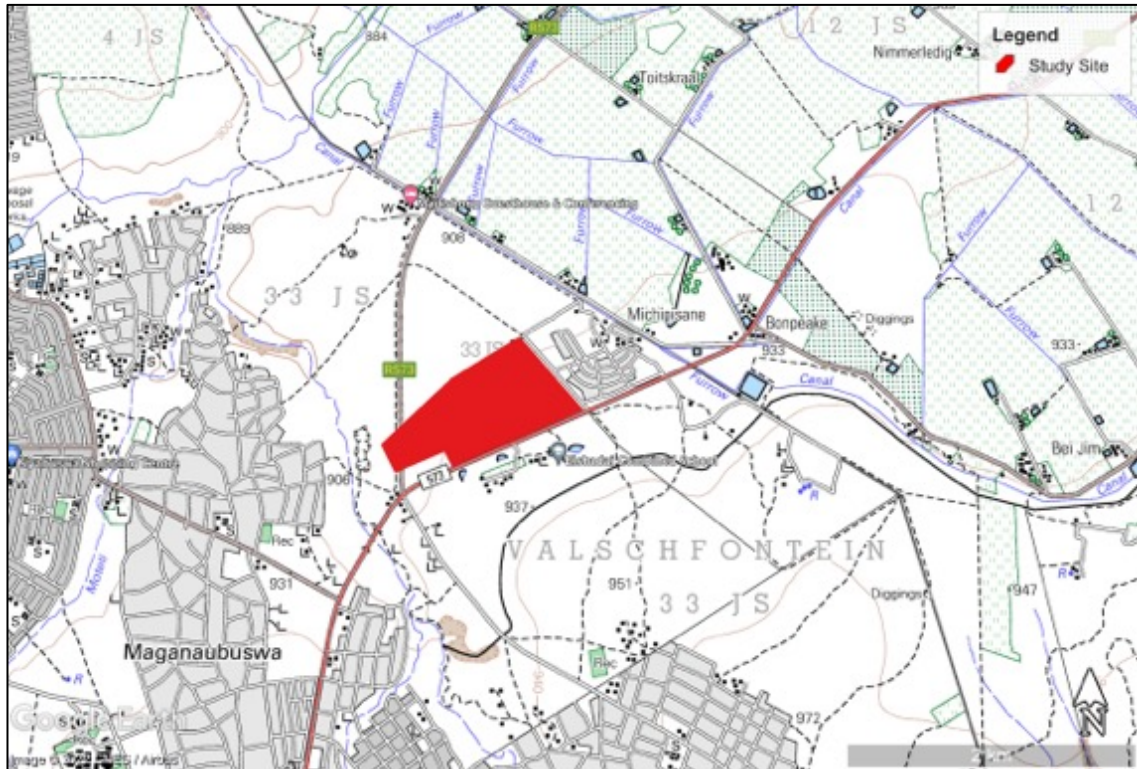


Figure 1: Locality Map (Source: Office of the Chief Surveyor-General)



Figure 2: Locality Map (Google Earth)

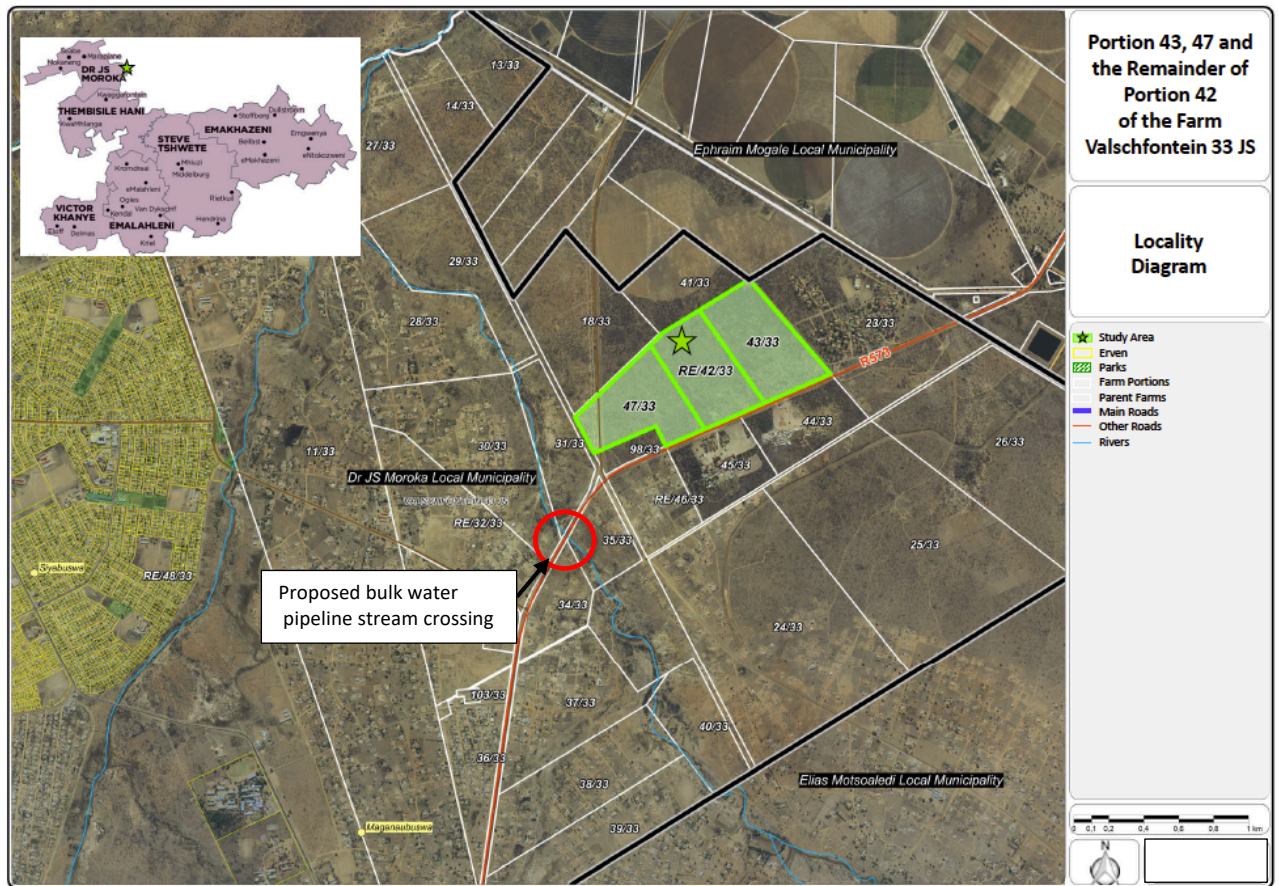


Figure 3: Locality Map (Aerial)

### 3.2 Site Description

The site is currently zoned “Agriculture” in terms of the Dr JS Moroka Local Municipality Land Use Scheme, 2020.

The landcover of the study site is degraded bushveld and vacant plots of land, with a farm dam near the southern boundary. The land use of the site is fallow and vacant with no commercial or agricultural activities taking place and no roads traversing the site. The only development on the site is the small soil-wall dam.

The surrounding properties to the north are agricultural/farming with irrigation crops and vacant portions of land. The properties to the south are educational (Good Shepherd Model School & Elshadai Combined School) with dwelling houses. The properties to the east and west are developed with dwelling houses.

The surrounding road network offers a number of opportunities for safe and convenient access to the development. This includes the R573 that is adjacent to the south and west of the site.

### 3.3 Project Description

The proposed development is a mixed-use development, consisting of the following land uses:

- 1009 erven zoned “Residential 1”
- 2 erven zoned “Business 1”
- 3 erven zoned “Institutional” for Church
- 1 erf zoned “Institutional” for Crèche
- 4 erven zoned “Public Open Space” and

- “Public Streets”

Access to the site will be obtained from the R573 situated south of the site.

Refer to Figure 4: Layout Plan  
 Layout Plan also attached as Appendix B.

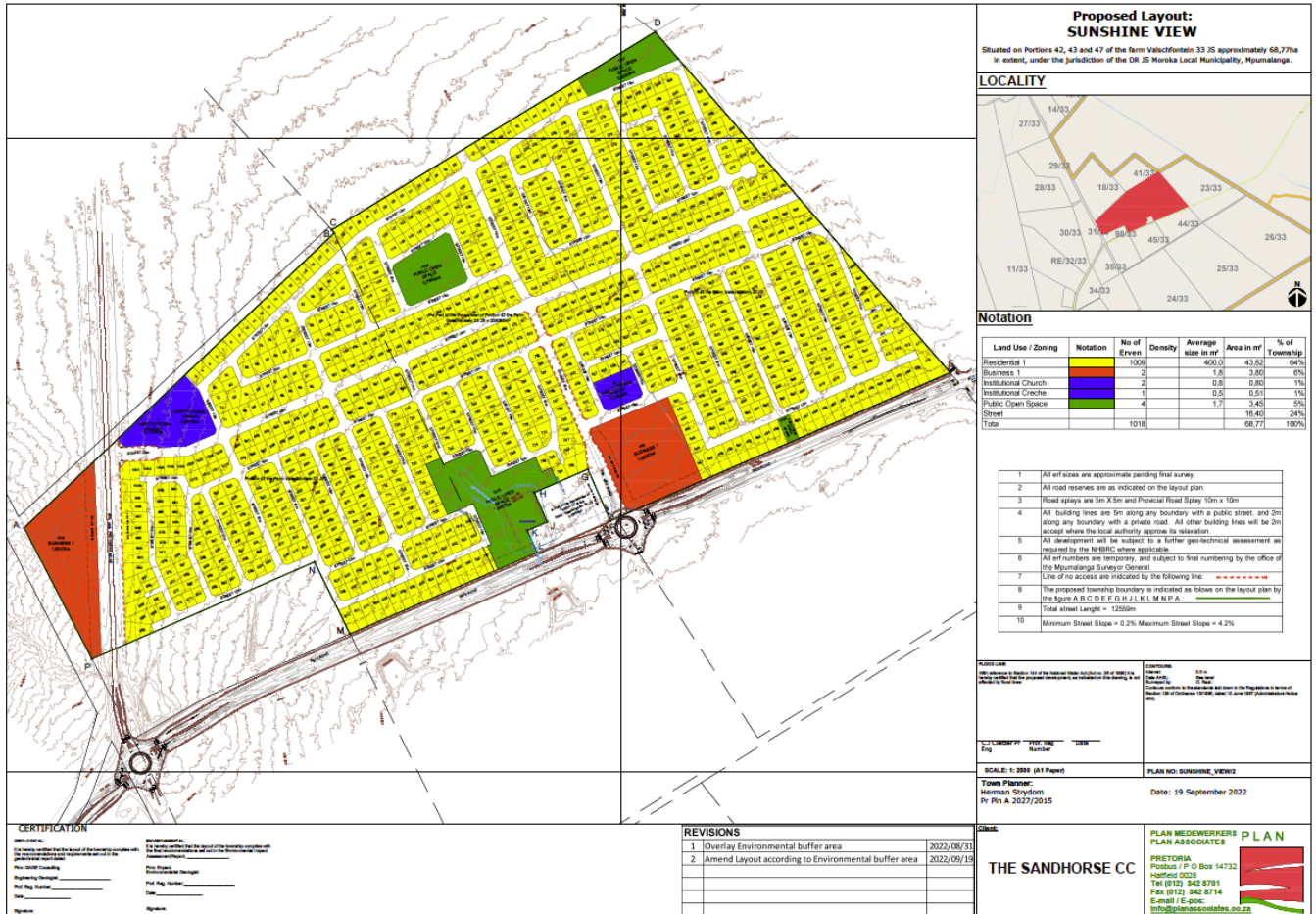


Figure 4: Layout Plan

### 3.3 Civil Services, Infrastructure and Electrical Services

Civil and Electrical Services Reports were compiled by Plan Associates Consulting Engineers and Buro Tech Consulting Engineers respectively to investigate the availability of civil and electrical engineering services with regard to the proposed development. The Civil and Electrical Reports are included as Appendix C (i) and Appendix C (ii) respectively.

The reports contained the following findings and recommendations:

### 3.3.1 Bulk Civil Services

#### 3.3.1.1 Water Services

##### Existing Bulk/Municipal Water Supply

Currently the nearby community of Toitskraal are supplied with water from Mthombo Balancing Dam. This dam has a 0.5Mℓ package plant to treat and supply potable water.

A new 14km long bulk water supply pipeline is being constructed from the Mthombo balancing Dam to the Weltevreden Water Treatment Plant (Weltevrede WTP).

The Weltevrede WTP is located approximately 11km to the west of the proposed new township. This new pipeline will supply 7Mℓ to the Weltevrede Water Treatment Plant (WTP). It is assumed that the proposed new 7Mℓ water supply pipeline currently under construction includes capacity to provide the proposed township with water.

Unfortunately, there is no water storage facilities in the direct vicinity of the proposed township. There is an existing “Siyabushwa” storage reservoir located approximately 6.5km south-west of the proposed township.

The image below indicates the approximate location of the existing water storage reservoir and proposed new bulk water supply pipeline relative to the proposed township.

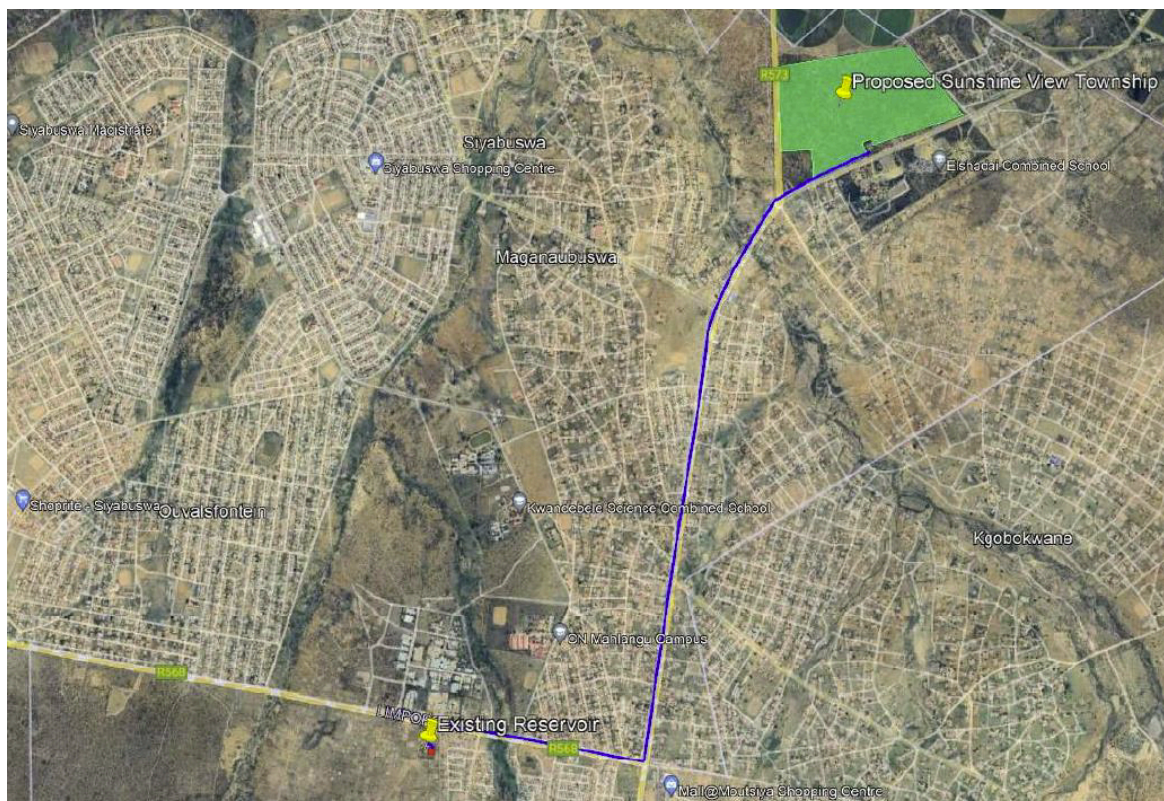


Figure 5: Existing Water Storage Reservoir

##### Water Reticulation Upgrades Required

It is proposed that a new 1Mℓ (24 hr storage) reservoir be constructed at the existing reservoir location to supply the proposed township with water. The estimated elevation of the existing reservoir site is 980m

above sea-level which provides a 55m static head between the reservoir site and the proposed township property.

From this new storage reservoir, a new bulk supply pipeline is proposed to supply the proposed township with potable water.

The size of the proposed new storage reservoir and bulk supply pipeline could be increased to include other areas in the vicinity, but the DR JS Moroka Local Municipality (DRJSMLM) will have to provide details and guidance in this regard, should it be required.

The proposed development could be serviced with the necessary potable water via the proposed new water services infrastructure should the required upgrades be done.

#### Water Network

The internal water reticulation network of the proposed township will connect to the proposed new bulk water supply pipeline as described above. The internal water network will incorporate fire flow and include valves and fittings as per the DRJSMLM requirements.

Erven will be serviced with individual house connections that will need to be metered. The internal network will comprise of 75mm to 160mm diameter Class 12 uPVC pipelines.

#### **3.3.1.2 Sewer Services**

##### Existing Bulk/Municipal Sewer System

Currently there is no municipal sewer infrastructure in the direct vicinity of the proposed township. A municipal Wastewater Treatment Works (WWTW) is located approximately 12km to the south of the proposed township. Unfortunately, this WWTW, with a capacity of 10Mℓ, will not be able to accommodate the proposed township due to its proximity.

The Siyabuswa WWTW with a capacity of approximately 2Mℓ is located 2km to the west of the proposed township. This facility is owned and operated by the Department of Public Works (Mpumalanga). This facility is earmarked to serve the community of Toitskraal but is currently not fully functional.

It is not surprising that there is little to no bulk municipal services in the vicinity of the proposed township, as most municipalities throughout the country currently struggle with incapacitated WWTW facilities or a lack of bulk municipal services overall. This could be attributed to a lack of basic planning and exponential growth of communities.

The image below indicates the approximate location of the Siyabuswa WWTW relative to the proposed township.

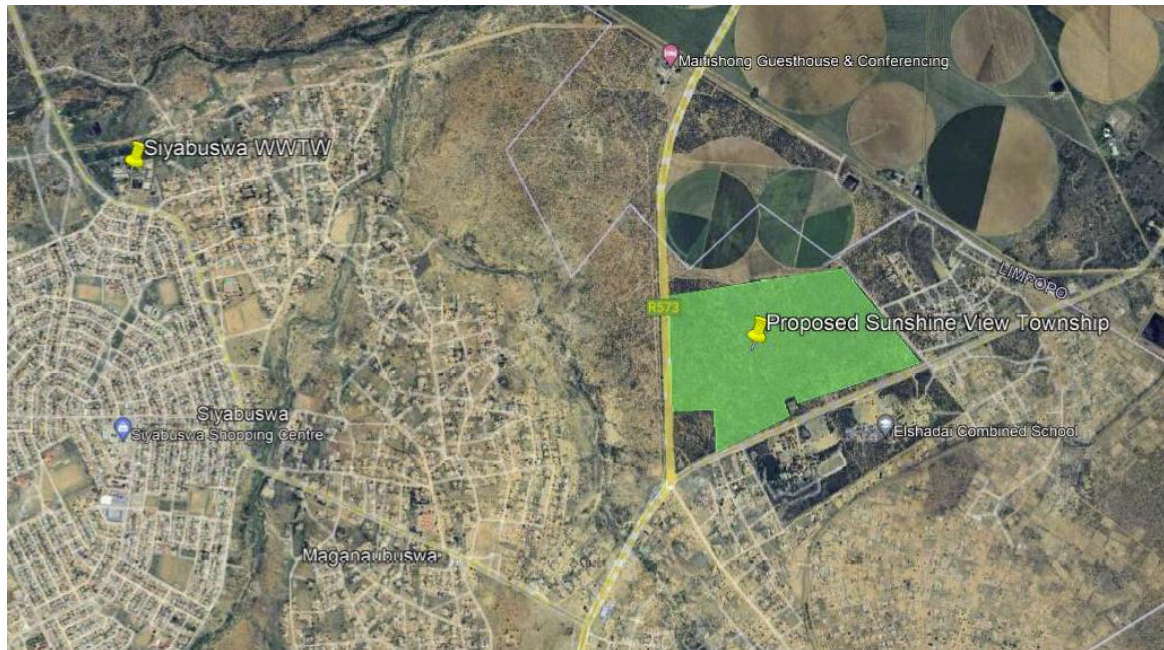


Figure 6: Siyabuswa WWTW - Location

#### Sewer System Upgrades Required

Based on the information provided it could be estimated that the current required WWTW capacity for the proposed township only, is 800kℓ/day.

It should be noted that this estimated capacity is the current wastewater treatment requirement and does not include future growth that could be stimulated by the proposed township. Additional capacity should be planned to accommodate future growth to take place during the planning and implementation stages as well as a 10-15 year growth horizon.

It is not recommended to provide a sewerage pumpstation for the proposed township. The township is located approximately 2km from the nearest WWTW and even further from the nearest municipal offices. The secluded location does provide opportunity to vandals and thieves to ransack the sewer pumpstation, rendering it, dysfunctional.

Pumping stations, although smaller with a reduced capital cost upfront does require high maintenance with numerous mechanical components that should be provided with backup considerations i.e. additional storage capacity, generators and a dual pump system with a duty and standby pump for each.

Several well design package plant patents are available in South Africa that is low maintenance and easily upgradable. The location of such a package plant should however take into consideration future expansion and development.

A constructed wetland treatment facility is one of such an example as depicted in the images below.

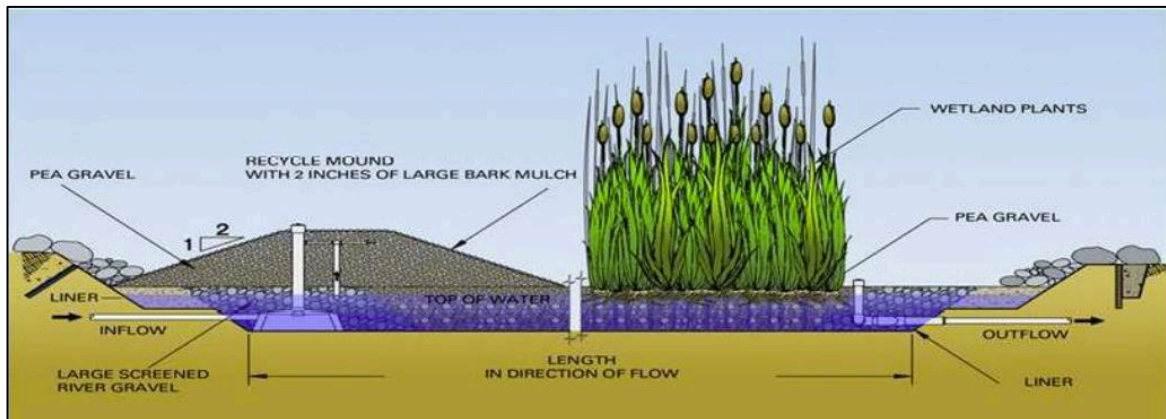


Figure 7: Typical Wetland Treatment Facility

A constructed wetland treatment facility could be easily positioned close to the proposed township and near the existing water course. The “self-sufficient”, easily maintained and almost “ransack free” design should be an ideal option for the treatment of sewerage effluent from the proposed township.

Sufficient space should be provided for this purpose within the township boundaries or within a servitude area in favour of the DRJSMMLM.

Careful consideration should be given to the current and future townships to be developed in the areas surrounding the proposed township. Bulk sewerage systems could be planned and implemented in line with the development strategy of the town and could assist with township developments in future if planned properly.

#### Sewer Network

When considering a sanitation solution for any area, whether temporary or permanent specific considerations should be taken into account. There is a wide range of these to consider but it could be summarised, but not limited to the following:

- The short-term/temporary nature of any sanitation solution;
- The topography and location of the informal township;
- General health and safety requirements;
- Soil conditions;

- The need for urgent and speedy intervention;
- Sanitation technology to be implemented;
- Sanitation and wastewater options;
- Existing services and availability;
- Cost or feasibility;
- How many people live there; and
- What is the average size of households in the area

It is proposed that the internal sewer network of the proposed township will drain to the north-western corner of the proposed township and connect directly onto the proposed new constructed wetland waste water treatment facility. The internal sewerage reticulation pipelines will consist of 160mm Ø sewer pipelines and manholes to be located within the road reserve of the proposed township.

### 3.3.2 Road Infrastructure

#### 3.3.2.1 Existing Internal Roads

The existing R573 Provincial Road runs along the western and southern boundaries of the proposed township. All other roads in the vicinity of the proposed township are informal/farm gravel roads.

There are no other formally constructed provincial or municipal roads in the vicinity of the proposed township.

#### 3.3.2.2 Upgrades for External Roads

It is expected that the township will be accessed from the R573 Provincial Road from both the southern and western boundaries. Specific road upgrades could be required at this access location to accommodate the vehicle movements of traffic entering and exiting the proposed township. These road upgrades will have to be done in accordance with the provincial roads department's standards and specifications.

It is also expected that public transport facilities will be required at the access positions to accommodate the pedestrians for the proposed township and future townships in the vicinity of the township. Any special Non-Motorized Traffic (NMT) requirements should be indicated in the Traffic Impact Study. These facilities could include walkways, cycle ways, road crossings, etc.

Any Municipal roads infrastructure will be designed and constructed to the following standards:

- "The Neighbourhood Planning and Design Guide"- Redbook, latest edition.

Access to the site can be achieved with an acceptable level of service via the R573 Provincial Road should the required external road upgrades be implemented to be confirmed by the Traffic Impact Study.

#### 3.3.2.3 Internal Roads Infrastructure

Access to the proposed new townships will be obtained directly from the existing R573 Provincial Road. The accesses from the external roads, should be constructed to provide safe and suitable access to the township and should take the estimations of the traffic impact study into account. These accesses should also be designed according to the relevant standards and specifications of the DRJSMLM and the Provincial Roads Department.

The internal roads for the proposed township will form part of the internal services road network. The new roads will be single carriageway roads with varying widths between 5m and 6m according to the



municipality's specifications and requirements and will suite the prescribed road reserve widths for the township.

The Intersections with provincial roads will accommodate the required slip lanes and turning facilities as may be required and identified in the Traffic Impact Study. Public Transport facilities and Non-Motorised Transport Facilities (NMTF) will also be incorporated as required.

All internal township roads will be designed and constructed to the following standards:

- "The Neighbourhood Planning and Design Guide", - Redbook, latest edition.

For the purposes of this report, it was assumed that the townships internal road networks would be constructed with 60mm interlocking grey paving blocks and the provincial road upgrades will be done with an asphalt road surface.

### 3.3.3 Stormwater Infrastructure

#### 3.3.3.1 Existing External Stormwater Infrastructure

The proposed township is located to the east of any existing water course, which appears to be a subsidiary of the Elands River. The natural pre-development run-off from the proposed application site drains via surface flow towards the north and then west over farmland and eventually in this subsidiary of the Elands River.

No formal stormwater infrastructure exists in the vicinity of the proposed township expect for stormwater culverts draining stormwater from south to north and east to west of the R573 Provincial Road.

Stormwater management and drainage for the proposed township is therefore proposed via conventional stormwater drainage practices.

Poor stormwater management and planning could result in loss or damage of property and in severe circumstances loss of life.

For all the settlements and proposed future townships, the proper and effective management of stormwater is critical and should be carefully planned, designed and implemented.

The storm water management planning should consider minor and major storm events for different rainfall return periods. It is not expected that the storm water infrastructure will be able to accommodate larger storm events for the 1:50 or 1:100-year storm returns (except in special circumstances) but the storm water planning should at least accommodate the natural run-off paths of these storm events to eliminate or reduce risk and damage to and prevent any loss of life for residents as far as possible.

For this purpose, major and minor stormwater management infrastructure should be considered. For minor events stormwater channels and pipe networks can be considered. For major events this stormwater infrastructure can be a combination of channels, stormwater pipe networks and road surfaces. These management strategies could include formalized run-off channels and drains constructed from in-situ rock material (if available) or by imported materials.

The images below indicate examples of storm water management infrastructure for larger event storms in rural but formalized areas.



Figure 8: Typical Reno Mattresses for Steeper Portions of Stormwater Channels/Side Drains



Figure 9: Typical Check Dam

The images below indicate examples of stormwater concrete lined and grass lines channels, some of which is combined with pipelines for road crossings.



Figure 10: Typical Stormwater Concrete Lined & Grass Lines Channels

### 3.3.3.2 Upgrades for External Stormwater System

No upgrades to the existing municipal/provincial stormwater infrastructure will be required to accommodate the stormwater runoff generated by the proposed new township.

However, new stormwater road crossings will be required along the R573 Provincial Road to Roedtan, leading towards the natural water course to the west of the proposed township.

All new municipal stormwater infrastructure will be designed and constructed to the following standards:

- “The South African National Roads Agency – Drainage Manual” – latest edition.
- “The Neighbourhood Planning and Design Guide”, - Redbook, latest edition.

The major stormwater runoff from the proposed development can effectively be drained and discharged into the natural watercourse on the western of the proposed township and neighbouring properties to the north.

### 3.3.3.3 Internal Stormwater Infrastructure

The details of the internal stormwater are as follows:

- Minor Stormwater run-off (1:5 year recurrence flood)

The stormwater infrastructure for the proposed township will be designed to accommodate the 1:5 year post development run-off. This stormwater networks will consist of open channels, if at all possible, but will predominantly consist of stormwater pipelines. The stormwater infrastructure will be accommodated within road reserves as much as possible and where required servitudes will be provided for the infrastructure outside of the road reserves in the favour of the municipality.

The discharge velocity of stormwater run-off through these networks will be reduced to an acceptable limit to prevent erosion. Energy dissipaters and reno mattresses or riprap will be used where required to prevent erosion as much as possible.

- Major Stormwater run-off (1:20 year recurrence flood)

The major stormwater run-off of the proposed township will be discharged by means of surface drainage and will discharge directly into or towards the existing water course to the west of the township or the neighbouring farmlands properties to the north, through a combined minor and major stormwater network. The network will consist of stormwater pipelines and the new internal road surfaces to be constructed will act as open channels.

As may be required and in special circumstances the proposed stormwater systems will be designed to cater for the 1:50 and 1:100 year return period storms. These could include, but is not limited to, systems catering for catchment areas larger than 30ha or flows greater than 10m<sup>3</sup>/s. These areas should typically require flood line determination to be done. For these larger storm events the designs will be done as per the requirements of the South African National Roads Agency – Drainage Manual.

### 3.3.4 Solid Waste

For the determination of solid waste generation, it should be noted that there is no clear indication or publications that could be consulted that accurately indicate volumes of solid waste that is generated by informal settlements. The volumes are therefore indicative only for purposes of planning for the collection and disposal of the estimated volumes of waste.

Case studies done in the City of Tshwane have indicated that households in informal settlements generate approximately 200 to 240ℓ of general waste per week.

The estimated volume of solid waste that could be generated by the informal and formalised settlements discussed in this report is calculated as 294.14 kℓ/week.

For formalized townships access is generally easy and municipal waste collection can be executed with general waste collection vehicles. It is therefore proposed that the residents collect their waste in common Wheelie Bins. These bins could be emptied by the local authority on a weekly basis.

### **3.3.5 Bulk Electrical Services**

#### **3.3.5.1 Existing Networks**

No electrical reticulation networks exist within the project envelope of the proposed Sunshine View. Electricity supply to townships adjacent to the proposed development consists of a combination of MV & LV overhead Aerial Bundle Conductor (ABC) on wooden poles, with voltage stepped down from 22 000-Volt to 400-Volt via platform mounted transformers.

A site inspection showed that the area is supplied via the AMK 22kV feeder (from the Amandla 88/22kV substation).

House connections will be done via concentric cable with metering via smart split prepaid metering.

All electrical construction work will be done in compliance with the applicable Eskom standards and specifications.

The area is supplied from the Amandla 88/22kV substation. The substation has an installed capacity of 2x 40MVA, with a firm capacity of 40MVA. Others Eskom substations in the surrounding area include the Wolwekraal and Groblersdal Eskom substations, and the supporting 132kV and 88kV transmission lines.

#### **3.3.5.2 Available Capacity**

The final estimated maximum demand for the new development is calculated to be 3 200 kVA (3.2 MVA). The Amandla 88/22kV Eskom Substation should have sufficient capacity available to provide the proposed development with capacity required.

Eskom did not provide any feedback at the time of publishing of the Electrical Report regarding availability of spare capacity on either the substation or the 22kV distribution lines. The formal Eskom application process will have to be followed to obtain network capacity details from Eskom.

### **3.4 Traffic Impact Assessment**

A Traffic Impact Assessment (TIA) was conducted by Gary Edwards Traffic Engineering. The Traffic Impact Report is included as Appendix C (iii).

#### **3.4.1 Study Area**

The following intersections were included in the investigation:

- R573 National Road / R573 Provincial Road – 2 Way Stop;
- R573 National Road / Good Shepherd Model School – 1 Way Stop; and
- R573 National Road / Road A – 2 Way Stop.

### 3.4.2 National Road Planning

The South African National Roads Agency Limited (SANRAL) appointed LEO Consulting to perform the planning and design of the upgrade of Section 3 of the R573 (between the Limpopo/Mpumalanga Provincial Border and Marble Hall). This road planning was obtained from LEO Consulting and the relevant section under investigation is attached in Appendix B of the Traffic Impact Assessment Report. The road planning caters for the following:

- Upgrading the R573 from 1 lane per direction to a dual carriageway (2 lanes per direction);
- Construction of dual lane roundabouts at the intersection with the R573 Provincial Road and at the Good Shepherd Model School.

### 3.4.3 Existing Traffic Volumes

A site visit was conducted on Tuesday 21 June 2022 to observe the current operating conditions along the R573 in the vicinity of the site. Weekday morning and afternoon peak period traffic counts were also conducted on this day (between 06h30 and 08h30 in the morning and between 15h30 and 18h00 in the afternoon) at the critical intersections to identify the existing peak hour traffic volumes on the surrounding road network. During the traffic surveys, it was noted that the Good Shepherd Model School mainly generated public transport traffic (stopping along the R573) and pedestrian traffic.

Acceptable operating conditions currently prevail at the surrounding intersections during the peak hours and no capacity constraints occur.

In the detailed design report compiled by LEO Consulting, 2015 CTO station data were obtained and processed. It was found that typically 11% of the Average Annual Daily Traffic along the R573 (between Siyabuswa and Marble Hall) consist of heavy vehicles.

### 3.4.4 Expected Future Volumes

The expected future background traffic volumes were calculated by considering the recommended growth rates as contained in the TMH 17 document.

A growth rate of 3% was considered appropriate for this study and is similar to the average growth rate applied by LEO Consulting along the R573 Section 3 corridor.

### 3.4.5 Access

Access to the township is proposed along the R573 National Road opposite the Good Shepherd Model School. This is a planned intersection by SANRAL that will be controlled by means of a dual lane roundabout. A second access is also proposed along the western provincial boundary road (R573) via a new intersection that will be located approximately 430m north of the R573 National Road. It should be noted that this location represents the maximum possible spacing from the national road.

A filling station is planned upstream of the proposed access along the R573 National Road. A separate application has been submitted to SANRAL in March 2021 and was subsequently approved. The proposed accesses to the filling station includes the following:

- A left in -left out access along the R573 National Road; and
- A full intersection along the new access road to the township (referred to as Road B in the TIA report), approximately 100m north of the R573.

The accesses to the filling station are currently under review by SANRAL. If approved, the spacing of the accesses along Road B will be as follows:

Way Stop controlled intersection to the proposed township, 80m north of the filling station access.

- 1 Way Stop controlled intersection to the filling station, 100m north of the R573;
- 1 Way Stop controlled intersection to the proposed township, 80m north of the filling station access.

### 3.4.6 Trip Generation, Distribution and Assignment

The expected peak hour trip generation of the planned township was calculated using the rates provided in the TMH17 document compiled by the Committee of Transport Officials. As recommended in the guideline document, reduction factors were applied to the trip generation rates to cater for the following:

- The R573 National Road is an important public transport corridor. The planned upgrade of the R573 caters for large roundabouts with public transport lay-by facilities at all main intersections.
- The proposed township will cater for the low income group and the average size of the stands will be 400m<sup>2</sup>.

The expected worst case peak hour trip generation of the township is shown in the table below:

LAND USE	TOTAL TRIPS	IN	OUT
Weekday AM Peak Hour			
Residential	528 trips	132 trips	396 trips
Retail 1 (7,453m <sup>2</sup> )	70 trips	46 trips	24 trips
Retail 2 (7,737m <sup>2</sup> )	71 trips	46 trips	25 trips
TOTAL	669 trips	224 trips	445 trips
Weekday PM Peak Hour			
Residential	528 trips	370 trips	158 trips

### 3.4.7 Capacity Analysis Results

Capacity analyses were performed to evaluate the expected operating conditions on the surrounding road network. The PTV Vistro software was used in the analyses. The output of the analyses is given as levels-of-service (LOS) which range from A (very good with minimum delay) to F (very bad with unacceptable delays). These levels-of-service (LOS) are based on the average delay experienced.

The detailed results are summarised and attached in *Appendix E of the TIA (Appendix C (iii))*.

### 3.4.8 Intersection Improvements

The existing layout of the intersections provide sufficient capacity to cater for the existing and well as expected future background traffic volumes on the road network. The additional Sunshine View development traffic will, however, require improvements at the following intersections:

- R573 / R573 Provincial Road
- R573 / Good Shepherd Model School Access / Road B

The planned R573 upgrading by SANRAL caters for a dual lane roundabout at both these intersections. According to LEO Consulting, the construction of the R573 upgrade should start towards the latter part of 2023. It can therefore be safely assumed that the roundabouts will be constructed before the Sunshine

View township will be implemented. The capacity analysis for the worst-case scenario (2027 with Sunshine View) were repeated considering these roundabouts.

#### 3.4.9 Internal Road Networks

The internal road network within the proposed township will be refined during the detailed design of the township. A preliminary assessment was performed for the main internal intersections, and it can be confirmed that single lane stop controlled intersections will provide sufficient capacity to cater for the peak hour traffic volumes. In particular, the proposed 1-way stop controlled access to the filling station along the main access road (Road B) was assessed and as shown below, acceptable operating conditions can be expected.

#### 3.4.10 Public Transport Facilities

The residents within the Sunshine View township will depend heavily on public transport and it can be expected that taxi routes will expand into the township as development takes place. According to the COTO Manual public transport stops should be located within acceptable walking distances from generators, attractors and modal transfer facilities. Walking distances to stops should preferably be within 400m but not more than 800m.

No formal lay-by facilities are currently available along the external boundaries of the property. As mentioned earlier, the planned upgrading of the R573 National Road will include the construction of lay-by facilities along both sides of the R573 at both roundabouts.

It is recommended that the developer of the Sunshine View township construct lay-by facilities along western boundary road (provincial road), both sides of the new proposed intersection. Dedicated public transport parking should also preferably be provided at both business sites.

#### 3.4.11 Pedestrian Facilities

The Good Shepherd Model School generates high pedestrian traffic. Pedestrian crossing facilities will be provided at the planned roundabouts along the R573. High pedestrian activity can also be expected within the Sunshine View township. Paved pedestrian walkways (at least 2.0m wide) should be provided along both sides of all internal roads with a road reserve of 16m and wider. Walkways should also be provided along the street frontage of the business erven, institutional erven and public open space erven.

## 4 NEED AND DESIRABILITY<sup>1</sup>

### 4.1 Need

Need refers to what is essential or a requirement rather than something being desirable. The provision of adequate housing is a basic human right that every South African is entitled to. There is an increasing need for the provision of adequate housing located close to transport, employment and other urban opportunities. This section of the report details the need for proposed development.

#### 4.1.1 Infrastructure Development

Effective spatial planning requires increased strategic, socio-economic and bulk infrastructure investment that encourages infrastructure-led growth and increase the performance of the economy. To provide energy efficient and coordinated cities optimum utilisation of all resources including land, engineering services, transportation infrastructure, social infrastructure and ecological resources, is required. The proposed

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<sup>1</sup> Information obtained from the Motivating Memorandum in support of an application for township establishment Sunshine View compiled by Plan Associates Development Planners (Pty) Ltd  
Compiled by Setala Environmental (Pty) Ltd

development was designed to be one which is compact and will take advantage of the above principles. The proposed development will also encourage infrastructure upgrades in the area as new bulk services will accompany the development and be integrated into the existing networks. The development of new infrastructure will also assist in maintenance of ageing infrastructure in surrounding neighbourhoods.

#### 4.1.2 Better Utilisation of Land

Sunshine View is situated on a vacant piece of land located to the north of Kgobokwane and east of Siyabuswa between the Dr JS Moroka (Mpumalanga) and Epharim Mogale / Elias Motsoaledi (Limpopo). The land is currently underutilised. The Breaking New Ground policy places emphasis on land to be developed in a strategic manner which can enhance the location of new housing projects.

Thus, the application for a housing development will ensure optimum utilisation of the subject properties without defeating any of the primary considerations in respect of conservation and environmental issues.

## 4.2 Desirability

Whereas need is easily quantified, desirable is often based upon personal opinion and more qualitative aspects. Critical factors that influence existing and new developments as the National, Provincial and Local Legislative Framework, which is discussed below:

### 4.2.1 Legislative Framework

The legislative framework provides a developmental vision for the city which all new and existing developments should promote. The legislative framework will analyse policies and frameworks on national, provincial and local level. The policies influencing and affecting National development and Mpumalanga Province more, so the Dr JS Moroka are discussed below:

#### 4.2.1.1 National Development Plan

The National Development Plan (NDP) 2030 offers a long-term perspective for the development of South Africa aimed at eliminating poverty and reducing inequality by 2030. The importance of creating sustainable human settlements is emphasised by the NDP. The key target for human settlements as described by the plan includes:

- More people living closer to their places of work.
- Better quality public transport.
- More jobs in or close to dense urban townships.
- Clear strategy for densification of cities through land use planning and focused strategy on the housing gap.

The road network within the development linked with the larger public transport route ensures an efficient public transport system benefiting local and surrounding residents.

It can be interpreted that the proposed development will assist in realising the vision of the National Development Plan by creating a development that is compact offering employment opportunities and quality public transport.

#### 4.2.1.2 Breaking New Grounds: Comprehensive Plan for Development of Sustainable Settlements

The Breaking New Ground Plan (also referred to as BNG) was published by the National Department of Housing in 2004 to provide guidelines for the development of sustainable human settlements. The policy, BNG, takes a different approach of creating sustainable human settlements as compared to only providing houses. Sustainable human settlements envisioned by BNG is one where inhabitants have adequate access



to economic opportunities, mix of safe and secure housing/tenure types, reliable basic services, educational, health, and social services.

The BNG guidelines, relevant to new development and how the proposed Sunshine View development will incorporate these guidelines are discussed below:

Residents should live in a safe and secure environment, and have adequate access to economic opportunities, a mix of safe and secure housing, and tenure types, reliable and affordable basic services, educational, entertainment and cultural activities, and health, welfare and police services.

The development will offer a range of housing types, sizes and prices to accommodate financial capability. Apart from the residential activities, the development will also comprise of offices, business, retail, churches, crèche and entertainment.

Ensure the development of compact, mixed land use, diverse, life-enhancing environments with maximum possibilities for pedestrian movement and transit via safe and efficient public transport in cases where motorised means of movement is imperative. The road network within the proposed development is one that caters to both motorised and non-motorised movements.

Ensure that lower-income housing is provided in close proximity to areas of opportunity. Integrate previously excluded groups into the city, and the benefits it offers, and to ensure the development of more integrated, functional and environmentally sustainable human settlements, towns and cities. The latter includes densification.

There is a need to move away from a housing-only approach to a more holistic development of human settlements, including the provision of social and economic infrastructure. The proposed development will consist of various residential typologies, offices, offices, business, retail, churches, crèche and entertainment.

#### 4.2.2 Spatial Planning Policies

This section of the report contains a comprehensive analysis of the spatial planning policies that inform and support the Sunshine View development. These policies are:

- Mpumalanga Spatial Development Framework
- Dr JS Moroka Spatial Development Framework

##### 4.2.2.1 Mpumalanga Vision 2030

In line with the Mpumalanga Spatial Development Framework (2012), the Mpumalanga Vision 2030 document formulated a spatial rationale for the province which is based on the following eight Key Drivers:

Key Driver 1 : Nodal Development

Key Driver 2 : Business, Commercial and Industrial Development

Key Driver 3 : Tourism Development

Key Driver 4 : Forestry Development Key Driver 5: Agricultural Development

Key Driver 6 : Mining and Energy Related Development

Key Driver 7 : Urban Development

Key Driver 8 : Rural Development

Key Drivers 1 to 6 are focused towards promoting economic development and job creation according to the space economy of Mpumalanga province from which priority nodes/areas for economic development have been identified.

Key Drivers 7 and 8 are focused on human settlement in and around these priority nodes/areas identified. Following below is a brief summary of the spatial guidelines for urban and rural areas as described under Key Drivers 7 and 8 of Mpumalanga Vision 2030:

#### Key Driver 7: Urban Development

In terms of the National Development Plan: Vision 2030, human settlement patterns within cities and towns should meet the needs and preferences of the citizens, taking into account broader social, environmental and economic interests. Travel distances need to be shorter which implies ensuring that a larger proportion of workers live closer to their places of work, and that public transport is safe, reliable, affordable and energy efficient. The above requires two main interventions in the urban areas of Mpumalanga Province: Urban Restructuring and Urban Renewal.

#### Intervention 1: Urban Restructuring

Urban Restructuring is aimed at transforming cities, towns and villages into more sustainable human settlements. The appropriate utilisation of well-located public owned land and public funded housing initiatives can act as powerful tools towards achieving urban restructuring objectives in Mpumalanga.

In the medium to longer term the objective should be to consolidate and densify the fragmented urban and rural settlement structure in three priority areas in the province with a view to transforming these into metropolitan areas. This will require strong interventionist approaches in terms of planning and development across municipal boundaries in these areas. The areas to be considered include:

- Mbombela and its rural surrounds including parts of Bushbuckridge and Nkomazi;
- The Witbank-Middelburg-Ogies complex extending up to Verena and settlements along the Moloto Corridor in Thembisile Hani (in Nkangala); and
- The Trichardt-Evander-Kinross-Secunda (TEKS) complex in the Gert Sibande District.

#### Intervention 2: Urban Renewal and Revitalisation

Urban Renewal and Revitalisation is relevant to all business/commercial areas and residential neighbourhoods in cities and towns in Mpumalanga Province, but even more so in the small towns in the Province, many of which are currently in a state of neglect and urban decay. The private sector should become active partners with government towards addressing the revitalisation of the small towns. The mining industry in particular can play a significant role in this regard as confirmed in the agreements reached in the recent Mpumalanga Mining Indaba.

Apart from enhancing the public space and facilities and promoting business and industrial uses in small towns, the provision/ upgrading of existing housing stock (full ownership or rental) can also make a significant contribution towards creating “critical sustainable mass” in small towns and thereby enhance the economic viability thereof.

#### Key Driver 8: Rural Development

Vision 2030 places particular emphasis on building the economy in rural areas, and more specifically through the following approach which is embedded into the Comprehensive Rural Development Programme (CRDP):

- Creating more jobs through agricultural development, based on effective land reform and the growth of irrigated agriculture and land production.
- Providing basic services and infrastructure in rural areas in such a way that it enables people to develop in a sustainable manner and to take advantage of opportunities in the rural parts of the Province.

- Developing industries such as agro-processing, tourism, fisheries and small enterprises where potential exists.

In pursuance of the above, the proposed approach towards rural development in Mpumalanga Province centres around the following three Interventions:

Intervention 1: Establishment of Thusong Centres

This principle requires that strategically located and accessible nodal points should be identified in all rural parts of Mpumalanga Province. These should then become focal points for public investment around which to establish a comprehensive range of community facilities serving the social needs of surrounding rural communities. Apart from clustering community facilities and services at these points, government should also consolidate large scale rural housing projects in and around these nodes rather than numerous small scale rural housing projects scattered across the rural landscape.

Intervention 2: Rural Settlement Consolidation

Existing settlements around service delivery nodes should be functionally consolidated and integrated over time. This can be achieved by way of the establishment of rural development boundaries which will firstly limit/curb the uncontrolled expansion of low density rural settlements. The resulting higher densities will lead to more sustainable rural human settlements. The consolidation of these settlements into rural clusters around rural service delivery points will transform rural settlement areas into functionally viable and sustainable clusters of human settlement throughout the province.

Intervention 3: Agrarian Transformation

As far as the rural hinterland between these rural clusters is concerned, the important principle as contained in Mpumalanga Vision 2030 is to promote agrarian transformation in order to transform these areas from subsistence farming to commercial farming areas. This will contribute significantly towards improved food security and economic empowerment of rural communities.

**4.2.2.2 Mpumalanga Spatial Development Framework**

The following set of interrelated strategic development objectives provides the foundation for the Spatial Development Framework for Mpumalanga:

Strategic Objective 1 : Capitalise on the regional spatial development initiatives

Strategic Objective 2 : Focus development on development corridors and nodes

Strategic Objective 3 : Protect biodiversity and agricultural resources

Strategic Objective 4 : Economic development and job creation supporting and guiding the spatial development pattern of Mpumalanga

Strategic Objective 5 : Accommodating urbanisation within the province

Strategic Objective 6 : The integration of the historically disadvantaged communities into a functional nodal and settlement pattern

Strategic Objective 7 : Tenure Upgrading

Strategic Objective 8 : Promote the development of rural areas that can support sustainable economic, social and engineering infrastructure

Strategic Objective 9 : Infrastructure Investment

Following from the Strategic Objectives a number of Strategic Focus Areas (Areas of Intervention) were identified as illustrated on the Mpumalanga Indicative Framework. The following directives apply to the Strategic Focus Areas noted in the Mpumalanga SDF (2012):

- The concentration of development within development and activity nodes with a regional and sub-regional function viz. Mbombela (Nelspruit), Emalaheni (eMalaheni), Steve Tshwete (Middelburg),

Govan Mbeki (Secunda) and Msukaligwa (Ermelo). Restructure these development and activity nodes to accommodate growth.

- The large population concentrations (supported by activity nodes) of Dr JS Moroka (Siyabuswa), Thembisile Hani (KwaMhlanga), Bushbuck Ridge (Acornhoek, Bushbuckridge), Nkomazi, Nsikazi within Mbombela and Chief Albert Luthuli should:
  - Link with nearby nodes of economic potential by providing efficient transportation and roads infrastructure providing for high mobility of movement;
  - Integrate economic activities to provide local employment.
- The Secondary activity nodes of Delmas, Standerton, Bethal, Belfast, Mashishing, Barberton, Komatipoort and Mkhondo should:
  - Balance the population with economic activities;
  - Provide social, economic and engineering infrastructure in support of the existing population.
- The small settlements of PixleykalsakaSeme (Volksrust), Dipaleseng (Balfour), Dr JS Moroka (Masobe/Pankop) and other smaller towns need to act as service centres for the surrounding population.
- Dispersed villages should be discouraged. The clustering of villages to allow for the provision of sustainable social and economic infrastructure should be encouraged.
- The housing of mining and power station personnel should take place in existing nearby towns.

The Mpumalanga SDF furthermore stipulates that infrastructure investment needs to promote the role and function of rural communities and focus on the development of communities to manage and develop their local economies, become self-sufficient, create livelihoods, add to the economy and reduce their dependency on social grants.

Rural development thus needs to provide for rural population clusters that can support sustainable economic, social and engineering infrastructure, but also be accessible to higher order economic and social services within nearby urban nodes. Road and transportation linkages thus to urban areas need to be provided and maintained. In the case of Dr JS Moroka, the proposed Moloto Rail initiative from the City of Tshwane to Siyabuswa is particularly vital.

Lastly, the MPSDF delineated a number of ecological corridors across the Province. A portion of one of these corridors traverses the DRJSMLM area of jurisdiction.

#### 4.2.2.3 Dr JS Moroka Spatial Development Framework

- Development Objectives/Principles

It is conceded that in the analysis of the space economy of Dr JS Moroka Local Municipality, there are no significant economic activities at this stage, and a plethora of people living below the minimum living level. The limited access to the municipal area contributes to the rural character of and limits the economic potential of the study area.

However, there are areas that are developing naturally along movement lines, and major intersections along these lines need to be prioritized for economic development. Furthermore, the high agricultural potential in the area could be used as leverage for economic development. Emphasis in the study area should thus be given to the provision of basic services and more focused economic development/ nodal development.

The main objective of the reviewed Dr JS Moroka SDF is to direct, organize and manage investment, development and growth in the municipal area. The next section will provide the policy and guidelines for achieving the objectives and strategies as indicated in Chapter 2, and in line with the SPLUMA development principles of:

- Spatial Justice
- Spatial Sustainability
- Spatial Efficiency
- Spatial Resilience, and
- Good Administration

These guidelines and policies provide the point of departure for the day-to-day decision-making within the LM, and the basis for the management of public spending.

#### **a) Movement (Facilitating local and regional linkages)**

The movement system is one of the most important structuring elements within the Municipality. The movement system must directly link strong high-intensity mixed use nodes and high-density developments within the LM with one another, as well as facilitate linkages with nearby higher order nodes, especially the City of Tshwane to the west. In this way, local communities are linked to areas of economic opportunity, employment opportunities, and also higher order goods and services not available locally [Spatial Justice].

#### **b) Nodal Development (Ensure viable strong activity nodes)**

Nodal development (the intensification of uses), together with the consolidation of residential settlements (see principle (c)) will ensure that the municipal spatial structure is sufficiently robust to allow opportunity areas to adapt to market and demographic changes [Spatial Resilience]. In general, nodes have the following characteristics:

- Clustering of business activities;
- Accommodates a mix of land uses including community facilities;
- High accessibility.

Activity nodes should ideally be established at highly accessible locations, including higher order road intersections within larger settlements, as well as adjacent to public transport stations (including the proposed Moloto rail stations within the DRJSMLM).

In managing and even developing new nodes, it needs to be kept in mind that the catchment areas and the income levels of an area determine the necessary/ ideal size of the node, and that the density and intensity of the node is a function of the mixture of land use activities, and the available transport infrastructure.

#### **c) Settlements (Create sustainable human settlements)**

Increased residential densities support the vibrancy of nodes and the viability of public transport, while protecting surrounding high potential agricultural land. Residential development should thus be consolidated around activity nodes, contributing towards an efficient municipal spatial structure. Also, settlements should offer residents a high quality of life by also including social facilities, business activities, open space and adequate engineering infrastructure [Spatial Sustainability].

The benefits of increased residential density are:

- Make more efficient use of existing infrastructure and serviced land;
- A reduced need for the development of Greenfields sites/reduced urban sprawl;
- Reduced need for investment in new infrastructure;
- Better access to existing services and facilities; and - More sustainable commuting patterns.

As part of this objective/ principle, land claims and the challenges related to land tenure have to be addressed as a matter of urgency.

**d) Environment (Support environmental management, tourism and recreational activities)**

Conserve and enhance the Municipality's existing physical and natural resources, and link them with the regional open space system. Part of this principle is the development of an open space system that will complement nodal development in settlements. In many cases this will require the rehabilitation of degraded vacant land into public amenities. The open space system in Dr JS Moroka should be:

- Able to meet local recreational needs;
  - Safe;
  - Accessible to all; and
  - Versatile.
- [Spatial Justice]

**e) Corridor Development**

Development corridors are linear tracts of land that contain a variety of transportation modes, especially public transport, and a variety of dense land uses. The development of corridors is one of the structuring elements to be used in structuring the Dr JS Moroka Municipality into a robust and efficient growth area [Spatial Efficiency and – \_Resilience].

The development of corridors should realize the following:

- Access to opportunities to large number of communities;
- Support more efficient service provision;
- Availability of adequate infrastructure;
- Realize economies of scale; and
- Contribute to growth and development of the Municipality.

The Dr JS Moroka LM SDF, in essence, promotes the growth of settlements towards identified corridors.

**f) Infrastructure Provision (Support efficient infrastructure provision)**

The provision of bulk infrastructure should address the basic needs of all communities [Spatial Justice]. Also, the ability of the availability of bulk infrastructure to influence private investment should be optimally utilised by servicing activity nodes and SDAs as a priority [Spatial Efficiency].

In the assessment of proposed development applications, bulk capacity should be assessed in relation to the proposal, and if the capacity is exceeded then the proposal should not be approved by the Municipality.

**g) Agriculture and Agro-Industries (Support local economic development)**

The agricultural potential of the municipal area and its proximity to major markets in Gauteng offer opportunities for the export of value-added goods. Formal and informal small, micro and medium enterprises should be supported [Good Administration].

**h) Community Facilities (Establish Thusong Centres)**

Social infrastructure such as clinics, sports facilities, pay-points, police stations etc should be provided at close proximity in strategic locations (preferably at Multi Purpose Community Centres/Thusong Centres).

This will ensure higher accessibility and more efficient service, and facilitate more efficient and optimum use of existing infrastructure [Spatial Resilience].

#### i) Holistic Planning

A holistic integrated approach in the overall development of Dr JS Moroka should be followed. This will allow the Local Municipality to better service its residents and those who come to visit [Good Administration].

- **Development Framework**

A Spatial Development Framework (SDF) is not just a spatial plan, but also a tool that should ensure integration of sectoral initiatives. It should construct a new management of infrastructure for existing and future development; ensure policy and institutional instruments to achieve the desired spatial structure and help to align relevant sectors. Figure 11 below illustrates the proposed Spatial Development Framework for Dr JS Moroka Local Municipality.

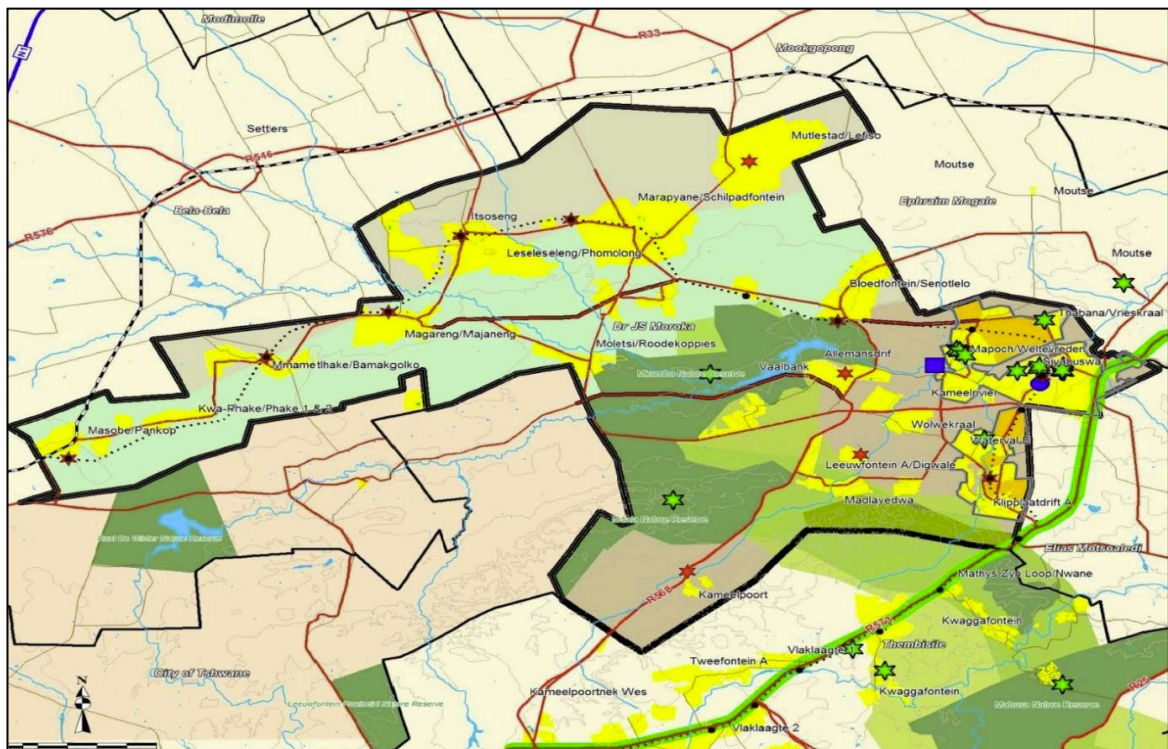


Figure 11: Dr JS Moroka – SDF

Essentially, Dr JS Moroka as a whole represents a large “services priority upgrading area”, and so development spending should primarily be aimed at providing inhabitants with the constitutionally mandated minimum levels of services and community infrastructure.

Development spending is envisioned to gravitate towards, and along the proposed Moloto Rail Corridor, and other prominent roads within the Municipality towards the core functional urban area at Siyabuswa.

With regards to consolidating the short to medium term growth, focusing on nodal development, and the upgrading of engineering services the following towns/ settlements in the LM should especially receive attention: Libangeni/Siyabuswa/Makometsane Four-way Crossing, Meetsemadiba/GaMorwe/Siyabuswa Four-way crossing and Siyabuswa/Matshiding/Ga Phaahlamohlaka Four-way crossing, Nokaneng/Seabe/Mmamethlake Y-junction.

In essence, the proposed Moloto Rail Corridor forms the central structuring element of the SDF for three reasons:

- 1) The corridor holds significant opportunities for both the Nkangala District and Dr JS Moroka in terms of economic spin-offs from the corridor and tourism potential;
- 2) The Moloto rail offers a means by which to consolidate and integrate existing and new urban developments into a functional whole, capable of stimulating economic development around key selected primary and secondary nodes; and
- 3) If all environmental, technical, and social factors are taken into consideration, the current alignment of the Moloto rail connects the identified nodes in the most direct and shortest possible manner to one another.

Consistent with the SDF for the Nkangala District, the Moloto railway line should thus serve as a Local Activity Spine to the identified nodes and existing settlements. As such, all new growth should be channelled towards and alongside the Moloto Rail Corridor, and other functionally important roads (R568 and R573) in the Dr JS Moroka Local Municipality. Applying this approach will also ensure that all the “service priority upgrading areas” as identified by the Nkangala District SDF are functionally integrated.

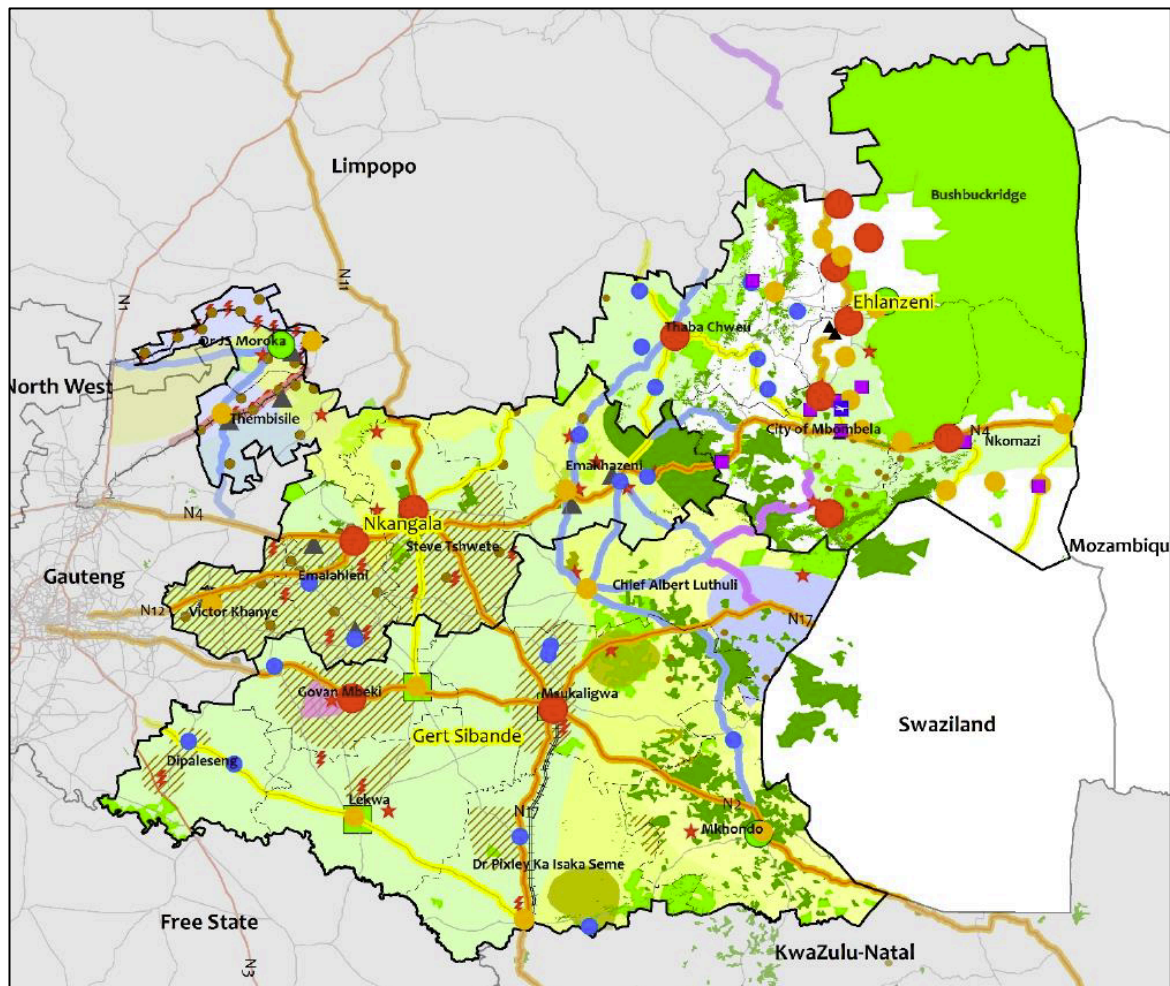


Figure 12: Nkangala District – SDF

Vacant land between Matshiding and Mthambothini and adjoining the proposed Moloto rail corridor (Phase 1) and the R568 and R573, constitute Strategic Development Areas 1, 2 and 3. New developments



in the LM should firstly be consolidated within these areas to further promote the desired spatial form of the municipal area, and to enhance the viability of the four proposed future railway stations along this strip i.e. Makola, Mogononong, Siyabuswa and Mthambothini.

This approach of consolidated development along the Moloto Rail Corridor also seeks the structural integration of the dispersed urban form via a U-shaped development corridor of connected settlements and activity nodes, with the short to medium term priority area being the eastern extents of the municipal area (SDA1, 2 and 3).

Apart from consolidating the short to medium term growth in the Dr JS Moroka area in these three Strategic Development Areas and focusing on strengthening the first four railway stations in the LM (Makola to Mthambothini), the towns/settlements in the other parts of the Municipality should also receive attention in terms of the consolidation and densification of land uses, provision of community facilities in line with the concept of Thusong Centres and the upgrading of engineering services.

It is furthermore advised that land claims, particularly those that fall within the Urban Development Boundaries of the respective LMs, be resolved as a priority. This is in order to unlock land within the respective Strategic Development Areas for planning and development. Furthermore, government (national, provincial and local) and parastatal owned land could be used as a growth management tool, because it presents Council with opportunities to implement strategic and catalytic projects. It is thus vital that the identification of such land pockets be prioritised, and that a Plan of Action be tabled for each.

- **General**

The SDF seeks to promote the incremental growth of existing urban areas, rather than new developments that are far removed from existing infrastructure and economic activity. The development of Thusong Centres and TODs at stations along the rail corridor seeks to ensure focused infrastructure spending in economically sustainable areas with high growth potential, i.e. in and around primary and secondary (rural) nodes. Capital expenditure programmes should focus on providing social and community facilities within these developments.

Importantly, the railway stations with adjacent transfer facilities and integrated development nodes (i.e. TODs) have been strategically positioned by the Moloto Initiative to serve the most densely populated areas, and in close vicinity to major road infrastructure intersections. Furthermore, focused development spending and infrastructure investment should take place in and around the Mkhombo Dam and Mdala Nature Reserves to unlock the tourist potential offered by these environmental assets falling within the municipal area. Local 'mini' tourist attractions that exhibit the Ndebele culture and heritage should be enhanced and linked into the Kamoka Open Africa Route initiative.

In general, land not under urban use in the Municipality possesses good agricultural potential. As agricultural forms a key part of the LED strategy for Dr JS Moroka, these areas should be protected from urban sprawl via channelling new urban growth into the U-shaped development corridor and associated Strategic Development Areas, of which the vacant land around Siyabuswa should take priority. Agro-industries should be consolidated with the proposed Thusong Centres at identified activity nodes, particularly in the northern extents of the LM.

In the Nkangala District SDF, the whole Dr JS Moroka area and especially the Siyabuswa area (in support of the development of a node in this area) was identified as a service upgrading priority area. Service upgrading priority areas should receive special attention in terms of allocating funding towards the upgrading, expansion and maintenance of infrastructure – both engineering and social infrastructure.

Engineering infrastructure in the LM should furthermore be aimed at providing inhabitants with the constitutionally mandated minimum levels of services.

Detailed interventions have been proposed for the existing Siyabuswa CBD as part of the Nodal Revitalisation Plan (2012). The priority projects should be incorporated into the DRJSMLM IDP process to give effect to the Revitalisation Strategy.

*In view of the above it is submitted that substantial motivation exists in support of the need and desirability of the proposed Sunshine View township development.*

## 5 LEGAL FRAMEWORK

### 5.1 The Constitution of South Africa (No. 108 of 1996)

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 Environmental Management Act, Act 107 of 1998 and EIA Regulations 2017

National Environmental Management Act, Act 107 of 1998: The Environmental Impact Assessment Regulations 2017: The NEMA EIA 2017 regulations and the listing notices thereto are relevant.

In terms of the EIA Regulations (GN R. 327, 325 and 324) of April 2017, 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 Mpumalanga DARDLEA:

**Table 3: Listed activities in terms of NEMA for the proposed Sunshine View Township:**

Relative Notice	Description (Verbatim and applicability to the project)
GN.R. 327, 7 April 2017 Listing Notice 1 Activity 9  The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	To make provision for the installation of pipelines for the bulk transportation of water and/or stormwater above these thresholds, outside an urban area, if required.

<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 10</p> <p>The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –</p> <p>(i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where—</p> <p>(a) such infrastructure is for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.</p>	<p>To make provision for the installation of pipelines for the bulk transportation of sewage above these thresholds, outside an urban area, if required.</p>
<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 12</p> <p>The development of—</p> <p>(ii) <u>infrastructure or structures with a physical footprint of 100 square metres</u> or more; where such development occurs—</p> <p>(a) within a watercourse;</p>	<p>The proposed development will include bulk water infrastructure to be installed within the Kgobokwane stream within the road reserve on Portion 31 and Portion 35 of the farm Valschfontein 33 JS.</p>
<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 19</p> <p>The infilling or depositing of any material of <u>more than 10 cubic metres into</u>, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than <u>10 cubic metres from a watercourse</u>;</p>	<p>The proposed bulk water pipeline will cross the Kgobokwane stream within the road reserve on Portion 31 and Portion 35 of the farm Valschfontein 33 JS and therefore more than 10 cubic meters of soil will be removed from the watercourse.</p>
<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 24</p> <p>The development of a road—</p> <p>(ii) with a reserve wider than 13,5 metres, or where no reserve exists where the road is wider than 8 metres.</p>	<p>To allow for access road.</p>
<p>Listing Notice 1 Activity 25</p> <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 2 000 cubic metres but less than 15 000 cubic metres.</p>	<p>To make provision for the treatment of sewage if required.</p>

<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 28</p> <p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(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>The proposed development will cover an area of approximately 68,77 hectares on fallow land located outside an urban area.</p>
<p>GN.R. 327, 7 April 2017 Listing Notice 1 Activity 67</p> <p>Phased activities for all activities—</p> <p>(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices;</p> <p>where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.</p>	<p>To make provision for construction of the development to be phased.</p>
<p>GN R. 325, 7 April 2017 Listing Notice 2 Activity 15</p> <p>The clearance of an area of 20 hectares or more of indigenous vegetation</p>	<p>The proposed development will require the clearance of approximately 68,77 hectares of area including indigenous vegetation.</p>

### 5.3 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.

According to the Biodiversity Impact Assessment Study the subject site does not fall within a Critical Biodiversity Area or Ecological Support Area.

#### **5.4 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 Impact Assessment Study took the NEM:PAA into consideration. The study area does not fall within any National Priority Areas.

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

The National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA) serves to reform the law regulating waste management in order to protect human health and the environment. This is managed

by providing reasonable measures for the prevention of pollution and ecological degradation. The NEM:WA aims to secure ecologically sustainable development while promoting justifiable economic and social development. The NEM:WA provides national norms and standards for regulating the management of waste by all spheres of government, for specific waste management measures and for matters incidental thereto. In terms of the NEM:WA the Minister of the DEA may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. Furthermore, the NEM:WA prohibits any person to commence, undertake or conduct a waste management activity except in accordance with the requirements or standards determined in terms of the NEM:WA for that activity or where a waste management licence (WML) has been issued in respect of that activity.

The Act, read together with the list of waste activities that have, or are likely to have, a detrimental effect on the environment (GN No. 921 of 29 November 2013) and the Amendments to the list of waste management activities that have, or are likely to have, a detrimental effect on the environment have been considered for purposes of potential relevance.

*The applicability of a Waste Management license in terms of the NEMWA will be determined once the proposed sewer package plant or alternative sewage options for the proposed development had been confirmed.*

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

The NWA provides for fundamental reformation of legislation relating to water resources and use. The preamble to the NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. In terms of the NWA, the national government, acting through the Minister of the DEA, is the public trustee of South Africa's water resources, and must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Minister of the DEA is responsible to ensure that water is allocated equitably and used beneficially in the public interest, while promoting environmental values. The national government, acting through the Minister of the DEA, has the power to regulate the use, flow and control of all water in South Africa.

The most fundamental departure from the NWA is the removal of the concept of water as private property. Instead, water will be made available through user licences, which may be issued for a maximum period of forty years, subject to renewal. A priority of users has been established for the allocation of licences, with the environment near the top of the list of priorities.

Section 21 of the NWA indicates that "water use includes":

- Taking water from a water resource;
- Storing water;
- Impeding or diverting the flow of water in a water course;
- Engaging in a stream flow reduction activity contemplated in section 36;
- Engaging in a controlled activity which has either been declared as such or is identified in section 37(1);
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- Disposing of waste in a manner which may detrimentally impact a water resource;
- Disposing in any manner of water which contains waste from, or which has

- been heated in, any industrial or power generation process;
- Altering the bed, banks, course or characteristics of a water course;
- Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- Using water for recreational purposes.

Specified water uses, in section 21 of the NWA, must be licensed unless listed in Schedule 1; the continuation of an existing lawful water use; is permissible under a general authorisation issued under section 39 of the NWA, or if a responsible authority waives the need for a license.

*A water use authorisation in terms of the General Notice 509, Government Gazette 40229, dated 26 August 2016 or "General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA)" for the proposed infrastructure (stream crossing by bulk water pipeline and proposed package plant/constructed wetland treatment facility (to be confirmed)) will be required.*

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

The National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA) allows for national, provincial and local air quality standards to be established as well as the declaration of priority areas. In addition the NEM:AQA requires that Air Quality Management Plans (AQMP) form part of the environmental implementation plan or environmental management plans to be prepared by national departments or the province as required by Chapter 3 of the NEMA. Furthermore the NEM: AQA requires municipalities to include an AQMP into its integrated development plan (IDP).

Key features of the NEM: AQA include:

- A decentralisation of air quality management responsibilities;
- The identification and quantification of significant emission sources that then need to be addressed;
- The development of ambient air quality targets as goals for driving emission reductions;
- The use of source-based (command-and-control) measures in addition to alternative measures, including market incentives and disincentives, voluntary programmes, and education and awareness;
- The promotion of cost-optimised mitigation and management measures;
- Air quality management planning by authorities, and emission reduction and management planning by sources; and
- Access to information and public consultation.

The overall objectives of the NEM:AQA include the following:

- The protection of the environment by providing reasonable measures for the protection of the quality of the air in the country;
- Protection of the environment by the prevention of air pollution and ecological degradation;
- Protecting the environment by securing ecologically sustainable development while promoting justifiable economic and social development; and
- To give effect to the constitution in order to enhance the quality of ambient air in order to secure an environment that is not harmful to the health and well-being of the people of South Africa.
- The NEM:AQA requires the Minister of the DEA to publish a list of activities which results in atmospheric emissions which may have a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions, ecological conditions or cultural heritage. The NEM:AQA requires that an Atmospheric Emissions License (AEL) be obtained

for such listed activities. Such a list of activities was published in GNR 248 (31 March 2010).

*Following a detailed analysis of the proposed project against the activities listed in GNR 248, the opinion is being expressed that based on information at hand, none of these activities will be triggered.*

*The Nkangala District Municipality is responsible for the issuing of AEL's in this instance. The said Municipality has also been notified about the proposed activity and as a registered Interested and Affected Party will be provided with a draft copy of this report and an opportunity to comment.*

## **5.8 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.*

## **5.9 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 Environmental Management Programme during the EIA process.

## **6 DESCRIPTION OF RECEIVING ENVIRONMENT**

This chapter provides a description of the receiving environment within the study area. Three components to the environment are recognised:

- Physical Environment;
- Biological Environment; and
- Socio-Economic Environment.

### **6.1 Physical Environment**

A Geotechnical Investigation was conducted by Yihla Environmental and Consulting Engineers (*Report included as Appendix C (iv)*).



### 6.1.1 Climate

Temperatures range between 18°C and 28°C with an average of 25,5°C. Generally, summer have a high number of sunshine hours with occasional afternoon thunderstorms. The general average rainfall of the area ranges between 450mm to 800mm.

### 6.1.2 Topography and drainage

The site is located on a gentle steep slope towards the westerly direction. The area exhibits an average slope of between 1.5° and 2° west. No prominent regional topographical features occur within the boundaries of the site.

### 6.1.3 Geology and Soils

The site is underlain by Biotete-Trondhjemite Gneiss (Goudplaats-Houtriver Gneiss Suite, Paleoproterozoic Granitoid Intrusion).

### 6.1.4 Hydrology

The site is located in the Olifants Water Catchment Management Area. The site drains by means of surface run off with storm water collecting towards the southern western direction.

### 6.1.5 Results of Geotechnical Investigation

#### Fill Materials

Due to the nature of its source and its sporadic distribution across the site, no laboratory testing was undertaken. Its consistency has also been described as loose and as such it is not recommended for founding medium for the proposed development.

#### Residuals

Laboratory tests were conducted within residuals show that these materials exhibit a medium heave potential. It should be mentioned that the expansive potential of material is instigated by change in its moisture content where an increase in the moisture content will result in expansion of the material and a reduction will result in shrinkage of similar material. This effectively implies that if the current moisture content or present moisture during construction is kept constant an insignificant movement can be anticipated, hence less damage/distress to structures.

However, due to insignificant expansive and compressible potentials this horizon is recommended as a founding medium for the proposed development.

#### Water table

It should be mentioned that this fieldwork was undertaken during winter season just after a week of rains and this is evident by the amount of moisture that is present within the soils. However, no water seepage was encountered in any of the trial pits. The depth of the water table is unknown.

#### Excavatability of the Ground

As it was mentioned that there are no double storey structures on the proposed development, the trial pits were hand-excavated using picks and shovels. The average depth of excavation up to refusal is 1.42m.

#### Geotechnical Classification

The site has been classified according to the "Geotechnical Classification of Urban Development" after Watermeyer and Tromp (1992) and the Joint Structural Division. The following classes designed across the site while its site classification reference has been presented in Appendix 4 of the Geotechnical Investigation Report. The site has been classified as Class H (<7.5mm of heave movement).

### Foundation Solution

It is recommended that the development be founded on Stiffened or Concrete Raft, a suitably reinforced concrete raft.

Alternatively, these structures should be founded on a Soil Raft and the details are:

- An area at least 0.5m larger than the foot print of the structure will need to be excavated to a depth of not less than 0.5m below the current ground level.

### General

As mentioned above the trial pits were loosely backfilled, where foot prints of the proposed structures are to be placed directly on top of these trial pits, the holes should be identified and properly backfilled.

### Additional investigations

No further investigations will be necessary for the proposed development.

### Construction Monitoring

#### **Excavation Inspection**

It is recommended that all foundations be inspected by a competent person prior to placing any concrete.

#### **Control Testing**

Regular checks on the quality and compaction of the backfill to the terraces should be made.

## **6.2 BIOLOGICAL ENVIRONMENT**

A Biodiversity Impact Assessment was conducted by Flori Scientific Services (*Report included as Appendix C (v)*).

### **6.2.1 Vegetation**

#### **6.2.1.1 General Vegetation**

South Africa is divided up into nine major Biomes. The study site is within the Savanna Biome . The Savanna (Bushveld) Biome is typically characterised by a lower layer of grasses, middle layer of shrubs, and an upper layer of trees. Mucina & Rutherford (2010) divided the Savanna Biome (Bushveld Biome) into six bioregions, namely: Central Bushveld, Mopane, Lowveld, Sub-Escarpment Savanna, Eastern Kalahari Bushveld; and Kalahari Duneveld. The study site is within the Central Bushveld Bioregion and within the original extent of the veldtype known as Central Sandy Bushveld.

Central Sandy Bushveld is a veldtype that is characterised by Low undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils (with the former often dominant on the lower slopes of sandy catenas) and low, broad-leaved *Combretum* woodland on shallow rocky or gravelly soils. Species of *Vachellia* (*Acacia*), *Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils. *Vachellia* (*Acacia*) *tortilis* (Camel thorn) tends to dominate some areas along valleys. The veldtype is typically that of a grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands (Mucina & Rutherford, 2010).

#### **6.2.1.2 Vegetation of the Study Area**

The study site is within the original extent of the Central Sandy Bushveld and there are a number of common and dominant species that define this veldtype that are found on site. These include bushwillow,

Vachellia (Acacia). The vegetation / veld on site has been over-grazed and is encroached / invaded by sicklebush. Sicklebush is a locally indigenous species that becomes invasive due to poor veld-management such as over-grazing. The vegetation on site is moderately to fairly heavily degraded Central Sandy Bushveld. The vegetation can be best described as Sclerocarya – Vachellia (Acacia) bushveld with an element of Combretum. That is, sicklebush – thorn bush (microphyllous / fine-leaved) with a scattered bushwillow (broad-leaved) component.

#### 6.2.1.3 Priority Floral Species

No red data listed (RDL) (endangered & threatened) floral species were observed during field investigations. No orange data listed (ODL) plant species were found to be present.

A few scattered marula trees (*Sclerocarya birrea*) trees were observed within the general area, but none within the study site itself, except along the southern boundary fence and in the road reserve. Marula is a nationally protected tree species.

#### 6.2.1.4 Protected Trees

None on site, but a few trees along the southern border fence and in the road reserve.

#### 6.2.1.5 Conservation status

Central Sandy Bushveld is not a threatened veldtype / ecosystem. The conservation status (or threat status) is that of least threatened / least concern (bgis.sanbi.org.za, NEMBA (G 34809, GoN 1002), 2011).

#### 6.2.1.6 Plants identified during field investigations

The main and dominant plant species identified during field investigations are listed in the appendices of the Biodiversity Impact Assessment Report. Due to the short time available for site investigations the list cannot be seen as exhaustive. However, the main and common species have been identified. During field investigations attention was given to the possible presence of RDL and ODL species by prior background data checks and specific habitat checks.

### 6.2.2 Aquatic Systems

#### 6.2.2.1 Watercourses in the study area

There are no perennial or semi-perennial rivers or streams in the study area. The closest such rivers or streams to the study site are the Elands River (approx. 2km northwest) and the Kgobokwane River / Stream (approx. 220m west) (*refer to Figure 13*). The Kgobokwane flows northwards and into the Elands River, which in turn flows northeast and eventually into the Olifants River.

There are no seasonal small watercourses in the study area, including small seasonal streams and distinctive drainage lines. The area is flat and open, with no deep valleys or ravines. Therefore, rain (stormwater) falling on the site and surrounding areas tends to flow in sheets, or follow the contours and topography of the land. Stormwater sheet-flow in the area is regularly re-directed by developments, even small changes such as ploughing of some land, building of a house, culverts, roads, etc. In other words, stormwater surface flow and sheet-flow is fickle and does not flow in actual watercourses.

There is a slight, gradient and sloped area in which a manmade impoundment (soil-walled farm dam) is present on the study site. From old maps it is clear that the dam structure is decades old. Surface stormwater from higher lying areas south of the site is channelled through culverts under the road (R573) into this dam through stormwater culverts and drains (*refer to Figure 14*). It is likely that historically (prior to any developments of schools, townships, etc. in the area) that a larger volume of stormwater surface flow flowed along this contour and therefore a small dam was built to capture this water for livestock.

However, it is obvious that due to the shallowness and size of the dam, along with the low levels of water inflow that the dam would have dried up during the wintertime and early springtime. Some water levels are now maintained year-round by channelled stormwater from 'upstream' developments and culverts, mainly from the property of the Good Shepherd Model School.

There are no wetlands (including freshwater pans) in the study area. A small freshwater pan (wetland) is situated approximately 100m south of the study site and south of the R573. This small pan is highly modified and artificially maintained by the impoundment of the R573 road and the channelled inflow and release of surface stormwater. It appears that this 'pan' is mostly artificial in origin and integrity. It is also marked as an 'artificial' system in Wetland Map 4 and on the SANBI – NFEPA maps.

The national wetland map (Map 5, 2018) incorrectly highlights the on-site artificial impoundment (farm dam) as a 'seep wetland' and the small pan as a 'valley bottom wetland' (refer to Figure 15).



Figure 13: Main Watercourses in the Region

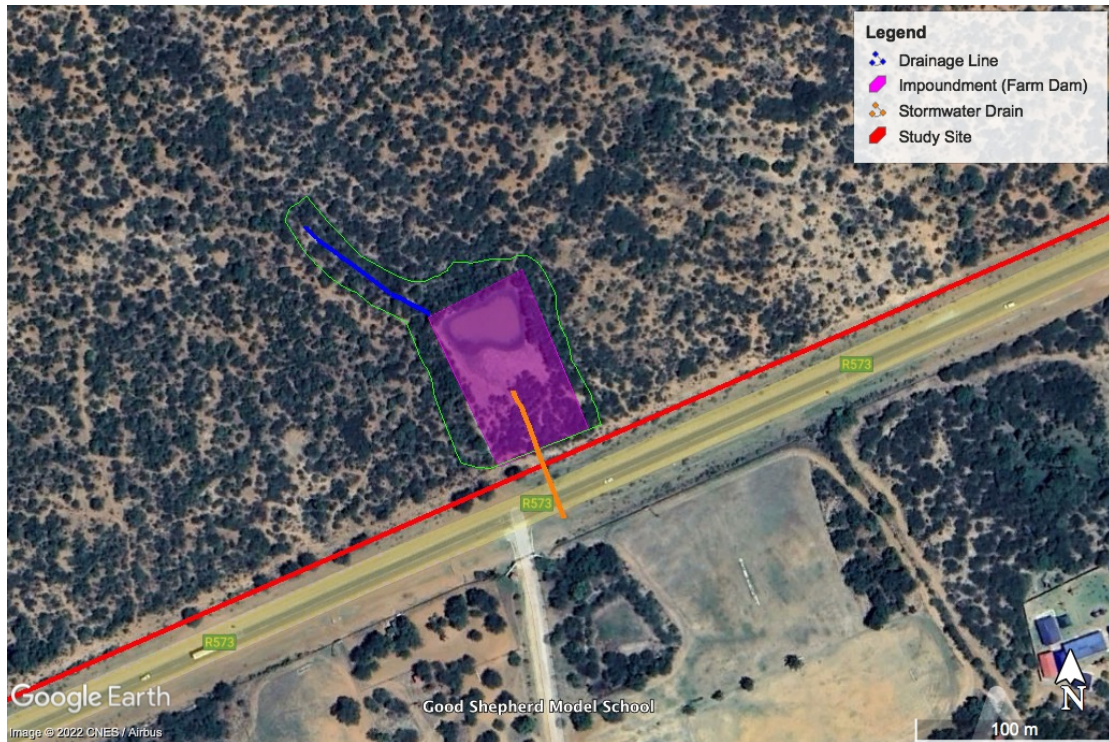


Figure 14: Impoundment and Stormwater Drain

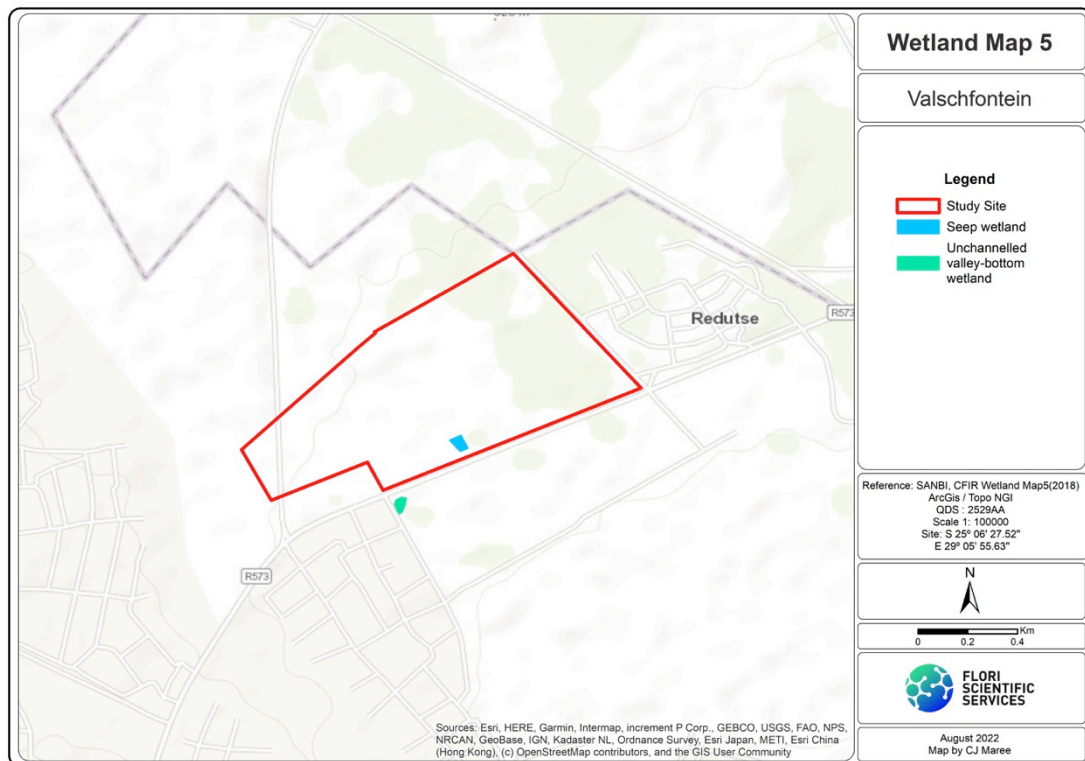


Figure 15: National Wetland Map (Map 5, 2018)

### 6.2.2.2 Drainage Regions

South Africa is geographically divided up into a number of naturally occurring Primary Drainage Areas (PDAs) and Quaternary Drainage Areas (QDAs). The different areas are demarcated into Water

Management Areas (WMAs) and Catchment Management Agencies (CMAs). Previously there were 19 WMAs and 9 CMAs, but as of September 2016, these were revised and there are now officially only nine WMAs, which correspond directly in demarcation to the nine new CMAs (Government Gazette, 16 September 2016. No.1056, pg. 169-172).

The study area is situated within the Primary Drainage Area (PDA) of B and the Quaternary Drainage Area (QDA) of B31H.

In terms of the aquatic environment the study site is within the wetland vegetation ecoregion of the Central Sandy Bushveld (Group 3).

The study site is not situated within a catchment that is an important or designated Fish FEPA area or Fish Corridor catchment. It is also not within a priority QDA.

### 6.2.2.3 Present Ecological State of Watercourses

All watercourses identified within the study area and surrounding areas are assessed to determine their Present Ecological State (PES). The assessment criteria and structure are 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. However, the only 'watercourse' on site is the manmade impoundment (farm dam) and the PES of the dam cannot be assessed / calculated using the standard methodology. The methodology is designed for natural systems, and even though it is used for artificial systems, these do not include manmade dams. Besides the dam there are no actual watercourses found on site and therefore no PES assessments can be conducted, or are necessary.

### 6.2.2.4 Ecological Importance & Sensitivity of Watercourses in the Study Area

The Ecological Importance and Sensitivity (EIS) ratings of watercourses identified on site are determined using the standard methodology discussed in the report. However, there are no naturally occurring watercourses on the study site for which their EIS can be determined. The methodology does not cater for artificial systems such as manmade farm dams. However, it is important to recognise that farm dams can (and do) become important aquatic features within the overall ecosystem. In most cases in-stream dams that impound rivers and streams create well documented negative impacts and consequences on the original, natural river or stream. However, dams also create other positive impacts in the environment such as creation of permanent open bodies of water essential for various fauna. In this case the small dam is decades old and has become an integral and important part of the natural ecosystem and is therefore important and sensitive and needs to be protected.

### 6.2.3 Fauna

No large- or medium-sized fauna (including mammals) were observed during field investigations. A few small burrows were occasionally observed in the surrounding open veld areas, and are most likely linked to the activities of small field mice and other rodents such as rock mouse (*Aethomys namaquensis*), striped mouse (*Rhabdomys pumilio*), and/or multimate mouse (*Mastomus natalensis*). Evidence was also found of scrub hare (*Lepus sacatilis*). The study site is becoming more and more isolated by growing townships and existing agricultural lands that surround it. Therefore, the free-movement of wild fauna in and through the area is limited, even in terms of avifauna. However, a number of common bushveld birds were observed on the site.

It is not possible to conduct a comprehensive survey of faunal species and their presence during the limited time assigned to site investigations. Therefore, standard and acceptable probability assessments were

conducted (as mentioned in the methodology and as shown below) for mammals to give an indication of the likelihood / potential presence and sensitivities.

#### 6.2.3.1 Mammals

No large- or medium-sized mammals were observed during field investigations. A few small burrows were occasionally observed in the surrounding open veld areas, and are most likely linked to the activities of small field mice and other rodents such as rock mouse (*Aethomys namaquensis*), striped mouse (*Rhabdomys pumilio*), and/or multimate mouse (*Mastomus natalensis*). Evidence was also found of scrub hare (*Lepus sacatilis*). The areas directly north and south of the study site are most likely to contain common wild mammals if present in the region.

It is not possible to conduct a comprehensive survey of faunal species and their presence during the limited time assigned to site investigations. Therefore, standard and acceptable probability assessments were conducted (as mentioned in the methodology and as shown below) for mammals to give an indication of the likelihood / potential presence and sensitivities.

#### RDSIS for mammals in the study area

The Red Data Sensitivity Index Score (RDSIS) for the study area's potential Red Data Listed (RDL) mammals (species of conservation concern (SCC) yielded an average score of 43,5%, indicating a 'Medium' index score of importance or occurrence with regards to RDL & SCC mammal species within the general vicinity of the study area. All species with a Probability of Occurrence (POC) of 60% or more have an increased probability of either permanently or occasionally inhabiting the study area or using the study area as a corridor for movement between habitats and areas. The species with a POC of 100% are those species that were observed during field investigations.

#### 6.2.3.2 Avifauna

The study area is not situated within an Important Bird Area (IBA). The open bushveld in the study site is moderately-degraded to heavily-degraded and has a high element of sicklebush encroachment due to over-grazing. However, the thorny thickets and the presence of a permanent open body of water (farm dam on site) create ideal habitat for a number of the smaller common bushveld bird species. A few common bushveld species were observed during field investigations such as laughing dove (*Streptopelia senegalensis*), cape turtle dove (*Streptopelia capicola*), forked-tailed drongo (*Dicrurus adsimilis*), blacksmith lapwing (*Vanellus armatus*), and southern masked weaver (*Ploceus velatus*).

#### 6.2.3.3 Reptiles and Amphibians

The only reptiles observed during field investigations were a few common skinks (type of lizard). Lizards tend to prefer rocky habitats, such as koppies, ridges and sheet rocky areas with loose boulders. No such habitats are present on the study site or immediate surrounding open, bushveld areas. The likelihood is therefore low that priority lizard species will be present in the actual study area or surrounding areas. The study site is situated south of lizard 'hotspots' for South Africa.

Snakes tend to be more mobile and adaptable to various and altered environments. A few, but limited number of common snake species will be found on the study site. Examples of common species potentially found in the area are common brown house (*Lamprophis capensis*), red-lipped herald (*Crotaphopeltis hotamboeia*) and rinkhals (*Hemachatus haemachatus*). A few dangerous snakes such as puff adder (*Bitis arietans*), common (or rhombic) night adder (*Causus rhombeatus*) and mambas (*Dendroaspis spp.*) may occasionally be found on site. The Rock Python (*Python natalensis*), which is a priority species (species of conservation concern), will not be present in the area of the study site.

#### 6.2.3.4 Invertebrates

Invertebrates such as spiders, scorpions and butterflies are important faunal groups, but are very difficult to properly assess in a short time period. During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. The nature and scope of the project is such that it will have low to negligible negative impact on these species should they occur. No priority species were observed.

Recorded butterfly fauna for the Mpumalanga Provinces falls into: 5 families, 17 subfamilies, 124 genera, 367 species and 6 additional subspecies (374 taxa). Shared endemic genera: 10. Exclusive endemism: 9 species and 3 subspecies (12 taxa). Shared endemism: 47 species and 14 subspecies (62 taxa) (SA Red Data Book: Butterflies, SANBI Series 13).

The species of conservation concern (SCC) for the Province are:

**Nymphalidae:** *Dingana fraterna*.

**Lycaenidae:** *Aloeides barbarae*, *Aloeides nubilus*, *Aloeides rossouwi*, *Chrysoritis aureus*, *Lepidochrysops irvingi*, *Lepidochrysops jefferyi*, *Lepidochrysops rossouwi*, *Lepidochrysops swanepoeli*.

**Hesperiidae:** *Metisella meninx*, *Platylesches dolomitica*.

According to the SA Red Data Book for Butterflies (SANBI Series 13,), Butterfly Hotspots for Mpumalanga Province are:

**Mountainlands Nature Reserve near Barberton**

*Aloeides barbarae* *Lepidochrysops jefferyi*, *Lepidochrysops swanepoeli*

**Escarpment southwest of Stoffberg**

*Dingana fraterna* *Aloeides rossouwi* *Lepidochrysops rossouwi*

Only one RDL / SCC species is likely to be found in the general area of the study site and that is the Marsh Sylph. The species inhabits marshes in wetlands at altitudes of 1 400m to 1 700m. The marshes are often in the headwaters of streams (G.A. Henning & Roos 2001). Found in marshland (vleis), in open grassland (Mucina & Rutherford 2006).

#### 6.2.3.5 Faunal species of conservation concern

During field investigations no faunal species of conservation concern were encountered. There are some ideal habitats for some priority faunal species, which are mainly in less degraded grassland situated along or close to small seasonal streams and wetlands.

#### 6.2.4 Sensitivity Assessment

##### 6.2.4.1 DEA Screening Tool Assessment

The Department of Forestry, Fisheries and Environment (DFFE) (Previously DEA) has developed a desktop screening tool that is used as a guideline in an initial desktop assessment of a project and project site ([www.screening.environment.gov.za](http://www.screening.environment.gov.za)). The screening tool is a guideline tool that needs to be verified during site investigations (ground truthing). Depending on the levels of sensitivity shown in the screening assessment certain criteria in terms of assessments, studies, etc. may be required by the competent authorities.

According to the screening tool (accessed August 2022) the various sensitivities for the study site and immediate surroundings are as follows:

- Terrestrial biodiversity combined theme sensitivity: Low.
- Aquatic biodiversity combined theme sensitivity: Low.



- Plant species theme sensitivity: Low.
- Animal species theme sensitivity: Low.

Figure 16 below, shows the sensitivities of the various themes for the study area.

During site investigations the sensitivities, were assessed and ground-truthed. The on-site assessments are in agreement with the sensitivity assessments of the national screening tool.

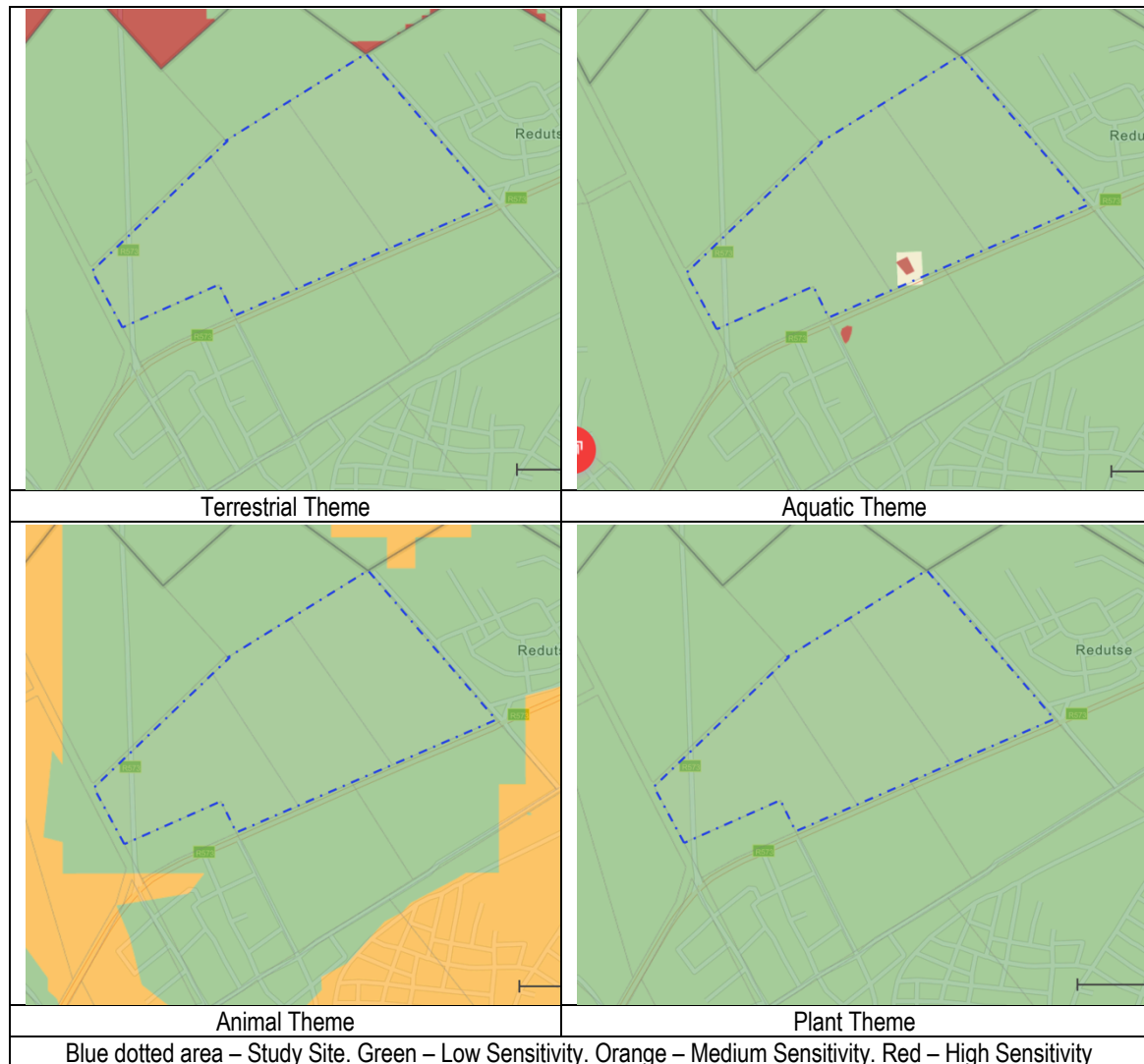


Figure 16: Maps of Screening Tool Sensitivities for the Study Area

#### 6.2.4.2 Ecological Sensitivity

The sensitivity assessment identifies those areas and habitats within the study area and nearby areas that have a high conservation value and that may be sensitive to disturbance or transformation. All watercourses (rivers, streams, drainage lines and wetlands) are, by default, considered sensitive (High Sensitivity), even if in a poor or degraded condition. Areas or habitats have a higher conservation value (or sensitivity) based on their threatened ecosystem status, ideal habitat for priority species, potential or real presence of RDL fauna and flora species, etc.

The study area and assessment area consist of three broad habitats, namely, transformed (mainly cultivated farmlands where the environment is totally transformed or seriously altered); grassland; and watercourses.

The floral and faunal sensitivity analyses are shown in the tables 3 and 4 below.

Table 3: Floristic sensitivity analysis

Criteria	Habitats	
	Bushveld	Watercourses
Red Data Species	1	6
Habitat Sensitivity	1	6
Floristic Status	2	6
Floristic Diversity	2	6
Ecological Fragmentation	3	6
Sensitivity Index	18%	60%
Sensitivity Level	Low	Medium

High: 80% – 100%; Medium/high: 60% – 80%; Medium: 40% – 60%; Medium/low: 20% – 40%; Low: 0% – 20%

Table 4: Faunal sensitivity analysis

Criteria	Habitats	
	Bushveld	Watercourses
Red Data Species	2	6
Habitat Sensitivity	1	6
Faunal Status	2	6
Faunal Diversity	2	6
Ecological Fragmentation	3	6
Sensitivity Index	20%	60%
Sensitivity Level	Low	Medium

High: 80% – 100%; Medium/high: 60% – 80%; Medium: 40% – 60%; Medium/low: 20% – 40%; Low: 0% – 20%

#### 6.2.4.3 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 5).

Table 5: Ecological sensitivity analysis

Ecological community	Floristic sensitivity	Faunal sensitivity	Ecological sensitivity
Bushveld	Low	Low	Low
Watercourses	Medium	Medium	Medium

High: 80% – 100%; Medium/high: 60% – 80%; Medium: 40% – 60%; Medium/low: 20% – 40%; Low: 0% – 20%

#### 6.2.4.4 National Priority Areas

The Study Site is not within any national priority areas, including protected areas and important bird areas (IBAs). Although not all national priority areas in terms of NFEPA, all the streams and wetlands are shown below in Figure 17.

National priority areas include formal and informal (private) protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National freshwater ecosystem priority areas (NFEPA) and National protected areas expansion strategy focus areas (NPAES).

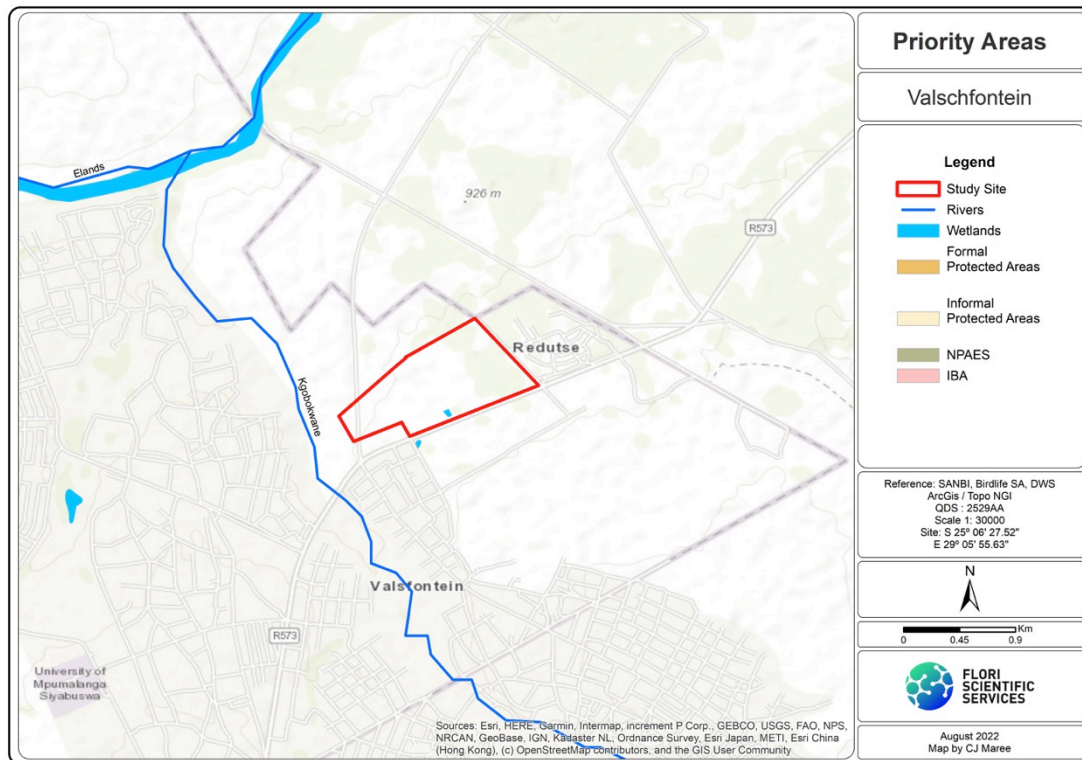


Figure 17: Priority Areas

#### 6.2.4.5 Critical Biodiversity Areas & Ecological Support Areas

The study site is not within any critical biodiversity areas (CBAs) or ecological support areas (ESAs) (Figure 18).

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). These form the key outputs of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision-making tools. CBAs are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (SANBI).

Ecological Support Areas (ESAs) are areas that are often seen as buffer areas for CBAs as well as corridors and connective areas between CBAs and/or other priority areas. ESAs are also often designated buffer and support areas along rivers and streams.

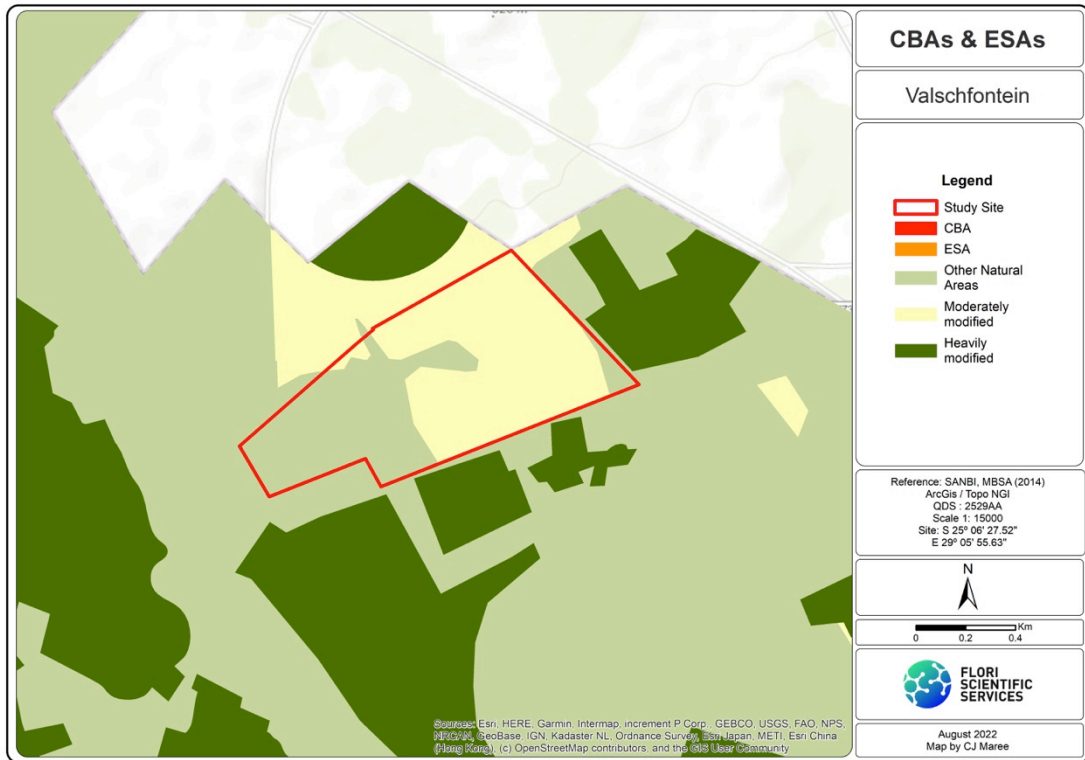


Figure 18: CBAs & ESAs

6.2.4.6 Sensitivity mapping of the study area

All relevant datasets, DEA screening desktop assessment and field investigations were taken into account in determining the sensitivity mapping of the study site (Figure 19). Note that the buffer zone is included in the ‘high sensitivity’ area, as this is basically also a ‘no-go zone’ or limited access area.



Figure 19: Sensitivity Map

#### 6.2.4.7 Buffer Zones

A standard, 32m buffer zone has been recommended and delineated around the identified watercourses found on site (Figure 20). The buffer zone includes the riparian zone around the dam and small stormwater and outflow drainage lines. It is understood that there is no significant difference in species make-up in the riparian vegetation (which is part of the definition), but it is denser vegetation and it is an integral part of the ecosystem and function of the watercourses, including refuge for birds and small animals that frequent the dam for water.

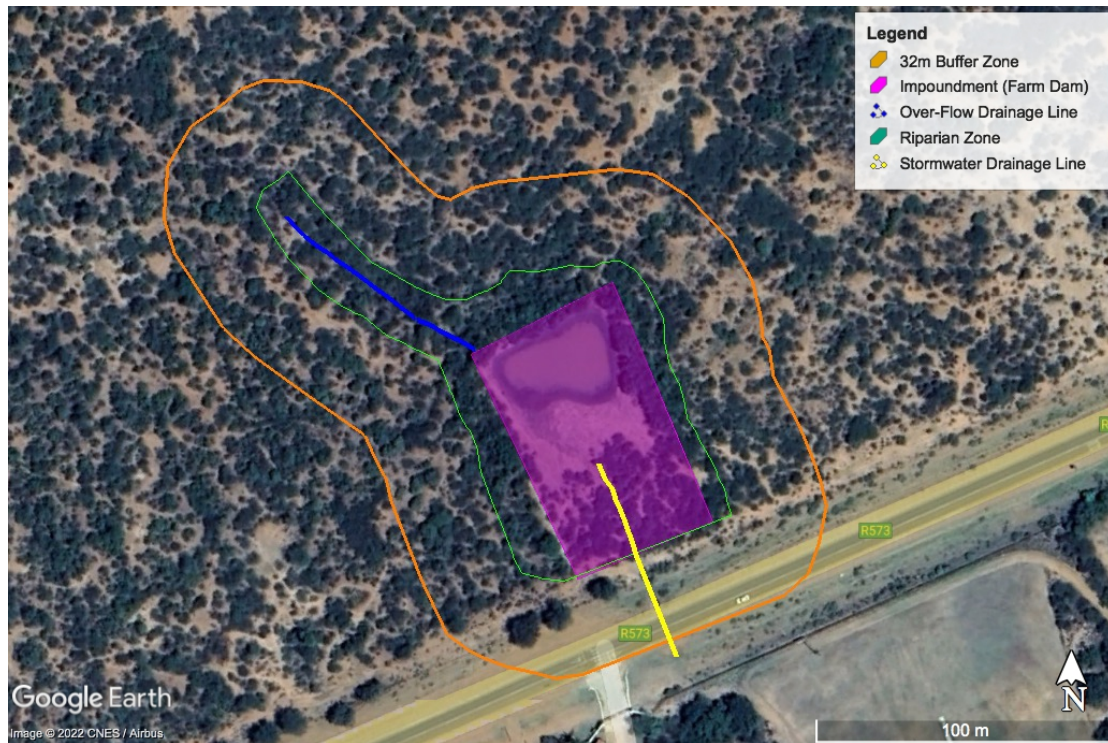


Figure 20: 32m Buffer Zone around Delineated Watercourses

#### 6.2.5 The Go, No-Go Option

##### 6.2.5.1 Potential fatal flaws

There are no obvious fatal flaws in terms of the ecological biodiversity and the project may proceed. However, mitigating measures, including any buffer zones recommended must be implemented.

##### 6.2.5.2 Classification criteria

The term 'fatal flaw' is used to evaluate whether or not an impact would have a 'no-go' implication for the project. In the scoping and impact assessment stages, this term is not typically used. Rather impacts are described in terms of their potential significance.

A potential fatal flaw (or flaws) from a biodiversity perspective is seen as an impact that could have a "no-go" implication for the project. A 'no-go' situation could arise if residual negative impacts (i.e. those impacts that still remain after implementation of all practical mitigatory procedures/actions) associated with the proposed project were to:

- a) Conflict with international conventions, treaties or protocols (e.g. irreversible impact on a World Heritage Site or Ramsar Site);
- b) Conflict with relevant laws (e.g. clearly inconsistent with NEMA principles, or regulations in terms of the Biodiversity Act, etc.);

- c) Make it impossible to meet national or regional biodiversity conservation objectives or targets in terms of the National Biodiversity Strategy and Action Plan (BSAP) or other relevant plans and strategies (e.g. transformation of a 'critically endangered' ecosystem);
- d) Lead to loss of areas protected for biodiversity conservation;
- e) Lead to the loss of fixed, or the sole option for flexible, national or regional corridors for persistence of ecological processes;
- f) Result in loss of ecosystem services that would have a significant negative effect on lives (e.g. loss of a wetland on which local communities rely for water);
- g) Exceed legislated standards (e.g. water quality), resulting in the necessary licences/approvals not being issued by the authorities (e.g. WULA);
- h) Be considered by the majority of key stakeholders to be unacceptable in terms of biodiversity value or cultural ecosystem services.

### 6.2.6 Impact Assessment

The impacts of the activities related to the proposed project were rated. There are existing impacts and potential negative impacts arising from the proposed project. Mitigating measures are recommended to help reduce the sum of the negative impacts (cumulative effect) on the natural environment in which the project is based. Depending on the nature of the project focus on the various phases typical to a project may vary. These phases are the construction phase, operation phase, maintenance and rehabilitation. In some projects, there may also be a decommission phase. The operation phase is mostly considered in terms of ongoing, routine maintenance after clean up and rehabilitation at the end of the construction phase. Recommendations and mitigating measures for the operation phase may oftentimes be able to be included in the routine maintenance programme / schedules.

#### 6.2.6.1 Existing Impacts

In terms of the natural ecology of the greater area, the primary existing negative impacts are large-scale commercial farming practices and high-density townships and semi-rural areas. Other existing impacts in the area include general infrastructure such as roads and power lines. The existing negative impacts on the actual site are fairly low, but with increasing impacts and pressures from growing surrounding townships.

#### 6.2.6.2 Potential Impacts

The potential negative impacts arising from the proposed project on the study site itself are high. Due to the existing developed townships and farming areas, as well as the low levels of biodiversity sensitivities, the negative impacts on the area is medium.

There are no potential positive impacts arising from the proposed project.

#### 6.2.6.3 Assessment of potential impacts

The assessment of potential impacts on the natural environment arising from the project and related activities is shown below in Table 6.

The scoring method used in the impact assessment is as follows:

- $SP = [\text{extent (E)} + \text{duration (D)} + \text{magnitude (M)}] \times \text{probability (P)}$ .

The maximum value is 100 significance points (SP). Environmental impacts will be rated as either that of High, Moderate or Low significance on the following basis:

- $SP \geq 60$ : High;  $SP 31 \geq 59$ : Moderate;  $SP \leq 30$ : Low.

## 6.2.6.4 Cumulative Effect

The cumulative effect speaks to the total sum of negative impacts on the natural environment. The cumulative effect looks at the sum of the existing impacts and the new, additional impacts arising from the proposed project and related activities. In general the overall cumulative impact will be 'Medium'.

Table 6: Assessment of Potential Impacts

Potential Impacts arising from Project	Phase of Project	Impact Rating (High: SP ≥60: Moderate: 31 ≥ 59: Low: SP ≤ 30)					
		Total Impact of Proposed Project					
		Extent	Duration	Magnitude	Probability	Total	Significance
	<b>Construction Phase: Pre-mitigation</b>	Local (2)	Permanent (5)	High (8)	High (4)	60	<b>High</b>
	<b>Construction Phase: Post mitigation</b>	Site (1)	Permanent (5)	High (8)	High (4)	56	<b>Moderate</b>
	<b>Operational Phase</b>	Site (1)	Permanent (5)	High (8)	High (4)	56	<b>Moderate</b>
<b>Mitigating Measures</b>	<p>1. Impacts on the existing natural environment related to the project are '<b>MODERATE</b>'</p> <p>2. Any temporary storage, lay-down areas or accommodation facilities to be setup within the project site.</p> <p>3. Ensure small footprint during construction phase. Movement of people and vehicles must stay within the project site / property boundaries / development site.</p> <p>4. A <u>32m Buffer zone</u> from the outer edge of the riparian zone must be implemented. This buffer zone is a 'No-Go' zone in terms of construction activities and the layout of the township. Therefore, no movement of vehicles or contractors is allowed during the construction phase, and the area must remain a 'green zone' / 'open space' as part of the layout and development. During the 'operational phase' the homeowners / tenants should be able to utilise the area as a recreational / green space, but no vehicles should be allowed in the zone, only people.</p> <p>5. No temporary site offices or lay-down areas are allowed within 50m of the edge of any watercourses.</p> <p>6. Access to the site during the construction phase should only be from off the existing main roads and planned permanent access roads into the township.</p> <p>7. All hazardous materials used during the construction phase must be stored appropriately to prevent these contaminants from entering the water environment;</p> <p>8. All excess materials brought onto site for construction must be removed after construction.</p> <p>9. No open trenches or mounds of soils to be left.</p> <p>10. No water may be used from out of the on-site dam during the construction phase at all.</p> <p>11. No trees are allowed to be cut-down within the buffer zone area, except for invasive sickle-bush and only as part of the landscaping design / layout for recreational areas / green spaces / walk-ways / picnic spots, etc.</p> <p>12. A Rehabilitation plan for disturbed areas to be compiled and implemented as part of the construction phase of the project and/or as part of the landscaping phase of the project.</p> <p>13. Infringement on the dam and buffer area might well trigger a Water Use Licence Application (WULA) process.</p>						
<b>Cumulative Effect on the study site</b>		Local (2)	Permanent (5)	High (8)	High (4)	60	<b>High</b>
<b>Cumulative Effect on the general area</b>		Site (1)	Permanent (5)	High (8)	High (4)	56	<b>Moderate</b>
<b>Individual Impacts</b>							
<b>Loss of natural vegetation</b>							
		Extent	Duration	Magnitude	Probability	Total	Significance
	<b>Pre-Mitigation</b>	Local (2)	Permanent (5)	High (8)	High (4)	60	<b>High</b>

	Post Mitigation	Site (1)	Permanent (5)	High (8)	High (4)	56	Moderate
<b>Mitigating Measures</b>	1. The sensitivity of the vegetation on the site is 'Low' therefore the impact will only be 'Moderate'. 2. The likelihood is very low that any RDL species are present and therefore be impacted on. Any ODL species observed (or other species of conservation concern – SCC) can be relocated. Should any be noticed during construction phase then the ECO and/or Specialist must first be contacted for advice on how to move forward. If any unknown plants are found that need to be moved or destroyed then once again the ECO and/or specialist must first be contacted. 3. Any priority species encountered must be identified and rescued prior to any excavation or construction activities. 4. Burning of removed vegetation is not allowed. 5. Open fires by contractors are not allowed. 6. Contractors should be allowed to use and/or distribute wood that is removed (trees cut down) during the operational phase. 6. A weed control programme should be implemented. This can form part of the routine maintenance programme for the township. 7. A site-specific rehabilitation plan is required.						
<b>Loss of or impact on wildlife</b>							
		Extent	Duration	Magnitude	Probability	Total	Significance
	<b>Pre-Mitigation</b>	Site (1)	Short-term (2)	Moderate (6)	Medium (3)	27	Low
	<b>Post Mitigation</b>	Site (1)	Short-term (2)	Minor (2)	Low (2)	10	Low
<b>Mitigating Measures</b>	1. Care must be taken not to interact directly with any wild life encountered. 2. Any bird nests encountered in the grass or on the water must not be interfered with. If encountered must first be discussed with specialist. 3. During the summer months (rainy season) staff must be continually made aware of being cautious and vigilant in encountering snakes. No snakes encountered may be killed and must be removed by a specialist on site or called in when required. 4. Contractors and staff are not allowed to catch fish in the on-site dam.						
<b>Impeding &amp; impounding of watercourses</b>							
		Extent	Duration	Magnitude	Probability	Total	Significance
<b>3. Impeding &amp; Impounding waterflow</b>	<b>Pre-Mitigation</b>	Local (2)	Short-term (2)	Low (4)	Medium (3)	24	Low
	<b>Post Mitigation</b>	Site (1)	Short-term (2)	Minor (2)	Low (2)	10	Low
<b>Mitigating Measures</b>	1. There are no naturally occurring watercourses on the site. 2. There is a small manmade dam on site that must be buffered and protected. 3. The existing inflow may not be altered or impounded or reduced. 4. Erosion and potential siltation of the dam and inflow must be monitored at all times during the construction phase of the project. 5. A 32m wide buffer around the edge of the dam, riparian zone, outflow / seepage area, and inflow area must be implemented and maintained. 6. General surface stormwater flow and movement may be altered and re-routed as part of the normal stormwater management systems and plans for the designs and construction of the township.						
<b>Siltation and erosion</b>							
		Extent	Duration	Magnitude	Probability	Total	Significance
	<b>Pre-Mitigation</b>	Local (2)	Short-term (2)	Low (4)	Medium (3)	24	Low
	<b>Post Mitigation</b>	Site (1)	Short-term (2)	Minor (2)	Low (2)	10	Low
<b>Mitigating Measures</b>	1. All mitigating measures above have reference to siltation and erosion. 2. Careful monitoring during the construction phase is essential to locate and mitigate any erosion observed. Investigations must be conducted after every rain downpour. Any problems need to be rectified immediately to avoid the problem escalating.						



	<p>3. All roads must be monitored at all times and maintained. This includes existing roads, gravel roads, tar roads, temporary access roads.</p> <p>4. The erosion potential for the site is 'Low'.</p>						
<b>Fringe impacts arising from the construction phase</b>							
		Extent	Duration	Magnitude	Probability	Total	<b>Significance</b>
	<b>Pre-Mitigation</b>	Site (1)	Short-term (2)	Moderate (6)	Medium (3)	27	<b>Low</b>
	<b>Post Mitigation</b>	Site (1)	Short-term (2)	Minor (2)	Low (2)	10	<b>Low</b>
Mitigating Measures	<p>1. Due to the nature of the project the potential for any significant fringe benefits is low during the construction phase and moderate during the operational phase.</p> <p>2. Care must be taken with heavy machinery used on the project. All access roads used during construction must be monitored and maintained.</p> <p>3. Soils and stones excavated may be used on the site as backfill, fixing of roads, filling of dongas, etc. but not within any demarcated or other watercourses, including drainage lines.</p> <p>4. All temporary access roads must be fully rehabilitated by the contractors prior to final signing off of the construction phase of the project.</p> <p>5. Continual communication must be maintained with landowners. A record of any official and general complaints must be kept on site.</p> <p>6. Great care must be taken not to leave any excavated holes open or unfenced over night, as there are numerous people and livestock moving in and through the general area. The entire project site should be properly fenced-off and secured, with all the necessary danger and other signage during the construction phase.</p> <p>7. Dust suppression is required during the construction phase due to the close proximity of the site to homes.</p> <p>8. The use of heavy machinery is not allowed after normal working hours (7am to 5pm) due to the close proximity to homes.</p>						

## 6.2.7 Conclusions & Recommendations

### 6.2.7.1 Conclusions

The conclusions of the biodiversity study are as follows:

- The study site is within the original extent of Central Sandy Bushveld, which is not a threatened veldtype / ecosystem.
- The vegetation on site is a mix of moderately-degraded to heavily-degraded bushveld, with no pristine areas present. The veld is heavily invaded / encroached on by sicklebush, which is an indigenous species that tends to encroach due to poor veld management such as over-grazing.
- There are no natural watercourses on site, including perennial rivers, streams and wetlands. There is a small impoundment (soil-wall farm dam). Stormwater is channelled through a box culvert under the road onto the site and into the dam from higher lying area, just south of the site.
- The study site is not within any national priority areas such as protected areas, important bird areas (IBAs), etc.
- No red data listed (RDL) floral species were observed in the study area and none are expected to occur. No orange data listed (ODL) species were observed, although a few scattered individual species may occur. A few marula trees were found along the southern boundary and R573 road reserve, but not within the central area of the site.
- The study site is not within any demarcated critical biodiversity areas (CBAs) or ecological support areas (ESAs).
- There are no obvious fatal flaws in terms of the natural ecology.
- Taking all findings and recommendations into account it is the reasonable opinion of the author / specialist that the activity may be authorised. The project and related activities should be allowed to proceed.

#### 6.2.7.2 Recommendations

The recommendations of the study are as follows:

- A 32m buffer zone around the edge of the dam and riparian zone has been delineated and must be implemented. No houses, buildings, etc. may be constructed in the buffer zone. However, open green space, walkways, and low-levels recreational spots may be developed in the buffer zone, with special attention given to still protecting the integrity of the dam, and the inflow of stormwater.
- All recommended mitigating measures as proposed in this study and report should be implemented if the findings of this report are to remain pertinent. All of the recommended mitigating measures must be part of the conditions in the EMP.

### 6.3 SOCIAL ENVIRONMENT

#### 6.3.1 Existing Zoning and Land Use

The site is currently zoned “Agriculture” in terms of the Dr JS Moroka Local Municipality Land Use Scheme, 2020.

The land use of the site is fallow and vacant with no commercial or agricultural activities taking place and no roads traversing the site. The only development on the site is the small soil-wall dam.

#### 6.3.2 Surrounding Land Uses

The surrounding properties to the north are agricultural/farming with irrigation crops and vacant portions of land. The properties to the south are educational (Good Shepherd Model School & Elshadai Combined School) with dwelling houses (*refer to Figure 21*). The properties to the east and west are developed with dwelling houses.

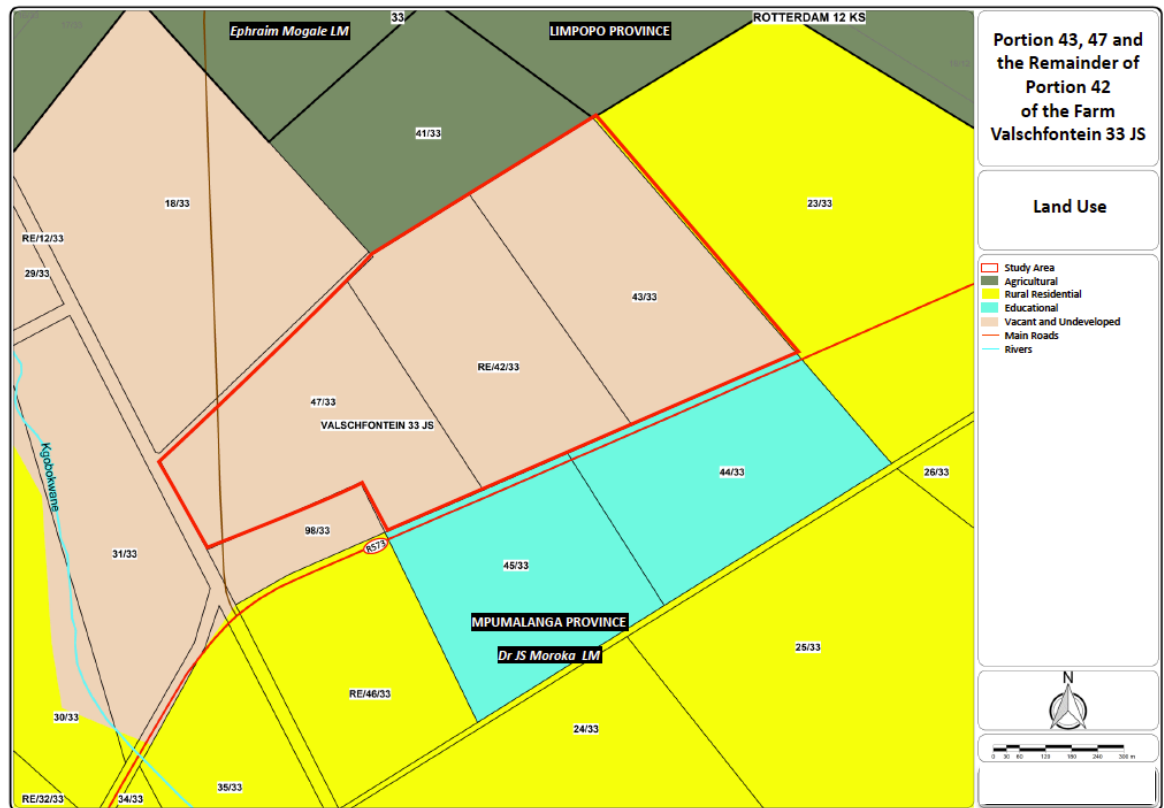


Figure 21: Land Use Map

### 6.3.3 Socio Economic Impact

The proposed development complies with development guidelines contained in Local legislation i.e. Dr JS Moroka Spatial Development Framework (SDF), Municipal legislation i.e. Mpumalanga Spatial Development Framework and National legislation i.e. The National Development Plan 2030, The Breaking New Ground Plan 2004.

Effective spatial planning requires increased strategic, socio-economic and bulk infrastructure investment that encourages infrastructure-led growth and increase the performance of the economy. To provide energy efficient and coordinated cities optimum utilisation of all resources including land, engineering services, transportation infrastructure, social infrastructure and ecological resources, is required. The proposed development was designed to be one which is compact and will take advantage of the above principles. The proposed development will also encourage infrastructure upgrades in the area as new bulk services will accompany the development and be integrated into the existing networks. The development of new infrastructure will also assist in maintenance of ageing infrastructure in surrounding neighbourhoods.

Sunshine View is situated on a vacant piece of land located to the north of Kgobokwane and east of Siyabuswa between the Dr JS Moroka (Mpumalanga) and Epharim Mogale / Elias Motsoaledi (Limpopo). The land is currently underutilised. The Breaking New Ground policy places emphasis on land to be developed in a strategic manner which can enhance the location of new housing projects.

The proposed Sunshine view development will ensure optimum utilisation of the site without defeating any of the primary considerations in respect of conservation and environmental issues.

The road network within the development linked with the larger public transport route ensures an efficient public transport system benefiting local and surrounding residents.

The proposed development will assist in realising the vision of the National Development Plan by creating a development that is compact offering employment opportunities and quality public transport.

There is a need to move away from a housing-only approach to a more holistic development of human settlements, including the provision of social and economic infrastructure. The development will offer a range of housing types, sizes and prices to accommodate financial capability. Apart from the residential activities, the development will also comprise of offices, business, retail, churches, crèche and entertainment.

During the construction phase temporary employment will be created and skills enhancement will take place. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to the spin-offs that will result.

The proposed development will provide the Council with a higher income from services and property tax since more people will be making use of the services of the Council after the approval of this proposed township.

Negative social impacts associated with the proposed development mainly occur during the construction phase i.e. noise, dust, visual, security, safety and traffic. Mitigation measures will be included in the EMPr.

#### **6.3.4 Heritage and Cultural Value**

A Heritage Impact Assessment was conducted by Beyond Heritage (Report included as Appendix C(vi)).

##### **6.3.4.1 Findings of the Survey**

The study area is overgrown and was accessed through cattle tracks during a pedestrian survey over one day. Heritage observations within the study area is limited to low density Middle Stone Age (MSA) scatters, ruins, a small cemetery and a stone packed feature of unknown purpose. Recorded features were numbered numerically and given the prefix VF for Valschfontein. General site conditions and site distribution of the recorded observations are illustrated in Figure 25 and briefly described in Table 7. Recorded features are illustrated in Photos 1 to 6.

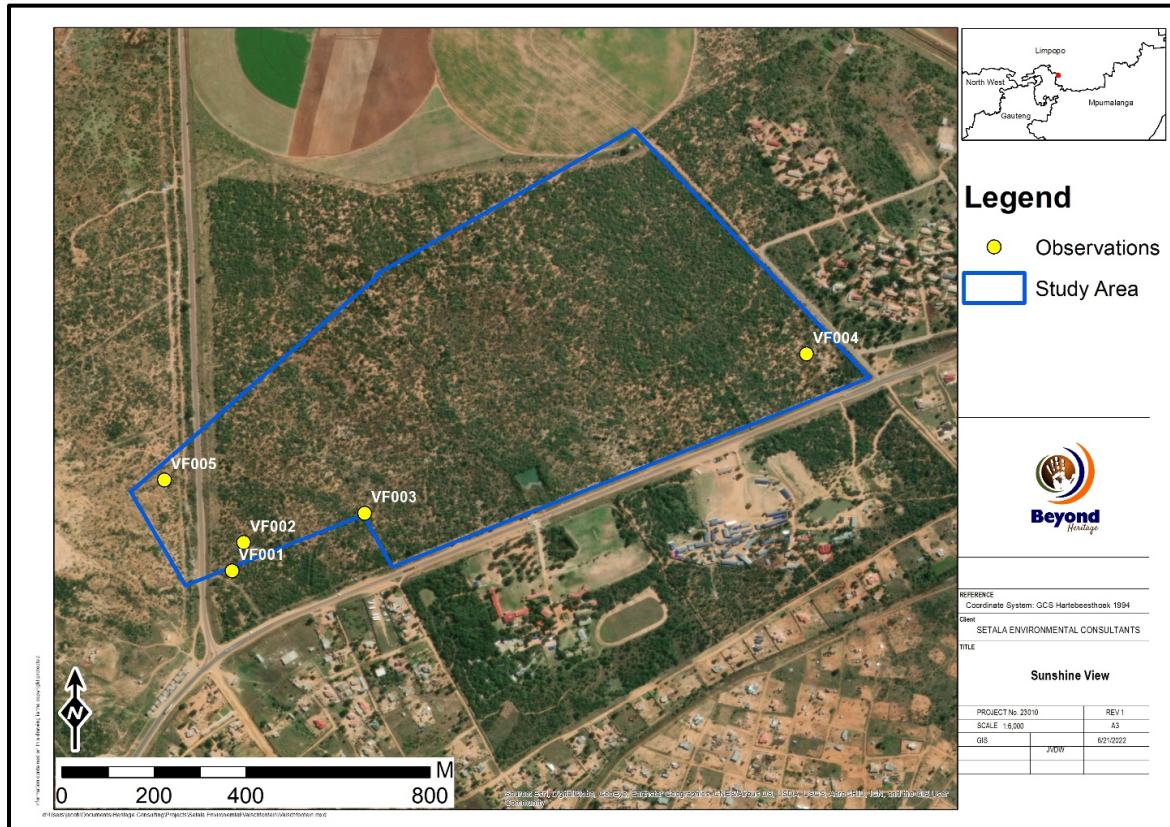


Figure 22: Site Distribution Map

Table 7: Recorded finds in the study area

LABEL	LONGITUDE	LATITUDE	DESCRIPTION	Significance	Mitigation
VF001	29° 05' 37.5288" E	25° 06' 40.8024" S	Isolated find consisting of a large (>5cm) MSA side scraper no other lithics are noted in this area	GP C Low Significance	No mitigation required – attributed to background scatter
VF002	29° 05' 38.3568" E	25° 06' 38.8117" S	Two graves situated near the western boundary of the project area covering an area of ~ 8 x 8 meter. The small cemetery is outlined by a single row of stones around the two graves. The first grave is marked by a cement border and headstone and the second grave by a row of packed stones for the border. The inscriptions on the graves are not visible.	GP A High Significance	Avoid with a 30 m buffer and access for family members
VF003	29° 05' 46.8709" E	25° 06' 36.7487" S	Stone packed cairn of unknown purpose. The feature is likely a survey beacon, but the possibility of a burial site cannot be excluded.	GP C Low Significance	Avoid , if not possible confirm the purpose of the stone cairn during social consulting.
VF004	29° 06' 17.9640" E	25° 06' 25.5565" S	This location is marked by the remains of a cement brick foundation of a demolished structure. The site is extremely degraded with the bricks showing extensive weathering. The site is situated near the southeastern boundary of the project area. This may possibly have been an informal dwelling but is not indicated on any historical maps.	GP C Low Significance	Monitor during construction to implement change find procedure if required.
VF005	29° 05' 32.7732" E	25° 06' 34.4159" S	A low density scatter of MSA lithic artefacts were identified scattered across an area (30 x 30m) on the western boundary of the project area. The raw material is from either igneous or metamorphic material. The scatter of lithic artefacts seems to be washing out of the gravel soils that are eroding away	GP C Low Significance	Monitor during construction to implement change find procedure if required.

		<p>due to the movement of downwash towards the small river towards the west. The artefact ratio is less than 5 artefacts per square meter. The area is marked by large scale sheet erosion and the artefacts are found in a deflated context. The wooded vegetation has been mostly cleared across the immediate surrounding area due to a local community having set up a stand at this location (Andrew) denied us further access at this area.</p>	
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Photo 1: Lithic artefact at VF 001.



Photo 2: General site conditions - Small cemetery containing two graves recorded as VF002.



Photo 3: Stone packed cairn possibly a survey marker located at VF003.



Photo 4: Remnants of a wall that has collapsed - The bricks seem to have been made by hand. The site was recorded at VF 004.



Photo 5: General site view at VF 004.



Photo 6: Small collection of MSA Lithic Artefacts being exposed by sheet erosion at VF005.

#### 6.3.4.2 Cultural Landscape

The cultural landscape of the area consisted of areas of cultivation and low scale developments such as railway lines and powerlines. The study area itself seems to have been fallow for a number of years.

#### 6.3.4.3 Paleontological Heritage

The study area is indicated as of high paleontological significance on the SAHRA Paleontological map (Figure 23) and an independent study (Bamford 2023) was commissioned for this aspect.

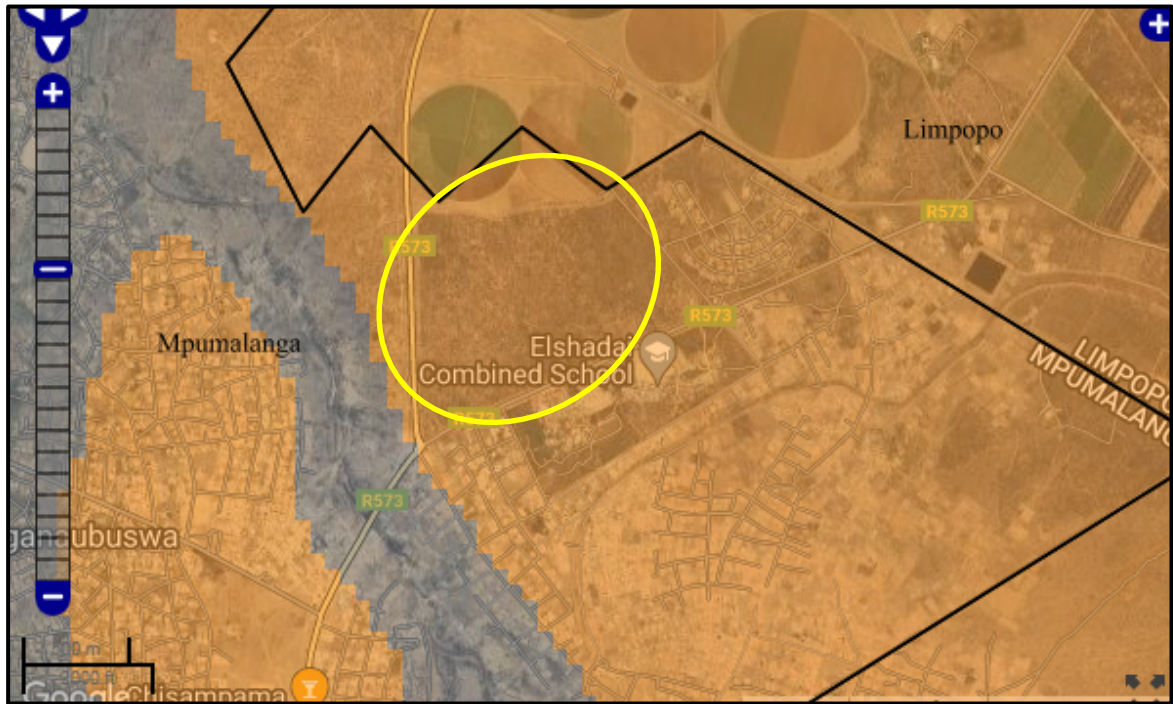


Figure 23: Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map

**6.3.4.4 Potential Impact**

Isolated Stone Age scatters (VF001 and VF005) are out of context and scattered too sparsely to be of significance apart from mentioning them in this report. The cemetery at VF002 is of high social significance and if impacted on the impact will be high. Although unlikely the Stone Cairn at VF003 could represent a burial site and this should be confirmed prior to construction. If confirmed to be a grave the feature is of high social significance, if the feature is a survey beacon it is of no significance and the impact will be low. Lastly, the recorded ruin (VF004) is not indicated on any of the historical maps and is therefore assumed to be younger than 60 years and not protected by the NHRA. It should be noted that although the feature has no aesthetic, historical or architectural potential, features like this one are known to contain unmarked graves (especially relating to still born children).



Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. Mitigation measures as recommended in this report should be implemented during all phases of the project. Impacts of the project on heritage resources is expected to be low during all phases of the development (Table 8 - 11).

#### 6.3.4.4.1 Pre-Construction phase

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure. These activities can have a negative and irreversible impact on heritage features if any occur. Impacts include destruction or partial destruction of non-renewable heritage resources.

#### 6.3.4.4.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. Potential impacts include destruction or partial destruction of non-renewable heritage resources.

#### 6.3.4.4.3 Operation Phase

No impacts are expected during the operation phase.

### Impact Assessment Tables

Table 8: Impact assessment of isolated Stone Age finds at VF 001 and VF 005

<b>Nature:</b> During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>24 (Low)</b>	<b>24 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	NA	NA
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>The Stone Age Scatters are isolated, out of context and scattered too sparsely to be of significance apart from mentioning them in this report. No additional preconstruction mitigation is required for this aspect.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.		

**Residual Impacts:**

Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.

Table 9: Potential impact on the cemetery recorded at VF002.

<b>Nature:</b> During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/recording)</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Moderate to high (7)	Moderate (6)
<b>Probability</b>	Highly Probable (4)	Not Probable (2)
<b>Significance</b>	<b>56 (Medium to high)</b>	<b>26 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>Graves and burial sites (as well as potential graves until proven otherwise) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured;</li> <li>Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;</li> </ul>		
<b>Residual Impacts:</b> If sites are destroyed this results in the depletion of archaeological record of the area and even though surface features can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

Table 10: Potential impact on the stone cairn at Feature VF003.

<b>Nature:</b> During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/excavation of site)</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>24 (Low)</b>	<b>16 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible

<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	NA	NA
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Confirmation the stone cairn at VF003 represents a grave during the social consultation process.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.		
<b>Residual Impacts:</b>		
Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

Table 11: Impact assessment of the project on the ruin at VF004

<b>Nature:</b> During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>24 (Low)</b>	<b>16 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	NA	NA
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Confirmation whether potential graves occur here during the social consultation process.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.		
<b>Residual Impacts:</b>		
Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

#### 6.3.4.5 Conclusion and recommendations

The topography of the study area is undulating with no major topographic features (such as pans or shelters) that would have been focal points for human activity in antiquity and heritage finds were limited to isolated Middle Stone Age artefacts (VF001 & VF 005), ephemeral remains of a demolished structure (VF004), a stone cairn (VF003) that could be a survey beacon and a small cemetery (VF002).

The low-density scatters of Stone Age material (VF001 & VF 005) is classified as background scatter (Orton 2016) and attest to human occupation of the wider area from the MSA onwards. These tools are out of context and scattered too sparsely to be of significance apart from mentioning them in this report. Due to the low artefact ratio and open-air context of these artefacts further mitigation is not warranted as it will not further contribute to our understanding of the Stone Age settlement of the area.

The cemetery at VF002 is of high social significance and should be preserved in situ. This should be achievable as the site is located on the eastern boundary of the study area. The Stone Cairn at VF003 is interpreted as a survey beacon but although unlikely could mark a burial site and this should be confirmed prior to construction. If confirmed to be a grave the feature is of high social significance, if the feature is a survey beacon it is of no significance. The recorded ruin (VF004) is not indicated on any of the historical maps and is therefore assumed to be younger than 60 years and not protected by the NHRA. It should be noted that although the feature has no aesthetic, historical or architectural potential, features like this are known to contain unmarked graves (especially of still born children).

The palaeontological sensitivity of the study area is high, and an independent study was conducted by Marion Bamford (2023) for this aspect. The palaeontological site visit found no fossils present within the proposed project area. Nonetheless, a Fossil Chance Find Protocol should be added to the EMP. As far as the palaeontology is concerned, the project may be authorised. The impact to heritage resources is medium and the project can commence provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

A section of the project area situated on the western side of the R573 has been cleared and marked as a residential stand and access was denied to the survey team in this area by the community.

No adverse impact to heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMP and based on approval from SAHRA.

#### **6.3.4.6 Recommendations for condition of authorisation**

The following recommendations for Environmental Authorisation apply and the project may only proceed based on approval from SAHRA:

Recommendations:

- Confirmation whether potential graves occur during the social consultation process, especially at the stone cairn at VF003 and the remains of the demolished structure at VF004;
- Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources (outlined in Section 10.2) in case heritage resources are uncovered during the course of construction;
- Burial sites (VF002) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured and the development of a heritage site development plan that will ensure the ongoing protection of the cemetery;
- Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;

- The inaccessible western portion of the study area and any additional changes to the layout should be subjected to a heritage walkdown prior to development.

#### **6.3.4.7 Chance Find Procedures**

##### **6.3.4.7.1 Heritage Resources**

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 10.5.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

##### **6.3.4.7.2 Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin**

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone or trace fossils) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the trace fossils such as stromatolites in the dolomites or the Quaternary bones, rhizoliths, traces. This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.

5. If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished, then no further monitoring is required.

#### **6.3.4.8 Reasoned Opinion**

The overall impact of the project is considered to be low and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

#### **6.3.4.9 Potent risk**

Potential risks to the proposed project are the occurrence of intangible features, sub surface cultural material and unrecorded burial sites. This can cause delays during construction, as well as additional costs involved in mitigation, as well as possible layout changes.

#### **6.3.4.10 Monitoring Requirements**

Day to day monitoring can be conducted by the Environmental Control Officers (ECO). The ECO or other responsible persons should be trained along the following lines:

- Induction training: Responsible staff identified by the developer should attend a short course on heritage management and identification of heritage resources.
- Site monitoring and watching brief: As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are from pre-construction and construction activities. The ECO should monitor all such activities daily. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Resources chance finds	Entire project area	ECO	Weekly (Pre construction and construction phase)	Proactively	<ul style="list-style-type: none"> <li>• If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented:               <ol style="list-style-type: none"> <li>1. Cease all works immediately;</li> <li>2. Report incident to the Sustainability Manager;</li> <li>3. Contact an archaeologist/palaeontologist to inspect the site;</li> <li>4. Report incident to the competent authority; and</li> <li>5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities.</li> </ol> </li> <li>• Only recommence operations once impacts have been mitigated.</li> </ul>

#### 6.3.4.11 Management Measures for inclusion in the EMPr

Refer to Table 10, HIA, Appendix C(vi) for management measures to be included in the EMPr.

#### 6.3.5 Visual Impact

Visual intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

High visual intrusion – results in a noticeable change or is discordant with the surroundings.

Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable.

Low visual intrusion – minimal change or blends in well with the surroundings.

The proposed development will change the scenic resources of the local area from an undeveloped area to a formal residential/business area. The visual intrusion is considered to be moderate as the proposed development will have minimal change and blends in with the surroundings.

The proposed development will require additional lighting on and in buildings and along roads. This will change the night landscape from unlit to lit.

*Mitigation measures will be included in the EMPr.*

## 7 PROJECT ALTERNATIVES

### 7.1 Introduction

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.

Based on the above the following alternatives were investigated for the proposed Sunshine View development.

#### a) Site alternatives

Site Alternatives	Description
Alternative Site 1 (only alternative)	Remaining Extent of Portion 42, Portion 43 and Portion 47 of the farm Valschfontein 33 JS
Alternative Site 2	No site alternatives were considered as this is the only site available to the applicant

#### b) Activity alternatives

Activity Alternatives	Description
Alternative 1 (preferred alternative)	Establishment of a mixed-use development consisting of Residential, Business, Institutional and Public Open Space land uses, and associated infrastructure.
Alternative 2	The need and desirability of a mixed-use development consisting of Residential, Business, Institutional and Public Open Space land uses have been confirmed. No activity alternatives were considered due to the benefits associated with a mixed-use development.

#### c) Layout alternatives

Activity Alternatives	Description
Alternative 1	Layout Alternative 1 encroached the 32m buffer zone around the riparian zone around the dam and small stormwater and outflow drainage line as recommended and delineated by the Biodiversity Specialist. <i>Refer to Figures 24 and 25.</i>



<p>Alternative 2 (Preferred Alternative)</p>	<p>Layout Alternative 2 allowed for a 32m buffer zone around the riparian zone around the dam and small stormwater and outflow drainage line as recommended and delineated by the Biodiversity Specialist. Refer to Figure 26.</p>
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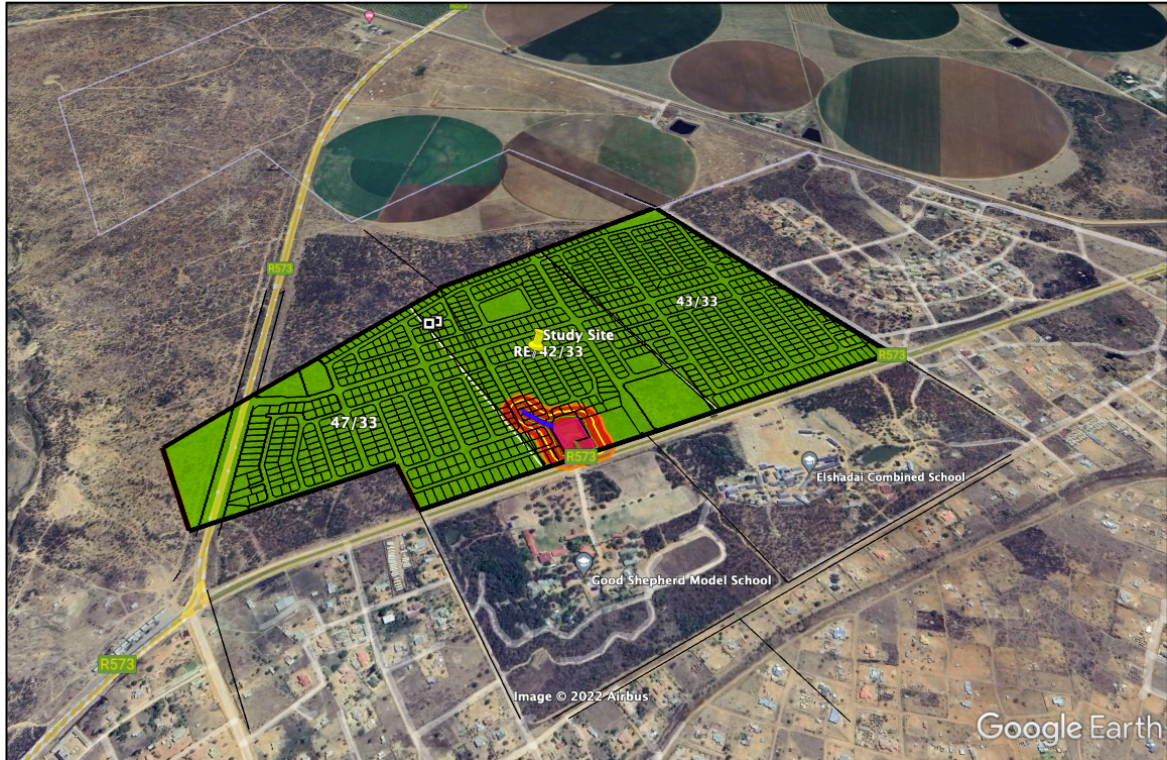


Figure 24: Layout Alternative 1 (Google Earth)

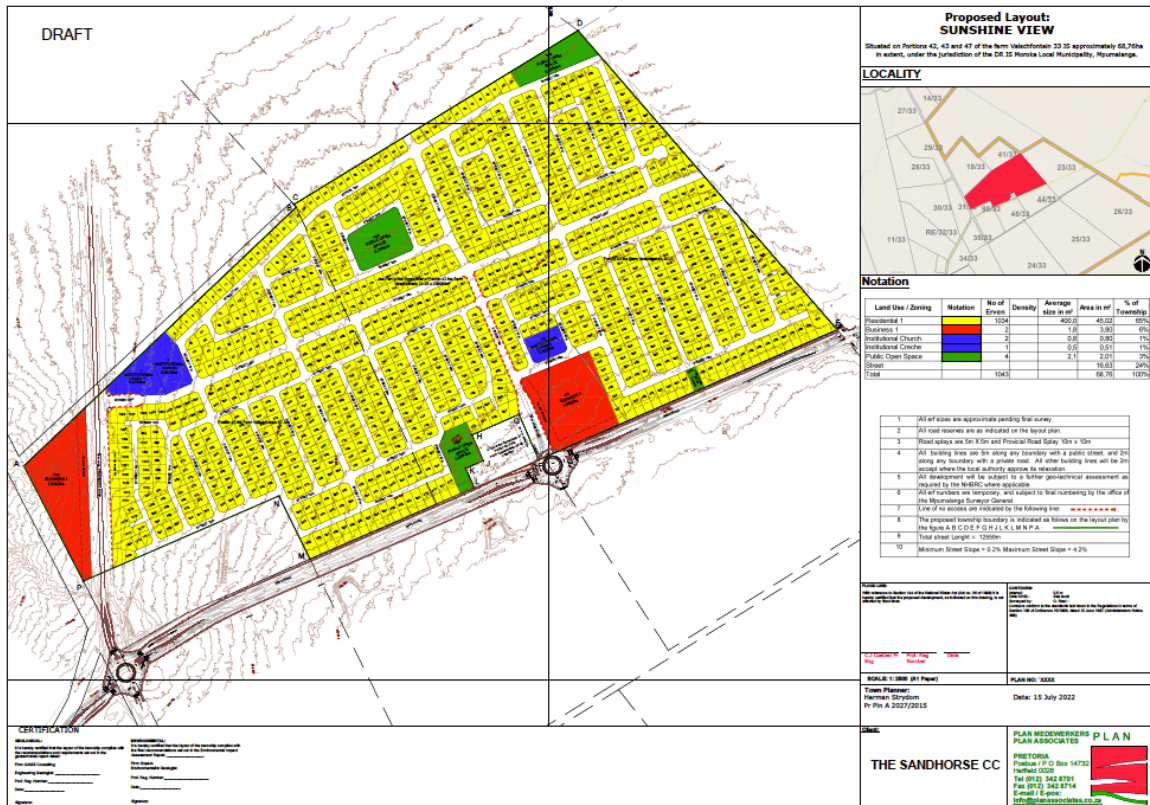


Figure 25: Layout Plan - Layout Alternative 1

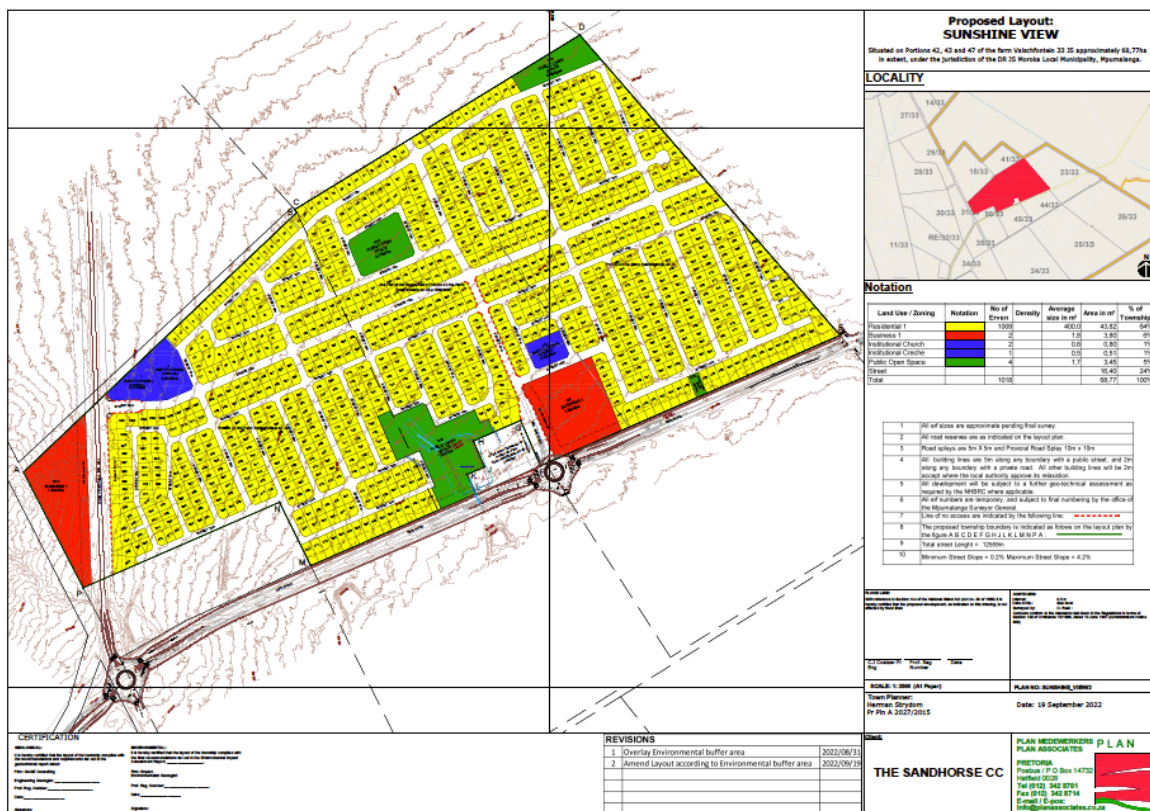


Figure 26: Layout Plan - Layout Alternative 2 (Preferred Alternative)

d) No-Go alternative

Should this option be implemented, the “status quo” will prevail and none of the advantages associated with the proposed mixed-use development will realize.

## 7.2 Motivation for the preferred alternatives

### Layout Alternative 2 (Proposal)

The original draft Layout (Alternative 1) encroached the 32m buffer zone around the riparian zone around the dam, small stormwater and outflow drainage line, recommended and delineated by the Biodiversity Specialist, as indicated in *Figure 24*. The draft Layout was amended to incorporate the 32m buffer zone around the riparian zone around the dam, small stormwater and outflow drainage line as part of the Public Open Space in the development. As a result, the number of Residential 1 erven were reduced from 1034 to 1009 in the proposed draft Layout (Alternative 2) (*Figure 26*). Layout Alternative 2 is regarded as the preferred alternative due to the protection of the 32m buffer zone around the riparian zone.

### No-Go Alternative

The no-go alternative will entail that the status quo will remain.

None of the advantages associated with the proposed mixed-use development consisting of much needed housing, business and institutional uses, will realize should the no-go option be implemented. The no-go option is therefore not regarded as a viable alternative.

## 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 Sunshine View development Scoping Phase PPP has entailed the following activities:

Refer to Appendix D: Public Participation.

## 8.1 Public Participation Activities Undertaken during the Scoping Phase

### 8.1.1 Authority Consultation

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

### 8.1.2 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.

The identified stakeholders of this project include:

**Table 12: Key Stakeholders contacted as part of Public Participation Process**

Contact Person	Company	Address
Ms. Gloria Moloto	Department Water and Sanitation QDA of B31D	Private Bag X 10580 Bronkhorstspuit 1020

Mr Philip Hine	SA Heritage Resource Agency	111 Harrington Street Cape Town 8000
Mr. GT Skosana	DR JS Moroka Local Municipality	Private Bag X4012 2601/3 Bongimfundo Street Siyabuswa
Mr MV Mahlangu	Nkangala District Municipality Department of Social Services: Environment	2A Walter Sisulu Street Middelburg 1050
Xolana Motha	Nkangala District Municipality	2A Walter Sisulu Street Middelburg 1050

*Proof of public participation during Scoping Phase was included in the Scoping Report.*

### 8.1.3 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. Setala Environmental erected a site notice at a noticeable location around the perimeter of the site on 30 June 2022.

### 8.1.4 Advertising

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

Daller – 1 July 2022.

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.

### 8.1.5 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 D (i).

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

### 8.1.6 Background Information Document (BID)

A briefing paper or Background Information Document (BID) for the project was compiled in English. 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.

### 8.1.7 Issues Register

Issues and concerns raised in the public participation process during the EIA process have been and will continue to be compiled into a Comments and Response Report. The Comments and Response Report will be attached as Appendix D (ii), in which all comments received, and responses provided will be captured. Correspondence received from I & APs are included as Appendix D (iii).

### 8.1.8 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 3 October 2022 to 3 November 2022. The report was submitted to all I&APs and electronic copies could be downloaded with a link from the Setala Environmental website.

Comments on the Draft Scoping Report were received from the following I&APs:

#### Department of Water and Sanitation (Refer to Appendix D (iii))

1. The Applicant shall conduct a preliminary legal assessment to identify all the water use activities associated with the proposed project that will require authorisation by the DWS. Furthermore, the applicant shall take note of section 22(1) of the National Water Act, 1998 (Act 36 of 1998):

"Permissible water use", a person may only use water-

- a) without a licence –
  - i. if the water use is permissible under Schedule 1;
  - ii. if that water is permissible as a continuation of an existing lawful use (section 32); or
  - iii. if that water use is permissible in terms of general authorisation issued under section 39;
- b) if the water use is authorised by a licence under this Act; or
- c) if the responsible authority has dispensed with a licence requirement under subsection (3), (of the same Act).

*Response:*

*Noted. The Applicant shall appoint a Water Use Consultant to conduct a preliminary legal assessment to identify all the water use activities associated with the proposed project that will require authorisation by the DWS.*

2. Any other water use related activities associated with this project that are not permissible as indicated under section 22(1) of the National Water Act, 1998 (Act 36 of 1998) shall have to be authorised by the DWS prior to such water use activities taking place and the applicant is requested to liaise with the DWS for guidance on the requirements for such an authorisation.

*Response:*

*Noted.*

3. **Flood-lines:** The applicant must note that no activities should occur within a 100m or within 1:100 year floodline or whichever is the greatest, unless authorised.

*Response:*

*Noted.*

4. **Water supply:** It is indicated on the report that water will be provided by municipality, the applicant shall provide the Department with a copy of a signed service level agreement with the service provider. The applicant should note that taking water from a watercourse is a water use in terms of section 21 (a) of National Water Act, 1998 (Act 36 of 1998) "taking water from a water resource" and it has to be authorised by the DWS.

*Response:*

*Noted.*

5. **Potable water:** The applicant should note that taking water from a water resource either through a borehole or any other means, is a water use in terms of section 21(a) of the National Water Act, 1998 (Act 36 of 1998) and must be authorised by the DWS.

*Response:*

*Noted.*

6. **Stormwater Management:** The applicant must ensure that clean stormwater is diverted away from all the working areas and stormwater leaving the construction areas must not be contaminated by any substance, whether that substance is a solid, liquid, vapour or any combination thereof. Should there be impacts on stormwater, adequate mitigation measures must be implemented as soon as possible.

*Response:*

*Noted. Included in the EMPr.*

7. **Wetlands and Streams:** If wetlands, streams and drainages are to be destructed, the applicant should ensure that mitigation measures are taken to mitigate impacts or alternatively, the applicant should provide another option which will not involve destruction of these watercourses. If the activity is within 500m radius of the watercourse, it constitutes a Section 21 (c) and (i) water use which requires authorisation in terms of Section 40 of the National Water Act, 1998 (Act 36 of 1998). A wetland study should also be conducted.

*Response:*

*Noted. The Biodiversity Assessment included a wetland study. It was confirmed that no wetland is present on the site.*

8. **Storage of oil, diesel, hydraulic fluids and grease:** It is recommended that the storage areas for these fluids be bunded with cement and in such a manner that any spillages can be contained and reclaimed without causing any pollution to the ground and surface water resources.

*Response:*

*Noted. Included in the EMPr.*

9. **Public Participation:** The applicant should note that this is one of the critical requirements when processing a water use authorisation application and it must be done as per "Regulations Regarding Procedural Requirements for Water Use Licence Applications and Appeals."

*Response:*

*Noted.*

10. **Sanitation:** The applicant must ensure that no sanitary system is located within a horizontal distance of 100 meters from any watercourses. Thus, reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.

*Response:*

*Noted. Included in the EMPr.*

11. **Pollution:** The applicant shall take note of section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998). It states that "An owner of land, a person in control of land or a person who occupies or uses the land on which- (a) any activity or process is or was performed or undertaken; or (b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resources must take al/ reasonable measures to prevent any such pollution from occurring, continuing or recurring".

*Response:*

*Noted. Mitigation measures included in the EMPr.*

The applicant is referred to Section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998) and to report any pollution incidents originating from the proposed project to the relevant Regional Office of the Department of Water and Sanitation within 24 hours.

*Response:*

*Noted. Included in the EMPr.*

Please also note that any use of water without authorisation is illegal as it is in contravention of the National Water Act, 1998 (Act 36 Of 1998) and is punishable by law.

*Response:*

*Noted.*

SANRAL (Refer to Appendix D (iii))

The South African National Roads Agency SOC Limited (SANRAL) indicated that the Agency is an affected and interested party and request the submission of a formal township establishment application for further evaluation.

*Response:*

*A Township Establishment Application had been submitted by Plan Associates Development Planners (Pty) Ltd.*



## 8.2 Public Participation Activities Undertaken during the EIA Phase

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

The draft EIA Report will be made available for authority and public review for a total of 30 days from 24 January 2023 to 24 February 2023. The report will be submitted to all I&APs and electronic copies can be downloaded with a link from the Setala Environmental website. Proof of notification will be included in the Final EIAR.

Comments received will be included in the Issues Register attached as Appendix D (ii) and correspondence received from I & APs will be included as Appendix D (iii).

Copies of the DEIAR will be submitted to the following key stakeholders:

- DR JS Moroka Local Municipality, Mr. GT Skosana
- Department of Water and Sanitation, Bronkhorstspuit Office

*Proof of submission will be included in the final EIAR.*

### Virtual/Public Meeting/Open Day

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

The opportunity to partake in the Public Participation Process, without face-to-face contact, is provided. Communication is proposed in writing via fax or email, and verbally via text messages, WhatsApp, Zoom or Teams sessions.

## 9 ENVIRONMENTAL IMPACT ASSESSMENT

### 9.1 Introduction

The EIA of the project activities is determined by identifying the environmental aspects and then undertaking an environmental risk assessment to determine the significant environmental aspects. The environmental impact assessment has included all phases of the project namely:

- Construction Phase; and
- Operational Phase.

Please note: due to the nature of the development it is anticipated that the infrastructure would be permanent, thus not requiring decommissioning or rehabilitation. Maintenance of infrastructure will be addressed under the operational phase.

### 9.2 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 13: 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 non-transitory	<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>	<b>Possible (2)</b> The impact may occur	<b>Improbable (1)</b> Likelihood of the impact

		Most likely that the impact will occur		materialising is very low
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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 14: CRITERIA FOR THE 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 - 20 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.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

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 EMPr. The EMPr will form part of the Environmental Impact Assessment Report (EIAR). Refer to Appendix E.

9.3 Impacts

9.3.1 Geology Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
Stability of structures	1	2	2	4	Negative Medium (-8)	<ul style="list-style-type: none"> <li>It is recommended that the development be founded on Stiffened or concrete raft, a suitably reinforced concrete raft.</li> <li>Alternatively, these structures should be founded on a Soil Raft: An area at least 0.5m larger than the footprint of the structure will need to be excavated to a depth of not less than 0.5m below the current ground level</li> <li>Where footprints of the proposed structures are to be placed directly on top of trial pits, the holes should be identified and properly backfilled.</li> <li>Excavation Inspection It is recommended that all foundations be inspected by a competent person prior to placing any concrete.</li> <li>Control Testing Regular checks on the quality and compaction of the backfill to the terraces should be made.</li> </ul>	1	2	1	2	Negative Low (-6)

### 9.3.2 Topographical Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
Surface gradient	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> <li>Surface drainage measures should be in place according to the engineer's design to ensure good site drainage without ponding of water after precipitation.</li> </ul>	1	2	1	2	Negative Low (-6)
Alteration of topography due to stockpiling of soil, building material and debris and waste material on site.	1	3	2	3	Negative Medium (-9)	<ul style="list-style-type: none"> <li>All stockpiles must be restricted to designated areas and are not to exceed a height of 2 metres.</li> <li>Stockpiles created during the construction phase are not to remain during the operational phase.</li> <li>The contractor must be limited to clearly defined access routes to ensure that sensitive and undisturbed areas are not disturbed.</li> </ul>	1	2	1	2	Negative Low (-6)

### 9.3.3 Hydrogeology Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
Groundwater contamination due to construction activities	2	4	3	3	Negative High (-12)	Construction Site	2	4	1	2	Negative Medium (-9)

					<ul style="list-style-type: none"> <li>• No temporary facilities, temporary accommodation, temporary storage to be setup within 50m of any watercourse.</li> <li>• Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This would reduce solid and liquid waste production and water demand at the site camp.</li> <li>• During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into any watercourse is avoided.</li> </ul> <p>Diesel, hydraulic fluid and lubricants</p> <ul style="list-style-type: none"> <li>• Minimise on-site storage of petroleum products;</li> <li>• Ensure measures to contain spills readily available on site (spill kits).</li> <li>• All petrochemical leaks and spills must be appropriately contained and disposed of at a licensed waste disposal site.</li> </ul> <p>Construction Vehicles</p> <ul style="list-style-type: none"> <li>• All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. No repairs may be undertaken beyond the contractor laydown area.</li> <li>• Should any transfer of vehicle fuel take place on site, it is important to demarcate a specific area for this purpose. This area should be covered with an impermeable layer to prevent any penetration of fuel and oil spillage into the soil. The area could also be sloped towards an oil trap or sump to ease collection of spilled substances.</li> </ul>				
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					<ul style="list-style-type: none"> <li>• All construction vehicles should be serviced on a regular basis to minimise the risk of oil spillage on site.</li> <li>• Servicing of vehicles or equipment must take place off-site at appropriate workshop facilities.</li> <li>• When not in use, construction vehicles must be parked in an area provided with an impermeable layer to prevent leaks and spills from penetrating the substrate.</li> </ul> <p>Construction site domestic waste and sewage</p> <ul style="list-style-type: none"> <li>• Minimise on-site accommodation.</li> <li>• Deposit solid waste in containers and dispose at municipal waste disposal sites regularly.</li> <li>• Dispose of liquid waste (grey water) with sewerage.</li> <li>• Install appropriate ablution facilities.</li> <li>• Preferably utilise municipal systems or chemical toilets.</li> </ul> <p>Construction site inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc)</p> <ul style="list-style-type: none"> <li>• Ensure compliance with stringent daily clean up requirements on site.</li> <li>• Dispose at municipal waste disposal sites.</li> </ul> <p>Construction site hazardous waste</p> <ul style="list-style-type: none"> <li>• All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time.</li> <li>• Material safety data sheets (MSDSs) are to be clearly displayed for all hazardous materials.</li> <li>• The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report.</li> <li>• Employees should be provided with absorbent</li> </ul>				
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						spill kits and disposal containers to handle spillages. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • Employees should record and report any spillages to the responsible person. • An Emergency Preparedness and Response Plan will be developed and implemented should and incident occur. • Access to storage areas on site must be restricted to authorised employees only. • Contractors will be held liable for any environmental damages caused by spillages.					
<b>OPERATIONAL</b>											
Potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.  Leaks of untreated water from pipelines may occur and impact on the groundwater quality.	1	2	2	3	Negative Medium (-8)	The applicant must ensure that no sanitary system is located within a horizontal distance of 100 meters from any watercourses. Reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.  Any leaks should be fixed immediately, and areas rehabilitated as needed.	1	2	1	2	Negative Low (-6)

9.3.4 Hydrology Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation	Significance Rating	Mitigation and management measures	After Mitigation	Significance Rating
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	E	D	I	P	(before mitigation)		E	D	I	P	(after mitigation)
<b>CONSTRUCTION</b>											
Increased urban run-off	2	2	2	1	Negative Medium (-7)	<ul style="list-style-type: none"> <li>Land disturbance must be minimized in order to prevent erosion and run-off - this includes leaving exposed soils open for a prolonged period of time. As soon as vegetation is cleared (including alien) the area must be re-vegetated if it is not to be developed on in future.</li> </ul>	2	1	1	1	Negative Low (-5)
Impeding & impounding of watercourses	1	2	1	2	Negative Low (-6)	<ol style="list-style-type: none"> <li>There are no naturally occurring watercourses on the site.</li> <li>There is a small manmade dam on site that must be buffered and protected.</li> <li>The existing inflow may not be altered or impounded or reduced.</li> <li>Erosion and potential siltation of the dam and inflow must be monitored at all times during the construction phase of the project.</li> <li>A 32m wide buffer around the edge of the dam, riparian zone, outflow / seepage area, and inflow area must be implemented and maintained.</li> <li>General surface stormwater flow and movement may be altered and re-routed as part of the normal stormwater management systems and plans for the designs and construction of the township.</li> </ol>	1	1	2	1	Negative Low (-5)
<b>OPERATIONAL</b>											
The proposed development could have a negative impact on water resources. Increased coverage of paved/hardened surfaces may increase the volume and velocity of stormwater runoff.	1	3	2	3	Negative Medium (-9)	Stormwater Management are addressed in the Environmental Management Programme (EMPr). A site-specific stormwater management plan is required.	1	2	1	2	Negative Low (-6)



						<p>4. No temporary site offices or lay-down areas are allowed within 50m of the edge of any watercourses.</p> <p>5. Access to the site during the construction phase should only be from off the existing main roads and planned permanent access roads into the township.</p> <p>6. All hazardous materials used during the construction phase must be stored appropriately to prevent these contaminants from entering the water environment;</p> <p>7. All excess materials brought onto site for construction must be removed after construction.</p> <p>8. No open trenches or mounds of soils to be left.</p> <p>9. No water may be used from out of the on-site dam during the construction phase at all.</p> <p>10. No trees are allowed to be cut-down within the buffer zone area, except for invasive sickle-bush and only as part of the landscaping design / layout for recreational areas / green spaces / walk-ways / picnic spots, etc.</p> <p>11. A Rehabilitation plan for disturbed areas to be compiled and implemented as part of the construction phase of the project and/or as part of the landscaping phase of the project.</p> <p>12. Infringement on the dam and buffer area might well trigger a Water Use Licence Application (WULA) process.</p>					
Loss of natural vegetation	2	4	2	4	Negative High (- 12)	<p>1. Any ODL species observed (or other species of conservation concern – SCC) can be relocated. Should any be noticed during construction phase then the ECO and/or Specialist must first be</p>	1	2	2	2	Negative Medium (- 7)

						<p>contacted for advice on how to move forward. If any unknown plants are found that need to be moved or destroyed then once again the ECO and/or specialist must first be contacted.</p> <p>2. Any priority species encountered must be identified and rescued prior to any excavation or construction activities.</p> <p>3. Burning of removed vegetation is not allowed.</p> <p>4. Open fires by contractors are not allowed.</p> <p>5. Contractors should be allowed to use and/or distribute wood that is removed (trees cut down) during the operational phase.</p> <p>6. A weed control programme should be implemented. This can form part of the routine maintenance programme for the township.</p> <p>7. A site-specific rehabilitation plan is required.</p>					
Loss or impact on wildlife	1	2	1	2	Negative Low (-6)	<p>1. Care must be taken not to interact directly with any wild life encountered.</p> <p>2. Any bird nests encountered in the grass or on the water must not be interfered with. If encountered must first be discussed with specialist.</p> <p>3. During the summer months (rainy season) staff must be continually made aware of being cautious and vigilant in encountering snakes. No snakes encountered may be killed and must be removed by a specialist on site or called in when required.</p> <p>4. Contractors and staff are not allowed to catch fish in the on-site dam.</p>	1	1	2	1	Negative Low (-5)
Fringe impacts arising from the construction phase	1	1	2	2	Negative Low (-6)	<p>1. Due to the nature of the project the potential for any significant fringe benefits is low during</p>	1	2	1	1	Negative Low (-5)

						<p>the construction phase and moderate during the operational phase.</p> <p>2. Care must be taken with heavy machinery used on the project. All access roads used during construction must be monitored and maintained.</p> <p>3. Soils and stones excavated may be used on the site as backfill, fixing of roads, filling of dongas, etc. but not within any demarcated or other watercourses, including drainage lines.</p> <p>4. All temporary access roads must be fully rehabilitated by the contractors prior to final signing off of the construction phase of the project.</p> <p>5. Continual communication must be maintained with landowners. A record of any official and general complaints must be kept on site.</p> <p>6. Great care must be taken not to leave any excavated holes open or unfenced over night, as there are numerous people and livestock moving in and through the general area. The entire project site should be properly fenced-off and secured, with all the necessary danger and other signage during the construction phase.</p> <p>7. Dust suppression is required during the construction phase due to the close proximity of the site to homes.</p> <p>8. The use of heavy machinery is not allowed after normal working hours (7am to 5pm) due to the close proximity to homes.</p>				
<b>OPERATIONAL/CUMULATIVE</b>										
The cumulative effect speaks to the total sum of negative impacts on the natural environment. The cumulative effect looks at the sum of the existing impacts and the new,	1	4	2	2	Negative Medium (-9)					

additional impacts arising from the proposed project and related activities.										
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9.3.6 Waste Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
Contamination of the surface and site with general waste.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> <li>An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimise littering.</li> <li>Bins must be provided on site for use by employees.</li> <li>Bins should be clearly marked and lined for efficient control and safe disposal of waste.</li> <li>Different waste bins, for different waste streams must be provided to ensure correct waste separation.</li> <li>A fenced area must be allocated for waste sorting and disposal on the site.</li> <li>General waste produced on site is to be collected in skips for disposal at the local municipal waste site.</li> <li>Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.</li> <li>Under no circumstances is waste to be burnt or buried on site.</li> <li>Waste bins should be cleaned out on a regular</li> </ul>	1	2	1	2	Negative Low (-6)

						basis to prevent any windblown waste and/or visual disturbance. <ul style="list-style-type: none"> <li>All general waste must be removed from the site at regular intervals and disposed of in suitable waste receptacle</li> </ul>					
Contamination of the surface and site with general and hazardous waste. Hazardous waste produced on site include: <ul style="list-style-type: none"> <li>Oil and other lubricants, diesel, paints, solvent;</li> <li>Containers that contained chemicals, oils or greases; and</li> <li>Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen).</li> </ul>	1	2	3	3	Negative Medium (-9)	<ul style="list-style-type: none"> <li>Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site.</li> <li>The Environmental Manager must have as part of his/her records the waste manifest for each batch based disposal.</li> <li>Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid).</li> <li>A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal.</li> <li>In the case of a spill of hydrocarbons, chemicals or bituminous, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimize pollution risk.</li> </ul>	1	1	2	2	Negative Low (-6)
<b>OPERATIONAL</b>											
Generation and disposal of domestic waste by the proposed development.	1	3	2	2	Negative Medium (-8)	Waste will be collected by an accredited waste company and disposed of at an appropriate and licensed waste disposal facility.	2	1	1	2	Negative Low (-6)

9.3.7 Air Quality Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation	Significance Rating	Mitigation and management measures	After Mitigation	Significance Rating
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	E	D	I	P	(before mitigation)		E	D	I	P	(after mitigation)
<b>CONSTRUCTION</b>											
Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing, general construction.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> <li>Dust must be suppressed on the construction site and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> <li>Loads could be covered to avoid loss of material in transport, especially if material is transported off site.</li> <li>Dust and mud should be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary.</li> <li>Facilities for the washing of vehicles should be provided at the entry and exit points.</li> <li>A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas.</li> <li>During the transfer of materials, drop heights should be minimised to control the dispersion of mater being transferred.</li> <li>The height of all stockpiles on site should be a maximum of 2m.</li> <li>Use of dust retardant road surfacing if made necessary due to the exceedance of Air Quality Guidelines.</li> </ul>	2	1	1	2	Negative Low (-6)

9.3.8 Noise Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation	Significance Rating	Mitigation and management measures	After Mitigation	Significance Rating
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	E	D	I	P	(before mitigation)		E	D	I	P	(after mitigation)
<b>CONSTRUCTION</b>											
During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff.	1	2	3	2	Negative Medium (-8)	<ul style="list-style-type: none"> <li>All construction activities should be undertaken according to daylight working hours between the hours of 07:00 – 17:00 on weekdays and 7:30 –13:00 on Saturdays.</li> <li>No construction activities may be undertaken on Sunday.</li> <li>Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order.</li> <li>All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability.</li> <li>Construction staff working in area where the 8-hour ambient noise levels exceed 60 dBA must have the appropriate Personal Protective Equipment (PPE).</li> <li>All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).</li> </ul>	1	1	1	2	Negative Low (-5)

9.3.9 Heritage Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove	1	3	1	1	Negative Low (-6)	The Stone Age Scatters are isolated, out of context and scattered too sparsely to be of significance apart from mentioning them in this report. No	1	3	1	1	Negative Low (-6)

from its original position archaeological and paleontological material or objects. Isolated Stone Age finds at VF 001 and VF 005						additional preconstruction mitigation is required for this aspect.					
Cemetery recorded at VF002	2	4	3	3	Negative High (-12)	<ul style="list-style-type: none"> <li>Graves and burial sites (as well as potential graves until proven otherwise) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured;</li> <li>Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures.</li> </ul>	1	3	1	1	Negative Low (-6)
Stone cairn at Feature VF003	1	2	1	2	Negative Low (-6)	Confirmation that the stone cairn at VF003 represents a grave during the social consultation process.	1	2	1	2	Negative Low (-6)
Ruin at VF004	1	2	1	2	Negative Low (-6)	Confirmation whether potential graves occur here during the social consultation process.	1	1	1	2	Negative Low (-5)
Possible impact on fossils	1	1	1	2	Negative Low (-5)	A Fossil Chance Find Protocol should be added to the eventual EMPr.	1	1	1	2	Negative Low (-5)

### 9.3.10 Traffic Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
There is likely to be an increase in traffic from construction vehicles.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> <li>Construction vehicles are to avoid main roads during peak traffic hours.</li> <li>All vehicles entering the Site are to be roadworthy.</li> </ul>	1	1	1	2	Negative Low (-5)

						<ul style="list-style-type: none"> <li>When using heavy or large vehicles / equipment, "spotters" are to be present to assist the driver with his blind spots.</li> <li>Any incident or damage to a vehicle must be reported immediately.</li> </ul>					
<b>OPERATIONAL</b>											
The proposed development would have an impact on the current road network.	2	4	3	2	Negative High (-11)	<ul style="list-style-type: none"> <li>The road upgradings and access recommended by the Traffic Engineers to be implemented.</li> <li>Public Transport and pedestrian facilities to be provided according to TIA</li> </ul>	2	4	1	1	Negative Medium (-8)
<b>CUMULATIVE</b>											
The proposed development together with other developments in the region would have a significant impact on the current road network						<ul style="list-style-type: none"> <li>Traffic control measures at intersections along the main roads will have to be changed once more development occurs in the region</li> </ul>					

9.3.11 Socio-Economic Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
<b>Employment</b>											
The development will result in job creation and provision of employment.	1	2	1	3	Positive Medium (+7)	<ul style="list-style-type: none"> <li>All labour (skilled and unskilled) and contractors should be sourced locally where possible.</li> <li>A labour and recruitment policy must be developed, displayed and implemented by the contractor.</li> <li>Recruitment at the construction site will not be allowed.</li> </ul>	1	2	1	3	Positive Medium (+7)

						<ul style="list-style-type: none"> <li>Where possible, labour intensive practices (as opposed to mechanised) should be practiced.</li> <li>The principles of equality, BEE, gender equality and non-discrimination will be implemented.</li> </ul>					
The development will lead to increased rates and taxes accruing to the local municipality.	1	2	1	3	Positive Medium (+7)						
<b>Safety</b>											
Public safety during construction.	1	2	2	2	Negative Medium (-7)	<ul style="list-style-type: none"> <li>Members of the public adjacent to the construction site should be notified of construction activities in order to limit unnecessary disturbance or interference.</li> <li>Construction activities will be undertaken during daylight hours and not on Sundays.</li> </ul>	1	2	1	1	Negative Low (-5)
Construction staff safety during construction.  Where sourcing of local labour is not possible, "outsiders" may need to be employed in order to address skills shortages. On-site accommodation may lead to social disturbances in the area and will also require additional service provisioning measures.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> <li>Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction.</li> <li>All construction staff must have the appropriate PPE.</li> <li>The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents.</li> <li>Report and record any environmental, health and safety incidents to the responsible person.</li> </ul>	1	2	2	1	Negative Low (-6)
<b>OPERATIONAL</b>											
<b>Employment</b>											
<ul style="list-style-type: none"> <li>The development will result in job creation and provision of employment.</li> <li>Jobs for the maintenance of infrastructure and services will be created following the completion of the development. These jobs might be made available to existing labour there creating long term employment.</li> <li>Service contractors could have access to other developments or projects in the area thereby creating long term</li> </ul>	2	3	2	3	Positive High (+10)						

employment.													
<b>PROVISION OF HOUSING</b>													
• Provision of a much-needed housing	2	3	3	4	Positive High (+12)								

### 9.3.12 Infrastructure Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
<b>CONSTRUCTION</b>											
Damage to the existing services and infrastructure during the construction phase and disruptions in services (i.e. electricity, water, damage to Telkom cables) during the construction phase.	1	3	2	2	Negative Medium (-8)	Mitigation measures supplied in the EMPr must be adhered to.	1	1	1	2	Negative Low (-5)
Provision of services and infrastructure	2	4	2	2	Negative High (-10)	<ul style="list-style-type: none"> <li>Availability of services to be confirmed</li> <li>Increased stress on municipal bulk services</li> </ul>	1	3	2	2	Negative Medium (-8)
The project will result in the upgrade of infrastructure and services in the area	2	3	3	4	Positive High (+12)						

TABLE 15: SUMMARY OF IMPACT ASSESSMENT AFTER MITIGATION

## CONSTRUCTION PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability it would occur	Significance rating After Mitigation
Geology: Stability of structures	1	2	1	2	Low
Topography: Surface gradient	1	2	1	2	Low
Alteration of topography due to stockpiling of soil, building material and debris and waste material on site.	1	2	1	2	Low
Hydrogeology: Groundwater contamination	2	4	1	2	Medium
Hydrology: Erosion due to increased urban runoff	2	1	1	1	Low
Impeding & impounding of watercourses	1	1	2	1	Low
Loss of natural vegetation	1	2	2	2	Medium
Loss or impact on wildlife	1	1	2	2	Low
Fringe impacts arising from the construction phase	1	2	1	2	Low
Contamination of the surface and site with general waste.	1	2	1	2	Low
Impact of odour, Noise, Safety and Dust	2	1	1	2	Low
Impact on Cultural Heritage Resources and Fossils	1	1	1	2	Low
Traffic Impact	1	2	1	1	Low
Impact of Labourers	1	2	2	1	Low
Impact on existing Infrastructure	1	1	1	2	Low
Economic Impacts This will be a POSITIVE impact	1	2	1	3	Medium
Provision of services and infrastructure	1	3	2	2	Medium
The project will result in the upgrade of infrastructure and services in the area This will be a POSITIVE impact	2	3	3	4	High

## OPERATIONAL PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Hydrogeology: Groundwater contamination due to the proposed onsite sanitation facilities.	1	2	1	2	Low
Hydrology: The proposed development could have a negative impact on water resources. Increased coverage of paved/hardened surfaces may increase the volume and velocity of stormwater runoff.	1	2	1	2	Low

Waste management	1	2	1	2	Low
Infestation by Alien vegetation	1	2	1	2	Low
Traffic: The proposed development would have an impact on the current road network during funerals	2	4	1	1	Medium
Economic Impacts This will be a POSITIVE impact	1	2	1	3	High
Provision of a much needed housing in close proximity of job opportunities	2	3	3	4	High

## 10 ENVIRONMENTAL IMPACT STATEMENT

### 10.1 Conclusions

The findings conclude that there are no environmental fatal flaws that could prevent the proposed Sunshine View development if the recommended mitigation and management measures contained in the preceding chapter and EMPr (Appendix E) are implemented.

The results of the impact assessment indicate that the most significant impacts as a result of the proposed project would include the following:

#### PHYSICAL ENVIRONMENT

##### Geology

From a geotechnical point of view the site is regarded as suitable for the proposed Sunshine View development. The foundation recommendations and construction monitoring measures supplied by the geotechnical engineer to be implemented.

##### Geohydrology

Groundwater contamination due to construction activities, disposal of waste water and sewage systems.

Recommendations and mitigations measures are included in the EMPr.

#### BIOLOGICAL ENVIRONMENT

The proposed development will result in loss of natural vegetation and loss/impact on wildlife. These impacts are not regarded as significant due to the following:

- The study site is within the original extent of Central Sandy Bushveld, which is not a threatened veldtype / ecosystem.
- The vegetation on site is a mix of moderately-degraded to heavily-degraded bushveld, with no pristine areas present. The veld is heavily invaded / encroached on by sicklebush, which is an indigenous species that tends to encroach due to poor veld management such as over-grazing.
- There are no natural watercourses on site, including perennial rivers, streams and wetlands. There is a small impoundment (soil-wall farm dam). Stormwater is channelled through a box culvert under the road onto the site and into the dam from higher lying area, just south of the site.
- The study site is not within any national priority areas such as protected areas, important bird areas (IBAs), etc.
- No red data listed (RDL) floral species were observed in the study area and none are expected to occur. No orange data listed (ODL) species were observed, although a few scattered individual

species may occur. A few marula trees were found along the southern boundary and R573 road reserve, but not within the central area of the site.

- The study site is not within any demarcated critical biodiversity areas (CBAs) or ecological support areas (ESAs).
- There are no obvious fatal flaws in terms of the natural ecology.

A 32m buffer zone around the edge of the dam and riparian zone has been delineated and must be implemented. No houses, buildings, etc. may be constructed in the buffer zone. However, open green space, walkways, and low-levels recreational spots may be developed in the buffer zone, with special attention given to still protecting the integrity of the dam, and the inflow of stormwater.

Recommendations and mitigation measures are included in the EMPr to be implemented.

## **SOCIO-ECONOMICAL ENVIRONMENT**

### Cultural heritage sites and graves

The topography of the study area is undulating with no major topographic features (such as pans or shelters) that would have been focal points for human activity in antiquity and heritage finds were limited to isolated Middle Stone Age artefacts, ephemeral remains of a structure, a stone cairn that could be a survey beacon and a small cemetery.

The palaeontological sensitivity of the study area is high, and an independent study was conducted for this aspect (Bamford 2023). The study concluded that no further palaeontological studies are required. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr.

The recommendations from the Heritage Specialist are included in the EMPr and in recommendations for Environmental Authorisation.

### Availability of services and infrastructure

#### Water:

There are no water storage facilities in the direct vicinity of the proposed township. It is proposed that a new 1Mℓ (24 hr storage) reservoir be constructed to supply the proposed township with water. From this new storage reservoir, a new bulk supply pipeline is proposed to supply the proposed township with potable water.

#### Sewer:

Currently there is no municipal sewer infrastructure in the direct vicinity of the proposed township. A package plant, such as a constructed wetland treatment facility, that has low maintenance and is easily upgradable, is proposed. The location of such a package plant should however take into consideration future expansion and development. Careful consideration should be given to the current and future townships to be developed in the areas surrounding the proposed township. Bulk sewerage systems could be planned and implemented in line with the development strategy of the town and could assist with township developments in future if planned properly.

Reasonable measures shall have to be taken to prevent the potential pollution of the ground and surface water resources due to the proposed onsite sanitation facilities.

#### Stormwater:

No formal stormwater infrastructure exists in the vicinity of the proposed township except for stormwater culverts draining stormwater from south to north and east to west of the R573 Provincial Road.



Stormwater management and drainage for the proposed township is proposed via conventional stormwater drainage practices.

Electricity:

The Amandla 88/22kV Eskom Substation should have sufficient capacity available to provide the proposed development with capacity required. Awaiting confirmation from Eskom.

Solid waste:

It is proposed that the residents collect their waste in common Wheelie Bins which could be emptied by the local authority on a weekly basis.

#### Traffic Impacts

The proposed development would have an impact on the current road network. The recommended access arrangements, road upgrades and public transport and pedestrian facilities must be implemented.

#### Need and desirability

The need and desirability for a mixed-use development, including a large number of housing, business and institutional facilities i.e. crèche and churches, in the area had been confirmed. The proposed development is in line with the National Development Plan, 2030, Breaking New Ground Plan, Mpumalanga Spatial Development Framework, 2012 and Dr JS Moroka Spatial Development Framework.

#### Socio-economic

The proposed development will create employment opportunities during both the construction and operational phase.

The development will lead to increased rates and taxes accruing to the Dr JS Moroka Municipality.

The project will result in the upgrade of infrastructure and services in the area.

It is the opinion of Setala Environmental that there are presently no environmental impacts emanating from the proposed activity that cannot be adequately managed. The management of the negative impacts will require the implementation of the necessary mitigatory measures detailed in the EMPr (refer to Appendix E) of this report.

## **10.2 Recommendations**

Based on the assumption that the mitigation measures will be effectively implemented for the proposed Sunshine View development and that no fatal flaws have been identified to date, it is the opinion of the EAP that this activity should be authorised to proceed to the final stages of decision making.

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

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

- The EMPr (attached in Appendix E) must be implemented and complied with to ensure the minimisation, control and mitigation of construction phase impacts.
- Compliance with the EMPr should be evaluated and audited by an independent, appropriately qualified and experienced ECO, on a monthly basis, as a minimum.

- The implementation of a site-specific Stormwater Management Plan that had been approved by the local municipality.
- The availability of electricity to be confirmed.
- The following recommendations apply and the project may only proceed based on approval from SAHRA:

Recommendations

- Confirmation whether potential graves occur during the social consultation process, especially at the stone cairn at VF003 and the remains of the demolished structure at VF004;
  - Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources in case heritage resources are uncovered during the course of construction;
  - Burial sites (VF002) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured and the development of a heritage site development plan that will ensure the ongoing protection of the cemetery;
  - Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures; and
  - The inaccessible western portion of the study area and any additional changes to the layout should be subjected to a heritage walkdown prior to development.
- All recommendations made by the specialists in reports compiled for this development should be adhered to at all times.

### 10.3 Proposed Duration of Environmental Authorisation

If granted, the environmental authorisation is required for a period of at least ten years.

### 10.4 Assumptions, Uncertainties and Gaps In Knowledge

The assessment contained in this report as well as the recommendations made are based on the assumption that it does not replace or nullify any other spheres of legislation that may apply to any or all aspects of the proposed development.