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# ECOLOGICAL IMPACT ASSESSMENT REPORT

## MATWABENG EXTENSION 6, ON THE REMAINDER OF THE FARM DE PUT 298 FP, SENEKAL LOCAL MUNICIPALITY FREE STATE PROVINCE

**NOVEMBER 2021**

**Reviewing Authority:**
Department of Economic Development, Small business Development, Tourism and Environmental Affairs
Directorate: Environmental Impact Management
113 Andrew Street
BLOEMFONTEIN
9301

Free State province

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## ABBREVIATIONS

| | |
|---|---|
| **BA** | Basic Assessment |
| **CARA** | Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) |
| **DEDSE**F | Department of Economic Development, Small business Development and Environmental Affairs, Free State province |
| **DWS** | Department of Water and Sanitation |
| **EAP** | Environmental Assessment Practitioner |
| **EIA** | Environmental Impact Assessment |
| **ESA** | Ecological Importance Support Area |
| **IDP** | Integrated Development Plan |
| **NEMBA** | National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) |
| **NEMPA** | National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003 |
| **NEMA** | National Environmental Management Act, 1998 (Act No. 107 of 1998) |
| **NFA** | National Forests Act, 1998 (Act No. 84 of 1998) |
| **PES** | Present Ecological State |
| **SDF** | Spatial Development Framework |
| **WULA** | Water Use License Application |

## DETAILS OF THE SPECIALIST

| | | |
|---|---|---|
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## EDUCATIONAL BACKGROUND

BPAED (Science), *UNIZUL), Botany, Zoology*

S S T D (Science), *UNIZUL*

MBL (Project Management, financial Management), *UNISA*

MSc (Environmental Sciences), *WITS*

## RESEARCH ABILITY

An assessment of spatial and temporal variations of nitrogen dioxide in the Mpumalanga Highveld: conducted for the fulfilment of the requirements for the Master of Science: WITS University

## PROFESSIONAL AFFILIATION

Pr. Sci. Nat: 118688: South Council for Natural Scientific Professions ***SACNASP,***

**ACREDITED CERTIFICATES IN THE FOLLOWING**

Environmental Law with the University of the North West;

Air Quality Management with University of Johannesburg

Environmental Risk Assessment;

Air Quality Management

Environmental Impact Assessment & Waste Management for waste managers

***KEY PROJECTS***

- Development of an Environmental Management Policy of Steve Tshwete Local Municipality;
- Basic Assessment for the Mabelane Filling Station, Bushbuckridge Local Municipality;
- Basic Assessment for a filling station at Stand 1881- 1882, Kamhlushwa, Nkomazi Local Municipality;
- Basic Assessment for the construction of bulk sewage Pipeline from Wilge to Ogies, Emalahleni Local Municipality;
- Basic Assessment for the construction of Amsterdam Boarding School, Mkhondo Local Municipality
- EIA for the construction of Mapulaneng hospital, Bushbuckridge Local Municipality;
- EIA for a Township Development at Kameel Revier, Dr. J.S Moroka Local Municipality;
- Basic Assessment to obtain a Waste Management License for the construction of Maxam Dantex(Pty) Ltd, General Waste Disposal Site: Johannesburg Metro;
- Water Use Application: Evaporation Ponds for Maxam Dantex (Pty) Ltd
- Environmental Impact Assessment to obtain a Waste Management License for the construction of Carolina General Waste Disposal Site: Chief Albert Luthuli Local Municipality
- Environmental Impact Assessment (EIA) to obtain a Waste Management License for the decommissioning of Sabie Landfill site: Thaba Chweu Local Municipality;
- Basic Assessment for the decommissioning of Kamaghekaza General Waste Disposal Site; Nkomazi Local Municipality
- Basic Assessment for the decommissioning of Marloth Park General Waste Disposal Site; Nkomazi Local Municipality

- Basic Assessment for the decommissioning of Hectorspruit General Waste Disposal Site: Nkomazi Local Municipality
- Basic Assessment for the decommissioning of Mbonsweni General Waste Disposal Site: Nkomazi Local Municipality
- Basic Assessment for the Decommissioning of Hazyview Waste Disposal Site: Mbombela Local Municipality;
- Environmental Impact Assessment (EIA) for the construction of Hoxane Landfill Site, Bushbuckridge Local Municipality;
- Environmental Impact Assessment for the Closure of Nelspruit Landfill site
- Environmental Impacts Assessment (EIA) for the establishment of Kamhlushwa Petrol Filling Station, Nkomazi Local Municipality
- Environmental Impact Assessment (EIA) for the establishment of a Sawdust Recycling Plant at Brondal, Thaba Chweu Local Municipality;
- Development of the Environmental Management Plan (EMP) for the operation of CRS Timbers (Pty) Ltd at Brondal, Thaba Chweu Local Municipality;
- Environmental Impact Assessment (EIA) for the bark recycling plant at Barberton, Umjindi Local Municipality;
- EIA studies for the Construction of Naas Filling Station Nkomazi Local Municipality;
- EIA studies for the Construction of a Filling Station at Block B, Nkomazi Local Municipality;
- EIA studies for the Construction and Rehabilitation of Road P95-1 between Verena Cross roads and the Border between Gauteng and Mpumalanga province;

**RECENTLY COMPLETED PROJECTS**

- Water Use License Application (WULA) for a Weir at Moses River, Thembisile Hani Local Municipality;
- Water Use License Application (WULA) for the discharge of a Wastewater Treatment Plant (WWTP) for Shongwe Boarding School, Nkomazi Local Municipality;
- Water Use License Application for the construction of Culver bridges and an Attenuation dam on Portions 30, 31 and 32 of the farm Houtkop 594 IQ Emfuleni Local Municipality, Gauteng Province;
- Basic Assessment for the Proposed Filling Station on Stand 1, Mkhuhlu Township, Bushbuckridge Local Municipality

- Basic Assessment for the Proposed Filling Station on Stand No 1, Relane village, Bushbuckridge Local Municipality;
- Basic Assessment for the Bulk Water Pipeline from Bundu to Boekehouthoek A, Thembisile Hani Local Municipality;
- Basic assessment for the bulk sewage pipeline from Maviljan (site for new Mapulaneng Hospital) to Saselane Waste Water Treatment Plant;

**OHER PROJECTS**

- Basic Assessment for the construction of roads D3933, D3934, D3935, D3936 and link road between D3933 and D 3934;
- Environmental Impact Assessment for the proposed development of Kwa-Khumalo Township on Portion 25 of the farm Gutshwa 959 JU, City of Mbombela Local Municipality;
- Environmental Impact Assessment for the development of a Township on Portion 159 of the farm Rondebosch 403 JS, Steve Tshwete Local Municipality;
- Environmental Impact Assessment for the development of a Township on the farm Middelburg an Middelburg Townlands 287 JS, Steve Tshwete Local Municipality;
- Water Use License Application for a weir and water pipeline at Bundu, Thembisile Hani Local Municipality
- Water Use License Application for culvert bridges development and pipelilne through a wetland on Portions 30, 31 and 32 of the farm Houtkop 959 JR, Emfuleni Local Municipality, Gauteng province

**Declaration of Independence**

I, Lucky Samuel Malaza, ID 6311085569080, declare that I

- am the Director of Imvelo Environmental Consultants cc which has been appointed to conduct an Ecological Impact Assessment for the proposed Township development of Matwabeng, extension 6, Senekal Local Municipality Free State province
- act as an independent ecological specialist, having Botany as one of my measure subjects in my junior degree;
- am an author of this ecological Impact Assessment report, as appointed by Leago Environmental Solutions
- do not have and will not have any financial interest on an approval of the basic assessment report with this specialist study except the remuneration for the work as agreed on the appointment letter;
- has no and will not have any conflicting interest with the undertaking of the activity and/or its approval by the competent authority
- undertake to disclose to the applicant and competent authority any information that has or may have a potential to influence decision making by the competent authority;
- will provide the applicant and competent authority with access to all relevant project information in my possession whether favorable or not

L S Malaza Signature

## 1. EXECUTIVE SUMMERY

Sekenal Local Municipality, proponent to the proposed development of Matwabeng Extension 6, intends to use the area of 15 hectares for Township development. Infrastructure for the proposed development will be linked to the existing system of Matwabeng Township. The area has been occupied by an informal settlement which has been relocated before the commencement of a Basic assessment process. The site occurs within the Eastern Fee State Sandy Grassland vegetative zone but in the area which has been disturbed due to human activities including the indicated informal settlement.

After an application lodgment with the Department of Economic Development, Small business development, Tourism and Environmental Affairs, Free State province, the applicant has been requested by the department to conduct an ecological impact assessment for the development.

Imvelo Environmental Consultants cc has been appointed to conduct this study, compile a specialist report that will be part of the draft Basic assessment report for the development that will be circulated amongst Interested and Affected Parties for public review and comments. As an expansion of an existing Township, the surface cover of the site has been removed, alien invader plants have germinated in certain sports of the site which have been used for illegal waste dumping. An informal sport ground also exists on the northern side of the site. The site slopes towards the river on the south end where some indigenous plant species still survive although there are indications of illegally dumped construction rubble in that part of the site. Some shrubs including *Helichrysum* species still exists further down of the site. With the disturbed area, the biodiversity richness of the site may be assessed by making reference to the adjacent environment, which partly slopes towards the riparian area of the site and across the river. Potential impacts which have been identified on the ecological functioning of the affected site are less significant because not much of biodiversity significance have been identified on site. The following potential impacts have been identified and assessed:

### CONSTRUCTION PHASE

Impact 1: Impacts on indigenous vegetation and plant species

Impact 2: Impact from alien invasion plants

Impact 3: Impacts from erosion

Impact 4: Increase in local and regional fragmentation

Impact 5: Cumulative increase in Environmental Degradation

**OPERATIONAL PHASE**

Impact 1. Loss of landscape connectivity

Impact 2: Continued surface erosion

Impact 3: Continued alien invasive plant species propagation

Impact 4: Dust generation and emissions

Impact 5: Potential ground and surface water contamination

**DECOMMSSIONING OF SITE OFFICE AND STORAGE AREA**

Impact 1: Alien invasive plant propagation

Impact 2: Impact from erosion

Significance of impacts without mitigation showed to be of medium significance and low significance with mitigation.

## 2. DATE AND SEASON OF ECOLOGICAL WALK THROUGH

A site visit was conducted on the 26th of October 2021 on the site where the proposed Township development will take place. This has been during spring season, where flowering of plants occurs and only one site assessment has been done and forms basis for plant species identification and natural habitat assessment. Only few species have been identified because the site is highly disturbed.

The intention of the Flora investigation was to:

- Obtain all relevant Précis and Red Data flora information;
- Take photos of to do analysis of the site;
- Identify basic floristic variations;
- Conduct a brief site investigation to obtain an understanding of the floristic environment;
- Assess the potential presence of Red List flora species according to information obtained from South African National Biodiversity Institute (SANBI);
- Incorporate existing biophysical information of the region into the assessment;
- Describe broad habitat variations present in the study area in terms of biophysical attributes and phyto-sociological characteristics;
- Map all relevant aspects;
- Provide pertinent recommendations.

## 3. ASSESSMENT RATIONALE

Natural resources including biodiversity richness forms an important conservation aspect in our country. South Africa is one of biodiversity rich countries in the world and this puts a responsibility to all inhabitants to conserve the natural landscape for the current and future use. Biodiversity gives and aesthetic and economic value to human life within the National context, it has medicinal value, provides research opportunities and creates tourism attraction through its natural landscape. Economic development, within macro and micro economic sphere is continuously taking place in the South Africa as Government responds to the needs of its inhabitants, and impacts on biophysical environment. It is a socioeconomic tool to improve lives of the people and while it occurs, developments must not be done in compromise of biodiversity. Development must therefore be done while preservation and management of biodiversity and its integrity are given priority for the sustainable development.

A need for residential development may not be put aside for the sake of the conservation of natural resources including biodiversity. Developments must be done following the applicable guidelines and procedures that balances between the conservation of natural resources and sustainable development. Proper management plans must be put in place to ensure that sensitive areas are excluded in the development foot print. Adequate buffer zones must be left between the development edge and watercourses as well as from the biodiversity rich areas. The proposed development would occur in the area where biodiversity has been degraded but some few plant species of biodiversity importance may still occur in the adjacent environment and must therefore be excluded from the development foot print and proper management plans be applied. The focus of the development must reflect the balance between socioeconomic development and nature conservation.

Some environmental legislations and Free State Biodiversity and Conservation plans make provision for the protection of natural resources and functionality of Ecological systems to attain sustainable development. The National Environmental Management Act, 1998 (Act 107 of 1998) forms the framework legislation specific environmental management legislations. This includes the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004), National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004), National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003, National Forest Act, 1998 (Act No.84 of 1998), Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983) and the National Water Act, 1998 (Act No 36 of 1998).

A water course occurs on the south of the proposed site, it is perennial and a riparian area still has plant species that identifies it with an in stream environment. An ecological impact assessment of the proposed development has been conducted in order to assess and quantify potential impacts that will be created on the natural environment adjacent to the area.

## 4. OBJECTIVES OF THE STUDY

- To identify and list faunal and floral species which have been identified on site for the proposed development and red data listed species;
- To establish the present natural conservation status of the site with regard to an extent of degradation and transformation;
- To identify the water course and delineate it from the site of the proposed development;
- To identify ecological sensitivity of and significance of the site for the proposed development

- To identify potential impacts of the development to the natural resources during construction and operational phases on and adjacent to the site; and
- To propose mitigation measures to identified potential impacts on the natural environment;

## 5. REGULATORY FRAMEWORK

This report has been prepared in terms of the National Environmental Management Act No. 107 of 1998 (NEMA) and is compliant with EIA Regulation GN 326 (2017, as amended in 2017),

Compliance with provincial, national and international legislative aspects is strongly advised during the planning, assessment, authorisation and execution of this project. Legislative aspects of which cognisance were taken during the compilation of this report are summarised, but not necessarily limited to list table 1 below.

Table 1: Legislative framework

| LEGISLATION | IMPLICATIONS |
|---|---|
| Nature Conservation ordinance, 1974 (Act no 19 of 1974) | The protection of fauna and flora. |
| Conservation of Agricultural Resources Act, 1983 CARA (Act no 43 of 1983) - | To promote the conservation of soil & water sources and combatting of weeds and invader plant species; and for matters connected therewith. |
| Occupational Health and Safety Act, 1993 (Act no 85 of 1993) | The protection of the health and safety of workers in the construction and operational phase of the development. |
| The Constitution of the Republic of South Africa, 1996 (Act No 108 of 1996) | Section 24 of the Constitution provides for the environment that is not harmful for the health and people's wellbeing. The proposed development should be done following environmental impact assessment procedures to ensure a sustainable environment for all. |
| National Environmental Management Act 1998 - NEMA (Act No 107 of 1998) | The development must be socially, environmentally and economically sustainable. |
| Mpumalanga Conservation Act, 1998 (Act 10 of 1998) | The management and conservation of Mpumalanga's biodiversity. |

| LEGISLATION | IMPLICATIONS |
|---|---|
| National Forest Act, 1998 (Act No 84 of 1998) | Protection of endangered trees according to the list mentioned in the act. |
| National Water Act, 1998 NWA (Act No 36 of 1998) | Legislation which gives a mandate to DWA to maintain good water quality. |
| National Heritage and Resources Act, 1999 (Act no 25 of 1999) | The protection of heritage areas. |
| Promotion of Access to Information Act, 2000 (Act No2 of 2000) | Legislation that allows the public access to information about activities that influence their well-being and to make contributions to decision making |
| National Health Act, 2003 (Act No 61 of 2003) | The development must be developed and operate according to these regulations. |
| National Environmental Management: Biodiversity Act, 2004 (Act no 10 of 2004) | The protection of the national biodiversity. |
| NEMA (Act 107 of 1998 and GN R982 (Regulations of NEMA, Chapter 5) and GN 983-986, 2014 | Gives the Department of Environment a chance to evaluate possible impacts and the management there off. |
| Spatial Development Framework (SDF) | Sound future municipal planning. The development must be part of the future planning of the Municipality |

## 6. METHODOLOGY USED

- An assessment of biodiversity and natural habitat was done through the site walkthrough for the species identification; this includes an evaluation of an ecological sensitivity of the site to the proposed development;
- Identified plant species would be categorized as per the Red Data Species List, Protected Species List of the National Forest Act, 1998 (Act No 84 of 1998), Invasive Species List of the Natural Environmental Management : Biodiversity Act, 2004 (Act No 10 of 2004).
- Site photos indicating sensitive areas and identified plant species were taken;
- The Present Ecological State (PES) of the site for the proposed environment was assessed and rated as per the table given below.

The Present Ecological State (PES) refers to the current state or condition of an area in terms of all characteristics and reflects the change to the area form its reference condition. The table gives categories of ecological systems in terms of the PES.

Table 2: Ecological Categories for assessment of the Present Ecological State (PES) on inland ecosystems (after Klynhans, 1996)

| ECOLOGICAL CATEGORY | PES % SCORE | DESCRIPTION |
|---|---|---|
| A | 90-100% | Unmodified, natural |
| B | 80-90% | Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged |
| C | 60-80% | Moderately modified, a loss and change on natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged |
| D | 40-60% | Largely modified, a large loss of natural habitat, biota and basic ecosystem functions has occurred |
| E | 20-40% | The loss of natural habitat , biota and ecosystem functions is extensive |
| F | 0-20% | Modifications have reached a critical level and the ecosystem has been modified completely with almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible |

Table 3: Scale utilized for the evaluation of the environmental risk Rating

| Evaluation component | Rating Scale and Description/Criteria |
|---|---|
| Magnitude or positive or negative impact | 1**0 –Very high**; Biophysical features and/ or ecological functionality/processes may be severely impacted on;<br>**8 – High**: Biophysical features and/ or ecological functionality/processes may be significantly impacted on; |

| | |
|---|---|
| | **6- Medium:** Biophysical features and/ or ecological functionality/processes may be moderately impacted on;<br>**4- Low**: Biophysical features and/ or ecological functionality/processes may be slightly impacted on;<br>**2- Very Low**: Biophysical features and/ or ecological functionality/processes may be slightly impacted on;<br>**0- Zero**: Biophysical features and/ or ecological functionality/processes will not be impacted. |
| Duration or negative or positive impact | **5-Permanent**: impact will continue on permanent basis;<br>**4- Long term**: impact should cease a period (>40years) after the operational phase/ project life of the activity;<br>**3- Medium Term**: impact may occur for the period of the operational phase/project life of the activity;<br>**2- Short term**: impact may only occur during the construction phase of the activity after which it will cease;<br>**1-Immeduate**: impact may only occur as once off during the construction phase of the activity. |
| Extent of positive or negative Impact | **5 – International**: impact will extend beyond National Boundaries;<br>**4- National**: impact ill extent beyond provincial boundaries but remain within National boundaries;<br>**3- Regional**: impacts will extend beyond 5 km of the development foot print but remain within the provincial boundaries;<br>**2- Locality**: impact will not extend beyond 5 km of the development foot print;<br>1- **Site specific** : impact will only occur on or within 200 m of the development foot print<br>**0**-no impact |
| Irreplaceability of natural resources being impacted on | **5- Definite** loss of irreplaceable natural resources<br>**4- High** potential for loss of irreplaceable natural resources<br>**3- Moderate** potential for loss of irreplaceable natural resources**;**<br>**2- Low** Potential loss of irreplaceable natural resources;<br>1-**Verly low** potential for loss irreplaceable natural resources'<br>**0-** No impact |

| | |
|---|---|
| Reversibility of Impact | **5- Impact cannot be reversed;**<br>**4- Low potential that impact can be reversed;**<br>**3- Moderate potential that impact can be reversed;**<br>**2-High potential that impact can be reversed;**<br>**1- impact will be reversible**<br>**0- No impact** |
| Probability of impact Occurring | **5- Definite**<br>**4- High** Probability of impact occurring > 75%<br>**3- Medium:** Probability of impact occurring id between 25%- 75%<br>**2- Low:** Probability of impact occurring is between 5% - 25%<br>**1-Improbable:** Probability of impact occurring <1**%** |
| Cumulative impact | **High**: Numerous similar historic, present of future development activities in the same geographical area, have taken or anticipated to take place which may cumulatively contribute and increase the significance of the identified impacts**;**<br>**Medium:** Few similar historic, present of future development activities in the same geographical area, have taken or anticipated to take place which may cumulatively contribute and increase the significance of the identified impacts;<br>**Low**: Virtually no similar historic, present of future development activities in the same geographical area, have taken or anticipated to take place which may cumulatively contribute and increase the significance of the identified impacts. The development is anticipated to be an isolated occurrence and should therefore have negligible cumulative impact<br>**None**: No cumulative impact |

Each potential ecological impact is evaluated, and once this is done the significance Score of each potential ecological impact is calculated by using the following formula

**SS (Significance Score) = (magnitude +duration + extent + irreplaceability + reversibility) x Probability**

The maximum significance Score is 150

The Significance Sire is used to rate an environmental Significance of each potential ecological impact as Table 4 below. Environmental Significance rating is completed for all identified potential impacts before and after the implementation of the recommended mitigation measures.

Table 4: Scale used for evaluation of the Environmental Significance Rating

| Environmental Significance Score | Environmental Significance Rating | Description/Criteria |
|---|---|---|
| 125 - 150 | Very High | An impact of very high significance after mitigation will mean the development may not take place. the impact may not be suitably reduced and mitigated to within acceptable levels |
| 100-124 | High | An impact of high significance after mitigation should influence the decision about whether or not to proceed with the development. Additional impact specific mitigation measures must be implemented if the continuation of the development is to be considered. |
| 75 -99 | Medium to high | Additional impact specific, mitigation measures must be implemented for an impact of medium – high significance if the continuation of the development is to ne considered. |
| 50 -74 | Medium | An impact of medium significance after mitigation must be adequately managed in accordance with the mitigation measures provided by the specialist. |
| <50 | Low | If any mitigation measures are provided by the specialist for an impact of low significance after mitigation, the impact must be adequately managed in accordance with this measures; |

| | | |
|---|---|---|
| + | Positive impact | A positive impact is likely to result into a beneficial consequence /effect and should therefore be viewed as motivation for the development to proceed |

## 7. STUDY AREA

The study area occurs on the Remainder of the farm De Put 298 FP, Senekal Local Municipality in the Free State province. The study site is 14 hectares in extent and the only site alternative for the proposed Township expansion. It was originally occupied for an informal settlement and residents have been moved to start the formalized residential development. It is accessed through Matwabeng Township and has the DG code: **TOFPOOOOOOOOO298OOOOO**


Figure 1: Locality map of the site

## 8. BIOPHYSICAL DESCRIPTION OFVTHE SITE

### 8.1 Climate

The site is located within the eastern Free State Climatic Zone of the continental climate. The area has cool temperature during the summer and cold during winter with a temperature range between maximum temperatures of around 26$^{o}$ C. The mean maximum annual precipitation is 700mm with most rainfall occurring during summer. Much precipitation occurs in the form of thunderstorm. The region shows great differences between average temperatures between winter and summer there is frequent frost during winter.

### 8.2 Topography

Variation in topography is regarded as powerful determinant and influence to high biodiversity in Southern Africa. The site for the development combines features of the Eastern Free State Clay Grassland and that of the Eastern Free State Sandy Grassland, but most on the latter. The landscape of the area is flat to slightly undulating with streams and rivers that drain the foothills of the Drakensberg. The small site for the development slopes to the west towards the river that borders the site at this end. At pristine state, the area would be a closed grassland with *Eragotis Curvula, Tristachya leucothrix* and *Themeda trimosa*. Some grass species may be extinct because of the conservation status of the site having been used partly for informal settlement and construction rubble disposal.

### 8.3 Geology and Soils

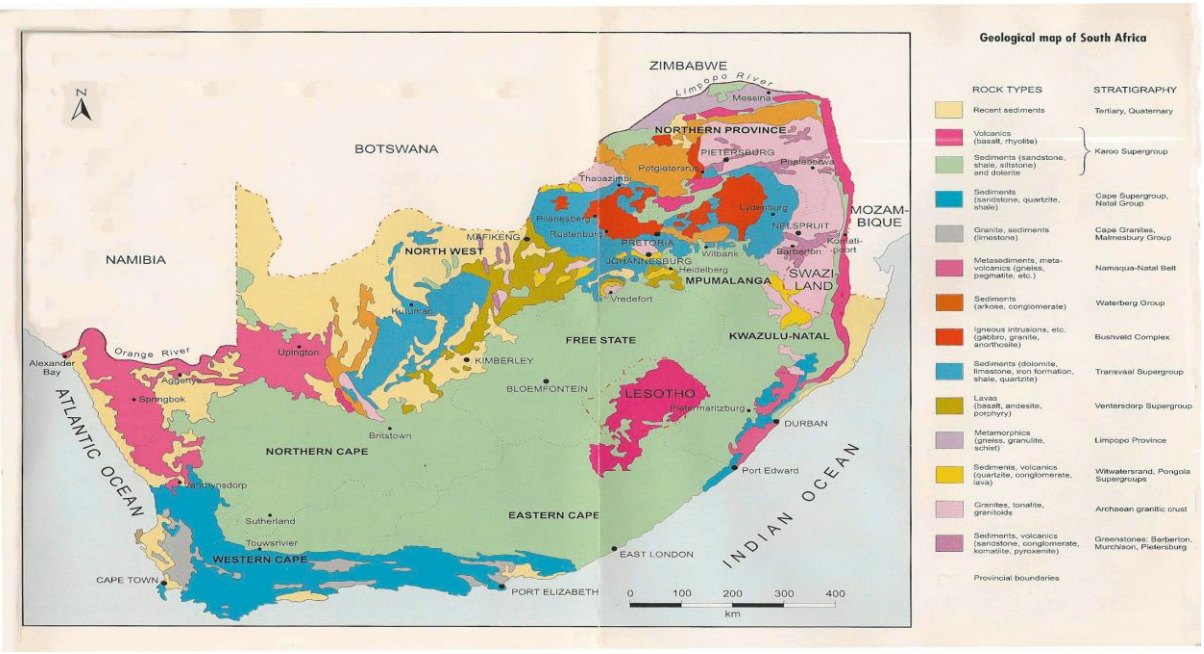

Figure 2: Geological Map of South Africa

The geology of the site is described by Mucina & Rutherford 2006 as “mudstone, sandstone and shale of the Beaufort Group (Tarkastad formation in the south and Adelaide Formation in the north. Outcrops are dominated by Glenrosa, Bonheim, Avalon, and Mayo soil forms which occur on the elevated areas whilst Sepane, Arcadia, and Rensburg soil forms occur on the bottom lands. This suggests that the latter group occurs towards the river in the area which will not be affected by the development.

### 8.4 Vegetation

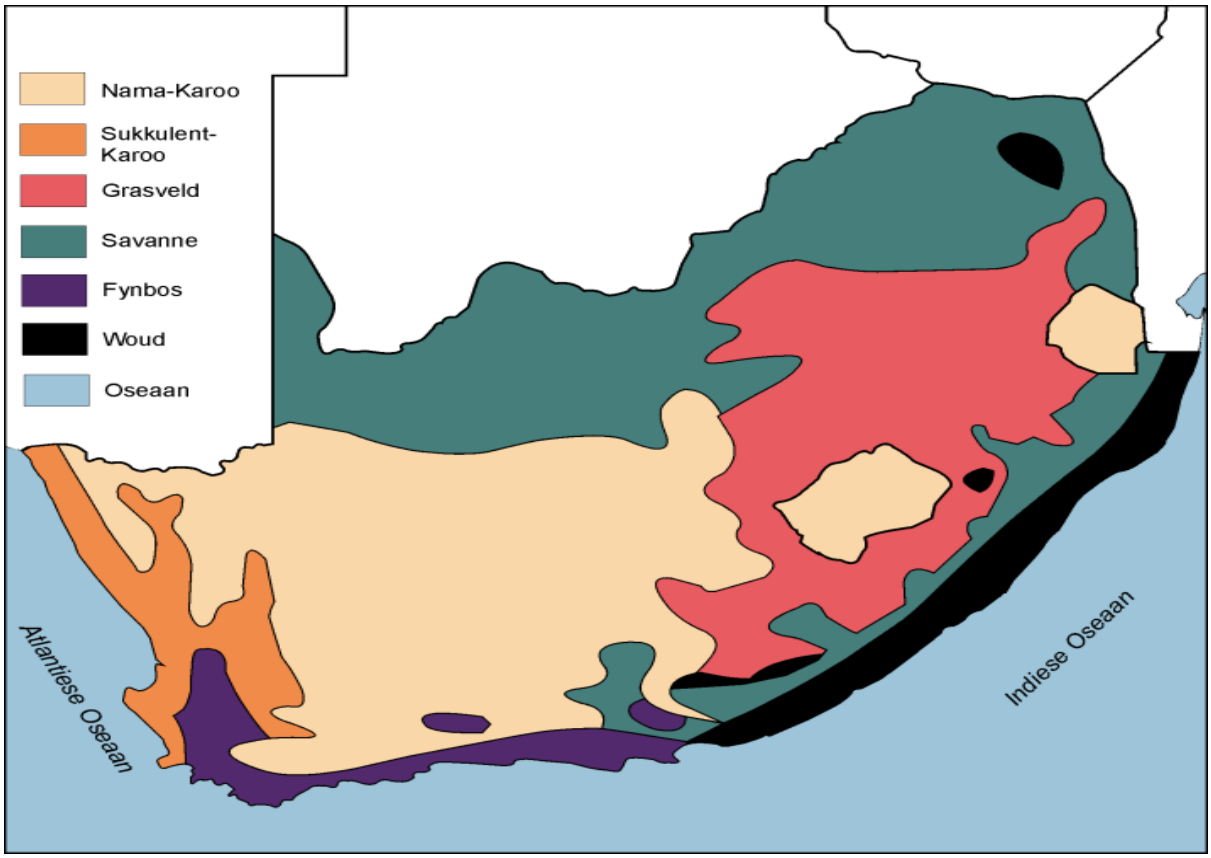


Figure 3: Vegetation map of South Africa

The site for the proposed development occurs in the Eastern Free State Sandy Grassland. This vegetative zone shows tiny difference with the Eastern Free State Clay Grassland which is mostly on the south of Senekal and form a line with the border of South Africa and Lesotho. The conservation status of the Eastern Free State Sandy Grassland is endangered (Mucina & Rutherford, 2006) and has a conservation target of 24% and this conservation status may be ascribed to developments as it is with the site where the expansion of the Township is proposed. Few shrubs and grass are still observed on

site with *Helychysum Psyolepis* being conspicuous in the area. The area for the development may be categorized as critically endangered in accordance with the Free State Provincial Spatial Biodiversity Plan.

Most area of the site for the development has already been transformed basically by the illegal dumping of construction rubble and certain volume of domestic waste disposal and informal settlement has taken place and people have been relocated prior to the assessment. This suggests that mechanical clearance of the site for the proposed development must not remove any indigenous grass and shrubs which occur further south of the site.

## 9. ASSUMPTIONS, UNCERTAINTIES AND LIMITATIONS

### 9.1 Assumptions

The development is an extension of an existing Matwabeng Township, houses have been planned to start at the edge of the existing Township towards the river on the south east of the site. It has been occupied for informal settlement which has been removed in order to formalize the site. Based on this information different assumptions need to be made during an assessment process of the site and therefore it is assumed that:

- The information about the site, its size, layout plan given to the specialist is correct and no change of this information will be communicated to effect the change in the content of the report;
- The extent of the development shown to the specialist during the side walk through remains the same and will not change to affect the scope of assessment done;
- No infrastructure was put on site of the development as was not indicated during the site walk through with the specialist;
- Interested and Affected Parties to the development will be given an opportunity to comment on the basic assessment report with the specialist studies conducted;
- Any comments and issues raised with regard to the content of the report will be communicated to Specialist for further clarification;
- Need and desirability of the proposed development takes into cognizance of Local, Provincial and National development plans and policies that reflects public interest;
- It is assumed that the basic assessment process has listed all listed activities which have been triggered by the proposed development and will take advantage of the Ecological Assessment report and other relevant specialists studies which have been conducted;

- The report will be evaluated taking into consideration of the conservation status of the area where the development is proposed to take place

### 9.2 Uncertainties

- Uncertainty of the adequacy of information gathered from the site walkthrough and season, if additional information will be required as the site for the development doesn't show ecological functioning;
- Uncertainty of the contribution of this specialist report in the decision making by the competent authority, such information will be investigated.

### 9.3 Gaps in knowledge as a result of

- Knowledge about the pristine stage of the environment prior to its disturbance;
- Regular activities of local communities on the area where the environment still has some shrubs and indigenous surface cover;
- Conditions which are likely to be given in the Environmental authorization with regard to limit the activities within the development foot print; and
- Illegal developments which may take place further down slope towards the riparian area

## 10. PRESENT ECOLOGICAL STATUS OF THE SITE

The present Ecological Status of the site is categorized as Class E which indicates that the loss of natural habitat, biota and ecosystem functions is extensive and this ascribed to developments in the area including the fact that informal settlement has occurred in the area. Ecological significance in the adjacent environment not forming part of the development foot print is negatively affected by illegal dumping

## 11. RESULTS AND DISCUSSIONS

### 11.1 Current site condition and present vegetation

Senekal and therefore Matwabeng Township occurs in the Eastern Free State Sandy Grasland (Gm4) within the Free State province. In its pristine state, according to Mucina & Rutherford, this vegetative

biome is dominated by: *Eragotis Curvula, Tristachya leucothrix and Themeda triandra. Dominating grass includes E. capensis, E. racemosa, Cymbopogon pospichilii, Elionurus muticus, Eragrotis plana,* and *Arsistida junciformis. Herd species of the family Asteraceae found are: Helichrysum, Vernonia* and *Berkheya.* The *Helychysum* species has been identified on the adjacent, *Euphobia species* has also been identified on the adjacent environment. Some indigenous plant species have been affected by open fire and therefore could not be identified.

The actual foot print of the site is heavily disturbed, potential impacts may be generated in the working site during construction and affect the remaining few shrubs which occur downslope of the development site. No red Data Listed species provincially, or nationally or other plant species of conservational significance have been identified on site. Human activities on including development has changed the conservation nature of the area and resulted into habitat loss and therefore avifauna assessment could not be done.

Figure 4: Development foot print showing degraded surface cover

Figure 5: Shrubs on the disturbed area outside the development foot print

Figure 5: Showing destruction of habitat by illegal rubble dumping on the adjacent environment

## 12. ECOLOGICAL ASSESSMENT OF THE SITE

Potential impacts and associated risks factors which are likely to be created and affect the ecological environment have been identified and listed. Detailed description of each impact is discussed, assessed and mitigation measures put

## 12.1 Construction Phase

### 12.1.1 Impacts on indigenous vegetation and plant species

Site clearance for infrastructure for the development will occur in the area which has been cleared of indigenous soil cover and affected by invasive alien plant species. This is due to the informal settlement which occurred on site and later relocated to formalize the site. Some shrubs occurred on the lower southern end of the site and buffers the development from the riparian area of Sloot River at the south. Erosional impacts, illegal waste dumping and construction vehicles movement may disturb these plant species. The impact on will be less significant because most indigenous plant species in the area have been disturbed.

### 12.1.2 Impact from alien invasion plants

The area for the development will be further cleared of soil cover, adding the surface clearance which has been created during the establishment of an informal settlement that has been relocated for the sake of the proposed development. This action will result into suitable condition for the propagation of alien plant species. This invasive species establishment will result into competition of resources with remaining indigenous plant species on the south slope of the site. Both the site and adjacent environment will be prone to invasive plat species propagation.

### 12.1.3. Impacts from erosion

The storm water flow will be accelerated from the elevated area of the site downslope to the south as a result of the cleared surface. Some parts of the soil will be loose as a result of working and putting of infrastructure for the development and such soil will be easily washed by storm water to areas downslope of the site. The drain lines to the south of the site will be disturbed by construction activities on site thereby increasing an erosional risk. As the site slopes to the river on the south, erosional impacts from increased storm water velocity on the cleared site may reach the riparian area in the river on the south end of the site and will be undesirable. The impact will be localized on the development foot print and partly moderate if it reaches the riparian area.

### 12.1.4. Cumulative increase in Environmental Degradation

Cumulative impacts associated with this type of development could lead to initial, incremental or augmentation of existing types of environmental degradation. Impacts on ambient air quality will be created from dust from construction activities. Rubble and waste materials from the construction site may be mobilized to the river on the south end and result on the cumulative impact on water quality. And further decline of water biological and chemical characteristics creates habitat loss of aquatic animal species. Water contamination, air pollution and land degradation may not always be immediately visible or readily quantifiable, but incremental increases may rise to levels where biological attributes may be degraded on local or regional scale through contaminants migration in the soil and water and dispersion in the air.

### 12.1.5. Impact on faunal diversity

Some animal species might have migrated from the site and adjacent environment as a result of destruction of the natural habitat by illegal waste disposal, but some are site using the site for natural habitat. Although the site has already been disturbed, noise, presence of humans in the construction site will cause noise averse animals to migrate. In the commencement of construction some slow moving animals may not leave this site immediately and be killed as a result. The impact on fauna will disturb the natural habitat recovery and faunal diversity. The impact will however be moderate as the site has already experienced habitat loss.

### 12.1.6. Increase in local and regional fragmentation

Uninterrupted habitat is a precious commodity for biological attributes in modern times, particularly in areas that are characterised by moderate and high levels of transformation. The loss of natural habitat, in the area for the proposed development suggests that biological attributes have been compromised by developments. Loss of habitat will lead to proportional loss of animal and plant population in the local and regional ecological environment. Some fauna are not keen to cross open spaces to seek for a new natural habitat, because they may be vulnerable to predators, loss of natural landscape will therefore restrict animal species from movement and lead to fatality from construction activities

## 12.2. Operational phase

### 12.2.1. Loss of landscape connectivity

The site for the development occurs adjacent to the already built area, and there is hardly soil cover of biodiversity occur. It is further separated by the river from an undeveloped area. The separation of the development site from the natural landscape contributes to the disturbance of large scale ecological processes where plant and animal species work in coordination which includes dispersion of seeds through pollination, migration or ability of flora and fauna to respond to the fluctuation of climate change and other conditions. The uncovered surface and habitat loss in between the disturbed area and rich landscape is not easily crossed by slow moving animals as they may fall prey to predators or be walked on. The impact on this aspect is moderate

### 12.2.2 Continued surface erosion

The site for the development has lost soil cover in certain areas as a result of human activities and illegal use of the site for informal settlement. It will be worked on for infrastructure development for the proposed development leaving loose soli particles on the surface. During the wet season an uncovered surface will be prone to storm water erosion. During high winds small soil particles will be blown by wind following the wind direction and may fall on leaf blades of some surviving plant species and disturb physiological processes. Impact from storm water may be moderate as the site slightly slopes to the south.

### 12.2.3. Continued alien invasive plant species propagation

The site is already infested by alien plant species after the relocation of the informal settlement. Working on the site without removing alien plant species will promote their propagation during the operational phase of the development. Invasive plant species grow faster in an unmaintained environment, if not identified and removed immediately, they compete with indigenous plant for natural resources and outgrow them. Some may grow deep and absorb water, harvest radiant energy and create stress on indigenous plants in the same environment. Impact from invasive plant species propagation will be minor as the Municipality will maintain the proposed formal settlement.

### 12.2.4. Dust generation and emissions

Dust will be generated from construction phase of the development, and continue in the operational phase in the streets that will not be tarred immediately. Dust from the development will be created from human activities within individual households and traffic in the access road and streets of the new development. Tail pipe emission will result from traffic coming and leaving the site, particulate materials (PMs) from ordinary burning in the settlement, dust and tail pipe emissions may be transported downwind and affect existing flora and fauna in the neighboring natural landscape.

### 12.2.5. Potential ground and surface water contamination

The development will be covered by impervious surface emanating from roofs of households, parking areas and paved streets. Storm water pipes will be installed and v-drains constructed on the sides of the streets for storm water control. Having collected storm water with contaminants, the system will open in the low areas and contaminated water may reach the river and change its biological, physical and chemical characteristics.

## 13. ASSESSMENT SIGNIFICANCE OF IMPACTS

### 13.1 Construction Phase

**Impact 1: Impacts on indigenous vegetation and plant species**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 6 | Medium 3 | Local 2 | Moderate 2 | Moderate 4 | High 4 | Medium 60 | -ve | High |
| **With mitigation** | Very Low 2 | Short 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 22 | -ve | High |

**Essential Mitigation Measures**

- Site walk through prior to commencement of construction to ensure that no other plants of biodiversity importance may be identified on site including adjacent environment;
- Demarcating the site for the development from the surrounding environment to ensure that site clearance beyond the development foot print doesn't take place;
- Identify and demarcate flood line of the Sloot River on the south of the site;
- Keep the buffer zone between the development edge and the River undisturbed;

- Appointment of an ECO to conduct environmental monitoring as per the approved Environmental Management Programme and conditions of the Environmental Authorization;
- Clearance of surface must be conducted after the site walkthrough to inform if any areas must be excluded to preserve any indigenous plant species which might have been identified;
- Stay on the development foot print for construction activities;
- Site establishment and temporary lay down must be dine on disturbed area of the away from the buffer zone

**Impact 2: Impact from alien invasion plants**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Low 4 | Short 2 | Local 2 | Moderate 3 | Moderate 3 | Definite 5 | Medium 56 | -ve | High |
| **With mitigation** | Very Low 2 | Short 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low | -ve | High |

**Essential Mitigation Measures**

- Site clearance must not leave any invasive plant species on site;
- Illegal waste dumped on site prior to the commencement of site preparation must be cleared to discourage alien plants invasion;
- No illegal dumping should be allowed on site during the construction period;
- Where excavation takes place, the removed top soil must be stockpiled closer to the excavated area to refill the site after working;
- Some areas in the construction area should be left undisturbed to recover indigenous grass layer and promote further growth in the adjacent environment;
- Where growth of invader plants has been identified, it must be removed immediately;
- An alien invader control plan must be developed and included in the maintenance plan of the Municipality,
- Manual removal of invader plants must be practiced and use of herbicides must be avoided;

**Impact 3: Impacts from erosion**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Working on site that involves excavation must be encouraged during dry season to avoid storm water erosion;
- Site clearance on the sloping area must be done when it will immediately be followed by rehabilitation;
- Working next to any drainage line should be avoided, as the layout plan must have not included any activity in this area;
- A low cover of vegetation should be left to reduce storm water velocity from elevated areas of the site;

- Erosional impacts must be investigated and rectified immediately;
- Monitoring of erosional problems must be monitored on frequently worked on areas, including access road to the site;
- Sediments must be controlled not to reach the low lying area of the site.

**Impact 4: Increase in Local and Regional fragmentation**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Site clearance and commencement of construction must be concentrated on the development foot print;
- Avoid activities that may interrupt the soil cover in the buffer zone between the development site edge and the riparian area of the Sloot River on the south end;
- Identified indigenous soil cover must be prevented from being disturbed by construction activities on site;

**Impact 5: Cumulative increase in Environmental Degradation**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Construction activities and those that have an impact on the environment must be investigated and recorded;
- Dust generating activities must be scheduled for wind stable days to avoid cumulative impact on the ambient air quality;
- Waste disposal on the construction area should be avoided, as it will add on the volume that already exist near the development site;
- Spillage of hydrocarbons from minor servicing of construction vehicles on site must be avoided,
- Site establishment must be done on an unused/unplanned area of the development site to reduce disturbance of the environment beyond the development foot print;
- Excavation for construction materials should be done on a permitted borrow pit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and must be rehabilitated following a rehabilitation plan approved by the Department of Mineral Resources.

## 13.2 OPERATIONAL PHASE

### Impact 1. Loss of landscape connectivity

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Disturbance of vegetation must be limited to areas of construction;
- Keep the size of areas subjected to land clearance in the development to a minimum;
- Collect cleared vegetation and debris that have not been utilised during construction and dispose them in a suitable waste disposal site as per the Minimum Requirements of Waste Disposal, DWAF 1998
- Removal or picking of any protected or unprotected plants shall not be permitted and no horticultural specimens (even within the demarcated working area) shall be removed,

### Impact 2: Continued surface erosion

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low | -ve | High |

**Essential Mitigation Measures**

- Provide/establish storm water management system for the Township and the infrastructure must be linked to the existing Township;
- Regular monitoring of the worked on surfaces must be done to identify any erosion which might have been created during the construction phase of the project;
- All cleared areas must be re-vegetated, this may be done through hydro grassing only in the areas which didn't have indigenous plants, otherwise re-vegetation must be allowed to follow a natural course;
- Where erosional impacts have been identified, especially in the sloping area to the south where some indigenous plants still exist, put in erosion control measures, e.g. gabions;
- Encourage landscaping using grass mix in open spaces including the Parks in order to promote infiltration of storm water;
- The grass mix to be used in open spaces should consist of indigenous grasses adapted to the local environmental conditions;

### Impact 3: Continued alien invasive plant species propagation

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low | -ve | High |

**Essential Mitigation Measures**

- Develop an Alien Invasive plant management plan to be implemented with the maintenance plan of the Municipality;
- Regular removal of alien plant species must be done following the management plan
- Enforce bylaws on waste management, to control illegal dumping;
- Provide enough facilities for waste management to prevent illegal dumping
- Identify illegally dumped waste materials and remove it from site;
- Regular monitoring for alien plant species must be done;
- Open spaces in the development must be left to encourage recovery of shrubs and some indigenous plant species un the area;
- Monitor potential spread of declared weeds and invasive alien plant species to adjacent environment vice versa following the regulations for protecting the agricultural resources by the Conservation of Agricultural Resources Act (No 43 of 1983) and must be addressed on a continual basis, through an alien vegetation control and monitoring programme;

**Impact 4: Dust generation and emissions**

| | **Magnitude** | **Duration** | **Extent** | **Irreplaceability** | **Reversibility** | **Probability** | **Significance** | **Status** | **Confidence** |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Access roads and streets to the proposed Township must be paved to reduce dust generation from Traffic;
- Dust suppression measures must be implemented for any construction activities that would be part of infrastructural development within the Township

**Impact 5: Potential ground and surface water contamination**

| | **Magnitude** | **Duration** | **Extent** | **Irreplaceability** | **Reversibility** | **Probability** | **Significance** | **Status** | **Confidence** |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | High 4 | Medium 68 | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low 44 | -ve | High |

**Essential Mitigation Measures**

- Sewage pipelines must be well maintenance to prevent spillages;
- Storm water control infrastructure must be well maintained and must not be used to convey contaminated effluent resulting from other activities;

### 13.3 DECOMMSSIONING OF SITE OFFICE AND STORAGE AREA

**Impact 1: Alien invasive plant propagation**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | Medium 3 | Medium | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low | -ve | High |

**Essential Mitigation Measures**

- Rehabilitate all cleared area where the site office and storage area have been put;
- Monitor the site after decommissioning for an adequate period that will be agreed upon with relevant authorities;

**Impact 2: Impact from erosion**

| | Magnitude | Duration | Extent | Irreplaceability | Reversibility | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|---|---|---|
| **Without mitigation** | Moderate 8 | Medium 3 | Local 2 | Moderate 3 | Moderate 3 | Medium 3 | Medium | -ve | High |
| **With mitigation** | Very Low 2 | Short term 2 | Local 2 | Low 2 | Moderate 3 | Low 2 | Low | -ve | High |

**Essential Mitigation Measures**

- Remove all components which have been used for the site office and storage area from site;
- Rehabilitate all cleared area where the site office and storage area has been put;
- Rip the surface to promote natural re-vegetation on the disturbed area;
- Monitor the site after decommission for an adequate period that will be agreed upon with relevant authorities;
- Monitor the site during post decommissioning for a period that will be agreed on with relevant authorities;

### 14. SUMMARY OF AN ECOLOGICAL ASSESSMENT

| Impact | Stage | Extent | Probability | Significance | Status | Confidence |
|---|---|---|---|---|---|---|
| **Construction phase** | | | | | | |
| **Impact 1:** Impacts on indigenous vegetation and plant species | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Impact 2:** Impact from alien invasion plants | Before mitigation | Local | Definite | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 3:** Impacts from erosion | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 4:** Increase in local and regional fragmentation | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 5:** Cumulative increase in Environmental Degradation | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Operational phase** | | | | | | |
| **Impact 1.** Loss of landscape connectivity | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 2**: Continued surface erosion | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 3:** Continued alien invasive plant species propagation | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 4:** Dust generation and emissions | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 5:** Potential ground and surface water contamination | Before mitigation | Local | High | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Decommissioning of site office and storage area** | | | | | | |
| **Impact 1:** Alien invasive plant propagation | Before mitigation | Local | Medium | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |
| **Impact 2**: Impact from erosion | Before mitigation | Local | Medium | Medium | -ve | High |
| | After mitigation | Local | Low | Low | -ve | High |

## 15. CONCLUSION AND RECOMMENDATIONS

The site for the development is not pristine, occurs near the built up area of Matwabeng Township and was occupied by an informal settlement prior to an ecological impact assessment. It is part of the Eastern Free State Sandy Grassland, with the conservation status of least concern. The informal settlement has been relocated for the sake of developing a Township following development plans of Senekal Local Municipality. The proposed development is an expansion of the existing Matwabeng Township. The site gently slopes to the south, where some shrubs and indigenous grass occur but form a thin line before the riparian area of the river in the south. The layout plan for the proposed development leaves a buffer zone before the flood line and the development edge. Having been used for informal settlement, there is hardly vegetation of biodiversity importance on the development foot print except the alien invasive plant species which have grown up on some areas which have been used for domestic waste disposal from the informal settlement. Further down towards the river, the site has been used for construction rubble disposal, e.g. concrete and related construction aggregates. This may be the cause of indigenous plant extinction and propagation of alien invasive plants. No red data plant species and environmentally sensitive areas which are likely to be found in this vegetative zone have been identified during the site walk through for this assessment. Habitat loss has occurred on site as a result of human activities including the development of an informal settlement. This report has been compiled to support a Basic assessment which has been conducted in terms of the Environmental Impact Assessment Regulations, 2017 as amended. It is recommended that the development must be restricted in the area which has already been disturbed by an informal settlement, leave enough buffer zone from the water course, i.e. 500 meters from the river on the south. Any development within 500 meters of a water course will trigger activities 21 (c) and 21 (i) of the National Water Act, 1998 (Act No 36 of 1998). In case this boundary has not been adhered to, a Water Use License Application (WULA) must be lodged with the Regional office of the Department of Water and Sanitation (DWS).

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# ANNEXURE A: LOCALITY MAP


LOCALITY MAP
MATWABENG
Legend
Propsed site
Proposed site
Google Earth
Image © 2021 Maxar Technologies
N
600 m

# ANNEXURE B: SITE LAYOUT PLAN

Project Title:

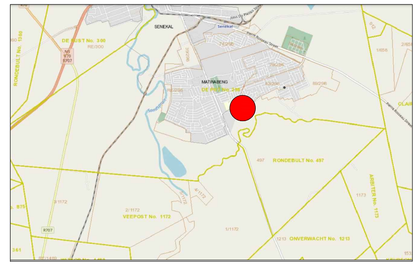
**PROPOSED EXTENSION OF**

**MATWABENG EXTENSION 6**

**Situated on:**

**REMAINDER OF THE FARM DE PUT 298-FP**

**FREE STATE PROVINCE**




| LAND USE | | | | | |
|---|---|---|---|---|---|
| ZONING | LAND USE DESCRIPTION | | NO. OF STANDS | AREA (HA) | % |
| RESIDENTIAL | RESIDENTIAL | | 345 | 10.2 | 70.3 |
| STREET | STREET | | * | 4.3 | 29.7 |
| TOTAL | | | 345 | 14.5 | 100 |

LEGEND

- Sewer Manhole
- Water meter
- Transformer
- Water Tap
- Assumed water manhole
- Fence Line
- MV Electric powerline
- LV Electric powerline
- Sewerline
- Cadastral boundary
- Assumed water pipeline

Prepared for:
SETSOTO LOCAL MUNICIPALITY

| Drawing Number: | Scale: |
|---|---|
| MTBG/2021-2 | 1:1500 |

Prepared by: