LEAP

Dr. Gwen Theron
PrLArch No 97082
EAPASA 2019/1421

Landscape Architect
Environmental Planner

Imbrilinx cc 2010/089810/23
P.O. Box 13185
Hatfield 0028

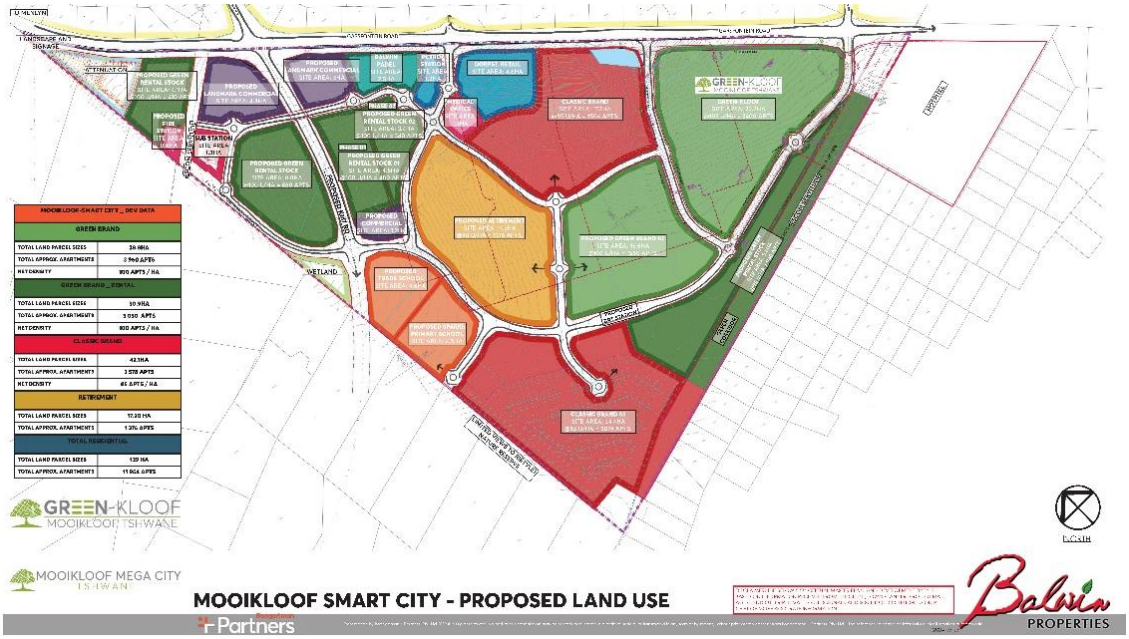
FAX: 086 606 6130
012 344 3582
083 302 2116
+27784261975

gwen.theron@leapenviro.co.za

October 2024

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

A mixed-use development known as Mooikloof Smart City on the Remainder of Portion 1 and Remainder of Portion 62 (a Portion of Portion 1) of the farm Rietfontein 375 JR, as well as Rietfontein Ridge Extension 6 on a Part of the Rem of Portion 62 (a Portion of Portion 1) and the Remainder of Portion 1046 of the farm Rietfontein 375 JR, Portion 1 of Portion 1046, and Mooikloof Manor Extension 2, City of Tshwane Metropolitan Municipality.

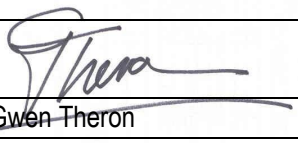


Prepared by:
Dr Gwen Theron
LEAP
(012) 344 3582

Distribution
LEAP library – 1 copy
Balwin Properties Ltd – 1 copy

Document Control Record

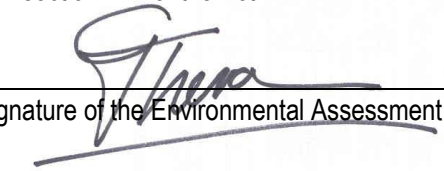
LEAP (Imbrilinx CC 2010/089810/23)
No 1Ivy Street, Sunnyside 0002
Tel 012 344 3582
Fax 086 606 6130
Email gwen.theron@leapenviro.co.za
www www.leapviro.co.za

DOCUMENT CONTROL						
Report Title						
Document ID						
File Path	*U:\Main data\PROJECTS\M\Mooikloof ESIA\2024.11.02 Mooikloof ESIA.docx*					
Client	Balwin PropertiesLtd		**Client Contact**		Michael le Grange	
Revision	**Date**	**Revision details/Status**	**Prepared by**	**Author**	**Verifier**	**Approved by**
0	11 Nov 2024					
1	29 Nov 2024					
Current Revision						
APPROVAL						
Signature						
Name	Dr Gwen Theron		**Name**			
Title	Environmental Practitioner EAPASA 2019/1421 Landscape Architect PrLArch 97082		**Title**			

DECLARATION OF THE EAP

I, Dr Gwen Theron , declare that -

- I act as the independent environmental practitioner in this application;
- I will 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
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.



Signature of the Environmental Assessment Practitioner:

Imbrilinx CC trading as LEAP

Name of company:

5 November 2024

Date:

TABLE OF CONTENTS

Table of Figures

ANNEXURES

Annexure A – 2003 Scoping report
Annexure B – Location and Conceptual Layout Plan
Annexure C – Geotechnical Assessment
Annexure D – Geohydrology Assessment
Annexure E – Freshwater Assessment
Annexure F – DFFE Screening Report
Annexure G – Town Planning memorandum
Annexure H – Social Impact Assessment
Annexure I – Civil Engineering Service Report
Annexure J – Public Participation Report
Annexure K – Final Environmental Management Program (EMPr)
Annexure L – Prof Gwen Theron's Curriculum Vitae

1. INTRODUCTION

The Mooikloof Smart City Development is designated as a project in the Presidential Infrastructure Program which is earmarked to kickstart the economy which has been decimated by the Covid 19 pandemic and to create employment opportunities in the construction sector on a large scale.

The JSE-listed company Balwin Properties Ltd is spearheading construction of the project which will comprise of approximately 16000 housing units comprising of a mixture of 1-, 2- and 3-bedroom apartments supported by retail, education and other community facilities.

LEAP have been appointed by Balwin Properties Ltd, to undertake an Environmental and Social Impact Assessment (ESIA) for a mixed-use development known as Mooikloof Smart City on the Remainder of Portion 1 and Remainder of Portion 62 (a Portion of Portion 1) of the farm Rietfontein 375 JR, as well as Rietfontein Ridge Extension 6 on a Part of the Rem of Portion 62 (a Portion of Portion 1) and the Remainder of Portion 1046 of the farm Rietfontein 375 JR, Portion 1 of Portion 1046, and Mooikloof Manor Extension 2, City of Tshwane Metropolitan Municipality.

The purpose of this report, therefore, is to compile an Environmental and Social Impact Assessment and conduct a risk and impact assessment . Furthermore, specific identified biophysical elements that provide the character of the site, the concerns of interested and/or affected parties, impacts and mitigation measures, are dealt with. This has been done in an objective manner to allow the relevant authority to make a value judgement on the application.

Numerous environmental and water use Authorisation has been obtained for the site as well as for external works. Refer to **Annexure K**.

1.2 IFC Performance Standards – incorporate into project framework

1.2.1 IFC requirements

IFC's Sustainability Framework articulates the Corporation's strategic commitment to sustainable development, and is an integral part of IFC's approach to risk management. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities.

In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced.

Together, the eight Performance Standards establish standards that the client is to meet throughout the life of an investment by IFC. :

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labor and Working Conditions.
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security
- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 7: Indigenous Peoples
- Performance Standard 8: Cultural Heritage

1.2.2 IFC requirements incorporated by Balwin

Balwin Properties Ltd subscribes to implementing the IFC Performance Standards on a project level. To this effect the following are implemented at Mooikloof Smart City – from inception to construction up to hand over to the clients, and thought the rules of the Body corporate and operations and maintenance.

The IFC guidelines are achieved through numerous documents and assessments. These are compiled three main sets of documents:

- An Environmental Impact Assessment – EIA – where the project is described, the site character and the social environment are investigated, the potential impacts are identified and mitigation measures proposed.
- An Environmental Management Plan – EMP – is a compilation of site specific and general impact mitigation measures that are used on site to guide the construction, to address stake holder engagement during construction and to keep records of inductions, audits and remedial measures implemented after audits
- The Site File contains the documents required to conduct the auditing and monitoring during the construction phase.

In fulfilment of the funding application for Mooikloof Smart City requirements, Balwin must provide the results of an Environmental and Social Economic Impact Assessment to meet the requirements of the national and international standards.

Performance Standards	**Topic of Performance Standards**	**Addressed in ESIA**
Performance Standard 1:	Assessment and Management of Environmental and Social Risks and Impacts	Environmental Impact Assessment Socio-Economic Assessment
Performance Standard 2:	Labor and Working Conditions.	Addressed in SHEQ procedures

Performance Standard 3:	Resource Efficiency and Pollution Prevention	Addressed in Environmental Management Plan
Performance Standard 4:	Community Health, Safety, and Security	Addressed in SHEQ Policy
Performance Standard 5:	Land Acquisition and Involuntary Resettlement	Not Applicable
Performance Standard 6:	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Planning and Design addressed in EMP Construction Phase addressed in EMP
Performance Standard 7:	Indigenous Peoples	Not Applicable
Performance Standard 8:	Cultural Heritage	Assessed in the Heritage Impact Assessment as included in the EIA

1.3 NEMA REQUIREMENTS

In accordance with the NEMA Regulations Chapter 5, 1998, Section 31 Environmental Impact Assessment Reports require the following:

Environmental impact assessment reports

An environmental impact assessment report 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-
- *(i). the EAP who prepared the report; and*
- *(ii).the expertise of the EAP, including a curriculum vitae;*

(b). the location of the activity, including:
- *(i). the 21-digit Surveyor General code of each cadastral land parcel;*
- *(ii). where available, the physical address and farm name; and*
- *(iii). 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-
- *(i). a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;*
- *(ii). 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-
- *(i). all listed and specified activities triggered and being applied for; and*
- *(ii). 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 location;

(g). a motivation for the preferred development footprint within the approved site;

(h). a full description of the process followed to reach the proposed development footprint within the approved site, including:

(i). details of the development footprint alternatives considered;

(ii). details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

(iii). 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;

(iv). the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(v). the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-
(aa) can be reversed;
(bb) may cause irreplaceable loss of resources; and
(cc) can be avoided, managed or mitigated;

(vi). the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii). 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;

(viii). the possible mitigation measures that could be applied and level of residual risk;

(ix). if no alternative development locations for the activity were investigated, the motivation for not considering such; and

(x). a concluding statement indicating the preferred alternative development location within the approved site;

(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 location through the life of the activity, including-

(i). a description of all environmental issues and risks that were identified during the environmental impact assessment process; and

(ii). 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;

(i). the nature, significance and consequences of the impact and risk;

(ii). the extent and duration of the impact and risk;

(iii). the probability of the impact and risk occurring;

(iv). the degree to which the impact and risk can be reversed;

(v). the degree to which the impact and risk may cause irreplaceable loss of resources; and

(vi). 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-

(i). a summary of the key findings of the environmental impact assessment:

(ii). a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and

(iii). 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 objectives, and the 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:

(i). the correctness of the information provided in the reports;

(ii). the inclusion of comments and inputs from stakeholders and I&APs;

(iii). the inclusion of inputs and recommendations from the specialist reports where relevant; and

(iv). 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 provisions 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-

(i). any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and

(ii). 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.

1.2 OBJECTIVES

The following objectives have been set:

- Preparation of the Environmental Impact Assessment Report by describing the context of the proposed development, including the bio-physical, socio-economic and institutional environments;
- Identification of impacts that the proposed development could have on the bio-physical and social environment;
- Assessment of the attitudes of the surrounding landowners and other interested and affected parties (I&APs) to such a proposed development;
- Recommendation of measures that will reduce, mitigate, or eliminate identified negative impacts and improve the positive impacts; and therefore; and
- Determine whether the proposed development site is deemed suitable for the proposed development from an environmental perspective.

2. DESCRIPTION OF THE PROJECT

2.1 Location

The site is located approximately 3km to the east of the Rietvlei Nature Reserve, on the western side of Garstfontein Road and immediately south of and adjoining the rural residential estate of Mooikloof, in the Kungwini area. The approved development of Grootfontein is located on the southern boundary. Refer to **Figure 1**

2.2 The Site

The area of the site is ±160 ha and is triangular and has an undulating topography. The lowest point of the site is at the northern boundary, adjoining Garstfontein Road. The site is predominantly vacant, although there are existing dwellings and outbuildings. The majority of the site is severely overgrown with invasive black wattle trees, although there are patches of disturbed grassland areas amongst the trees. The grassland areas are heavily overgrazed.

To the north of the Mooikloof Glen and Mooikloof Heights, as well as the established mixed-use estate The Hills, and also Mooikloof, which comprises properties of a minimum of one hectare and to the south of the site is the rural residential area of Grootfontein, which also comprises rural residential properties of a minimum of one hectare.

Figure 1: Google location and adjacent land uses

To the south of and adjoining the southern boundary of the site is the approved rural residential area of Grootfontein, which also contains properties of a minimum area of one hectare each. Both these areas were established in terms of the division of agricultural land and remain rural residential / agriculture in nature. The subdivision of the application site is envisaged to be similar in nature and description. Refer **to Figure 1**: Surrounding Land Uses.

The site lies within 3 km of the Bronberg to the east, which is considered a Irreplacable and Critical Biodiversity area. Furthermore, to the west the City of Tshwane Rietvallei Nature Reserve houses the Rietvallei Dam which is one of the water sources of the City of Tshwane. Refer to **Figure 2**. The dam is alleged to be polluted from the urban areas lying in the upstream of the dam.

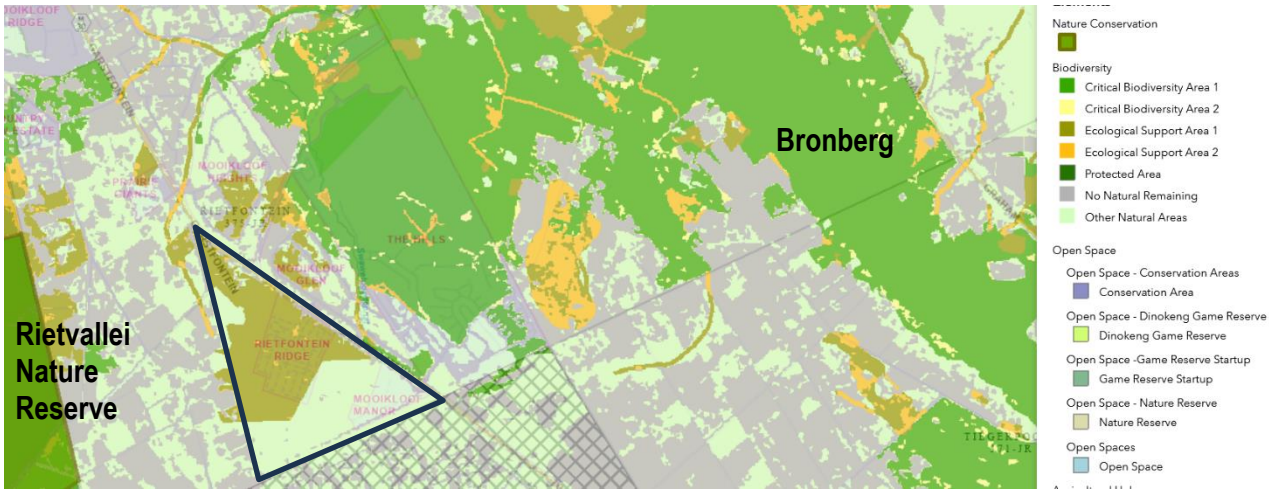


Figure 2: Site proximity to Nature reserves and ecologically significant areas.

2.3 Existing development

When Balwin purchased the land, it comprised existing structures for which constructed started late 2015. The development is part of 4 residential townships known as Rietfontein Extension 11, 12, 13 and 14 on a portion of portion 1046(a portion of portion 62) of the Farm Rietfontein 375 JR.

Balwin, after an amendment to the Environmental Authorisation proceeded with new township application and after approval of Township Mooikloof Manor x2, which is located at the southeastern corner of the property, continued construction under the same Environmental Authorisation in September 2020.

Mooikloof Manor x2 is part and parcel of the land for which the Environmental Authorisation has been issued and does not require any further environmental authorisation. It is located outside the 500 m regulated area as stipulated by the National Water Act regulations, and thus does not require a Water Use License.

2.4 Existing infrastructure and services

The 2015 and 2020 developments are services by:

ROADS
Garstfontein Road runs to the east of the site and two access roads link the development to Garstfontein Road.

WATER
Water provision is from municipal sources. The Rietfontein reservoir located close to the south western corner of the site provides the development with potable water.

SEWER
An existing sewer treatment facility is located north of the site. Sewage runs via gravity flow to the facility.

STORMWATER

Storm water is managed via a piped system and taken to storm water management pond that releases the flow in a controlled manner into the existing stream.

ELECTRICITY

The electricity is provided by the national electricity provider ESKOM via existing bulk supply lines.

2.5 General Description of the Proposed Project

The project is envisioned to provide residential opportunities for middle-income and first-time buyers, as well as rental units, which are supported by commercial, recreation, education and the required suite of services. The land is being developed in phases and is submitted for township development approval as the market demands Access to the proposed development will be via a series of security-controlled points along an internal and external road network.

The development will be fully serviced with waterborne sewage, water and electricity. All these essential services are close to the site and will be extended, in accordance with the City of Tshwane requirements, to link to the site. Refer to **Figure 3** for the general layout of Mooikloof Smart City.

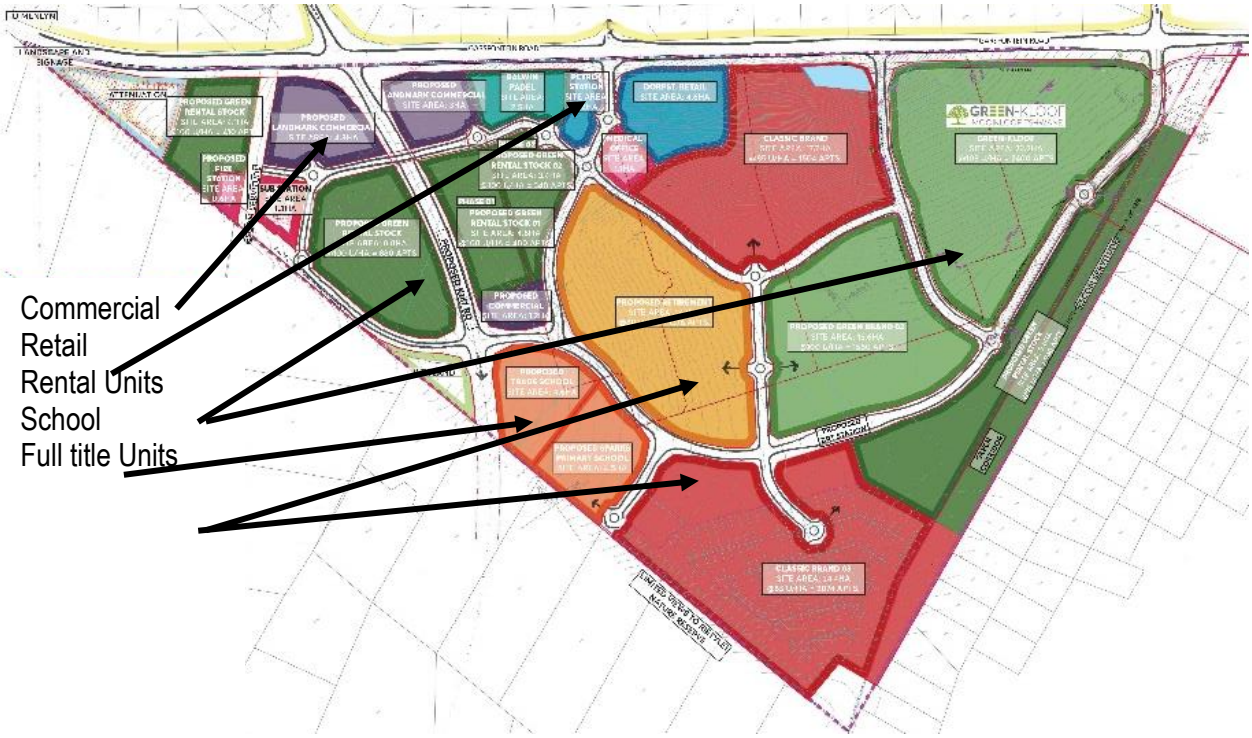


Figure 3: Site - General Layout of Mooikloof Smart City

Mooikloof Smart City comprises of the following townships and projects which have reached the following stages in the approval/proclamation process:

MOOIKLOOF MANOR EXTENSION 2

The Township was proclaimed on 26 April 2022.

Projects emanating from proclamation of township:

a. Rezoning of Erf 633 Mooikloof Manor Extension 2. Application in terms of Section 16(1) of the City of Tshwane Land Use Management By-Law, 2016(Amended 2024) still to be submitted to Council.
b. A Consent Use Application has been submitted in terms of the Tshwane Town Planning to increase the height of Erf 634 from 3 to *4* storeys. Approval is being awaited from Council.

MOOIKLOOF MANOR EXTENSION *9* TO 15

The above townships have reached the stage where there are approved Conditions of Establishment and layout plans. A Section 99 and Section 100 application is soon to be submitted for Mooikloof Manor Extension 14 to divide Mooikloof Manor Manor Extension 14 into smaller townships so that the eastern portion of Mooikloof Manor Extension 14 can be notarially tied with ERF 634 Mooikloof Manor Ext 2.

RIETFONTEIN RIDGE EXTENSION 16

An application in terms of Section 16(4) of the City of Tshwane Land Use Management By-Law, 2016 was submitted for Rietfontein Ridge Extension 16 to obtain rights for a shopping centre to be developed by Dorpstraat. This application hos been approved by Council and we are awaiting clearance letters. On proclamation of this township Erf 1095 Rietfontein Ridge Extension 16 will be subdivided into three erven. One of the three erven will be rezoned to "sports facilities(padel courts etc)", one will be earmarked for fast foods(land use rights already approved) and one erf will be earmarked for a car wash and petrol filling station site. A rezoning application will have to be submitted in order to obtain rights for a petrol station site.

RIETFONTEIN RIDGE EXTENSION 21

An application has been prepared in terms of Section 16(4) of the City of Tshwane Land Use Management By-Law, 2016(Amended 2024) for "Residential 4" rights and a service centre. This township will then be notarially tied with Mooikloof Manor Extension 2 and will form an integral part of Greenkloof Residential Precinct.

RIETFONTEIN RIDGE EXTENSION 18

A township application in terms of Section 16(4) of the City of Tshwane Land Use Management By-Law, 2016(Amended 2024)will be prepared for the northern part of this township to secure the rights for a sports complex.

The Mooikloof Smart City Project has been presented to the City of Tshwane who fully supports it and treats it as an SUD Project. This means that Council considers it as top priority project and that they are willing to fast-track the applications.

In addition, the Mooikloof Smart City project has been Gazetted as and SIP Project which implies that it also enjoys the support of Central Government.

3. CHARACTERISTIS AND STATUS QUO

The first environmental impact assessment for the land titled SCOPING REPORT - FOR THE PROPOSED DEVELOPMENT OF PORTION 62 OF THE FARM RIETFONTEIN 375-JR, was prepared by Seaton Thompson and Associates in 2003. The report was based on the following specialist studies that are not available:

- Specialist Faunal Survey
- Report on the Vegetation of Portion 62 of the Farm Rietfontein 375-JR

Based on the review of the information provided an Environmental Authorisation was issued – reference number GAUT 002/02-03/15 and 48 dated 27 May 2005.

Since the reports are no longer available, updated and confirmation studies were compiled to submit in more recent applications.

To compile the studies, the DFFE screening tool must be used to determine the studies to be conducted.

3.1 DFFE Screening Tool

Refer to **Annexure F**. The National Department of Forestry, Fisheries and Environment Screening Tool is used as a guideline of aspects considered by DFFE as being significant environmental characteristics to investigate. The results are addressed under each topic in the report. The results of the DFFE Screening report shows that the Terrestrial Biodersity Theme is “Very High” while the other themes are listed either “High or Medium”, while the Aquatic theme is “Low” (Refer to Table 1)

It must be noted that some characteristics, such as geology and hydrogeology is considered mandates of Council of Geoscience and of the Department of Water and Sanitation and is thus not covered in the DFFE screening report, but is included in the report.

Due to the deteriorated ecological nature of the site, some aspects such as fauna and flora are not addressed in great detail, however, others such as geohydrology and climate that may be impacted by the development are elaborated upon.

Table 1: Results of the DFFE Screening Tool

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme		X		
Defence Theme			X	
Paleontology Theme		X		
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

3.1 Geology and Soils

Refer to **Annexure C**. The geology of the area comprises shale, quartzite and andesitic lava of the Daspoort Stage of the Transvaal system. These conditions do not pose any constraints or require any precautionary measures for the development of residential units.

The site is located on shales and quartzite, which has shallow soils and does not have good agricultural potential. Additionally, as the site is heavily and densely covered in invasive black wattle, this further reduces any agricultural potential of the site.

The general slope angle is towards the north-northwest and percolating groundwater will flow in this direction Local perched groundwater tables may occur seasonally of which the slight ferruginisation is a manifestation, although no groundwater seepage was encountered during the Phase I or Phase 2 investigations. The perched water tables will typical occur in the transported soil on the interface with the shale bedrock and will appear during and towards the end of the rainy season. These areas are characterised by surface seepage from the shallow shale areas on the lower slopes. This may be typical of the northern part along Garsfontein Road. The regional groundwater in this area occurs in fractured aquifers with an average depth to the groundwater table of between 20 and 30m.

3.2 Hydrological Characteristics

Refer to **Annexure D**. According to the 1:500 000 Hydrogeological Map – 2526 Johannesburg, the local hydrogeology of the area is characterised by generally low-yielding fractured aquifers, which have median borehole yields of 0.1-0.5 l/s. The groundwater quality in the area is good, with typical electrical conductivity values of less than 70 mS/m.

The site falls within the catchment of the Swavelpoortspruit, which is close to the northern boundary of the site. The Swavelpoortspruit drains into the Pienaarsrivier which forms part of the catchment system flowing northwards to Roodeplaat Dam. The proposed development involves medium density development and there could be increased hard surfaces, which will not impact significantly on increasing stormwater runoff.

Geostratum (Pty) Ltd (Geostratum) was appointed by Balwin Properties to carry out a hydrogeological investigation for the purpose of developing a groundwater supply to support the water demand for the Mooikloof Smart City development. The property is located in the suburb of Mooikloof, southeast of Pretoria in Gauteng Province, South Africa. The main findings of the study are :

The 1:50 000 Geological Map – 2528CD Rietvleidam indicates that the site is underlain by sedimentary rocks of the Timeball Hill Formation of the Pretoria Group which have been intruded by younger dolerite dykes. The sedimentary rocks consist of shale, siltstone, tilloid and quartzite.

- Two faults intersect the site, resulting in lateral offset of the lithologies adjacent to them.
- According to the 1:500 000 Hydrogeological Map – 2526 Johannesburg, the local hydrogeology of the area is characterised by generally low-yielding fractured aquifers (average borehole yields of 0.1-0.5 l/s). Faults may be associated with more productive aquifer conditions.

- During the hydrocensus conducted by Geostratum in November 2021, a total of 19 boreholes were identified within a 2 km radius of the site.
- The static water levels in the area range from 2.15 to 61.65 mbgl, with an average depth of 27.54 mbgl. Local groundwater levels more or less mimic the surface topography. Within Development Site 1, groundwater flow is directed towards the north-northwest.
- Borehole yields in the area range from 1 000 to 9 000 l/h (average of 4170 l/h), while blow yields range from about 1 080 to 25 000 l/h (average of approximately 8 700 l/h).
- Groundwater abstraction rates in the area range from 1 to 80 m3/day (average of about 5.4 m3/day). The water is used for irrigation, livestock watering and domestic purposes.
- Two geophysical traverses were done on the Smart City site in order to locate potential drill targets.
- Two boreholes (BH3 and BH4) were drilled within Development Site 1. BH3 was drilled to a depth of 80 m and encountered water strikes at 24, 34 and 43 m. A final blow yield of about 25 000 l/h was recorded. BH4 was drilled to a depth of 72 m and encountered a water strike at 68 m. A final blow yield of about 5 200 l/h was recorded.
- The newly drilled and two existing boreholes were subjected to aquifer testing. The tests consisted of to a 24-hour Constant Rate Test and a subsequent Recovery Test. This was done in order to determine a sustainable rate of abstraction for the boreholes.
- The cumulative sustainable yield from the tested boreholes is ~615.6 m3/day, far exceeding the demand of 300m3/day.
- The total abstraction in the sub-catchment, including the proposed abstraction, will have a moderate level of stress impact on the groundwater resource unit.
- From the sub-catchment water balance calculation, it is evident that groundwater can be used as a viable source for the development the resource will however require monitoring and management.
- The water quality represented by the abstraction boreholes are good and fit for human consumption. The concentration of all the chemical constituents analysed are below the thresholds of the SANS: 241 (2015) Drinking Water Standards.

The following Recommendations are listed in the Study:

- It is recommended that the groundwater levels of the proposed abstraction boreholes be monitored by means of electronic water level recorders (divers) in order to monitor the water levels over time in the boreholes. Comparison between the static and dynamic levels should be done over time.
- Bi-annual water quality samples should be obtained from the boreholes and analysed
- The water level data should be interpreted by a Hydrogeologist on an annual basis in order to determine a potential decrease in water levels and in order to determine the impact of the abstraction over time on the sub-catchment.

3.3 Climate

Climatic information has been obtained from the Weather Bureau and is comprised of information from several stations in close proximity to the site. The climate of the area is generally moderate, experiencing hot summers and mild winters, typical of the Highveld weather conditions. Summer rain

varies between 650mm and 750mm per year, whilst temperatures vary between -12Cº and 39Cº, with an average 16 Cº.

The following is a summary of climatic conditions, obtained from the SA Weather Bureau, over a long period of time. Statistics have been obtained from more than one weather station, depending on availability of data.

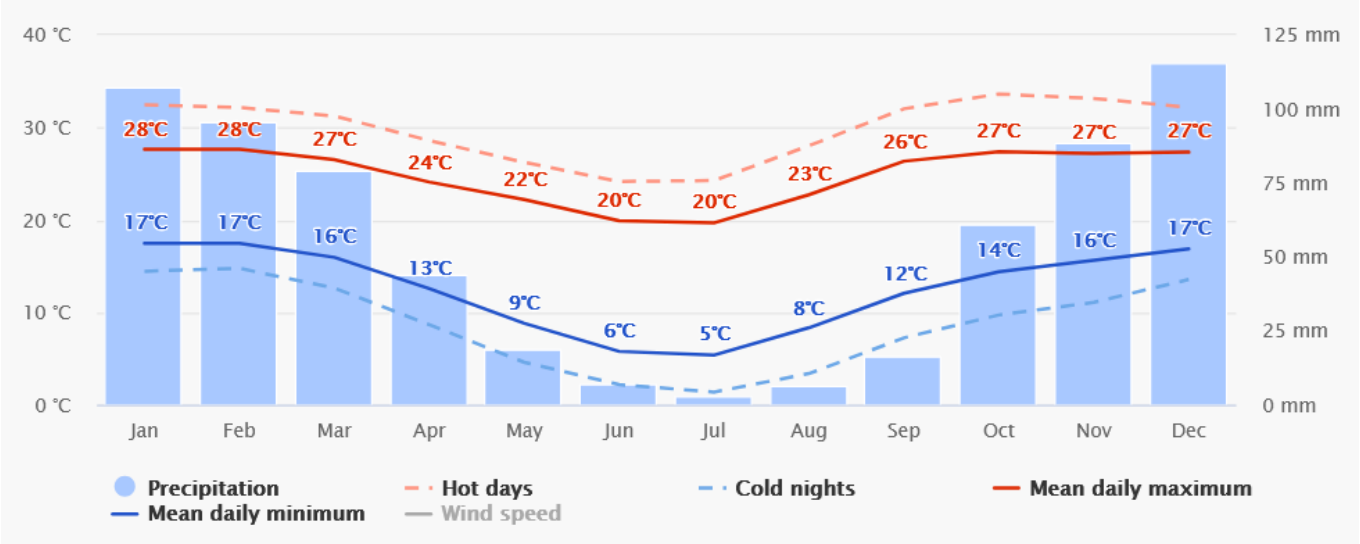


Figure 4: City of Tshwane - Average Annual Rainfall and Temperature

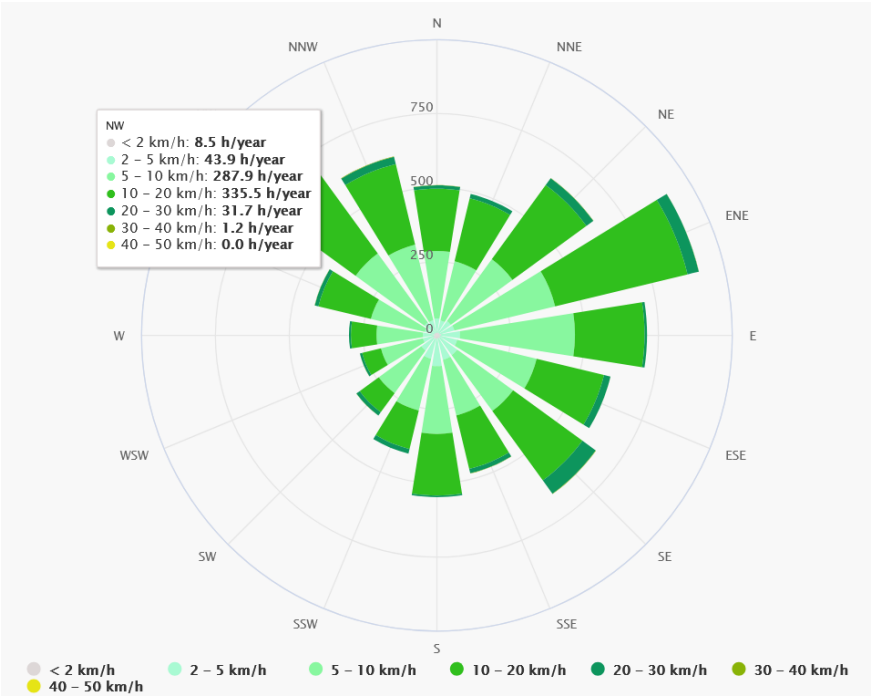


Figure 5: Tshwane - Windrose

The nearest station providing wind information is Pretoria. The predominant wind direction in summer,

September to March is east - north east, whilst in winter, the dominant direction is east south easterly. Average wind speed in the area is approximately 4.0 metres per second. Statistics for evaporation have been obtained from the Roodeplaat station, which have the most comprehensive information available. Statistics on wind direction indicate that the site is unlikely to be affected by any air borne pollutants, as it is not located in the path of any pollution generating activities.

The **City of Tshwane in their Climate Action Plan (CAP)** provide risk analysis of the Metro. The CAP assesses the Fire, Flooding, Social-economic vulnerability, Drought, and Heat Risks. According to the results, the site area, for the timeframe up to 2050, is not in a vulnerability zone if all the aspects are considered , however, the site is expected to be subject to a high number of dry days, which is also linked to a high expectancy of fire hazards, and in summer a high expectancy of flooding.

The Climate Response and Vulnerability Plan (CRVP) confirmed that Tshwane is currently affected by the following climate hazards: Drought, extreme climate events that include flooding and hail that damage infrastructure, and rising temperatures that lead to a higher number of hot days (temperatures higher than 35 °C) and heatwaves (consecutive hot days).

The City has emergency action plans to address the impact of climate change on the city, but prevention plans must be addressed at national level to be effective. It is, however, possible to implement response measures on site that can direct the site towards a climate-resilient project, which successfully mitigate the impacts of heat, flooding, fire, and socio-economic stress by providing for:

- Tree-lined streets and providing green space to break heat buildup and activate air movement, thus improving air quality and ambient temperature.
- Implementing sustainable drainage systems to retain water on site and reduce storm water runoff.
- Renewable energy systems
- Water-use reduction and water harvesting, as well as onsite sewer treatment.
- Waste recycling at source with storage areas for easy pickup.
- Effective internet connection that makes it possible for residents to work from home.
- Mixed use development to allow for short distance travelling to convenient shopping and work
- Early learning centers to allow young families to leave their kids at a facility that is safe and secure and which is easily accessible for nannies to collect them after lunch.
- Electric charging stations and bus stops and convenient pick up points for public transportation with no more than 400m between stops.

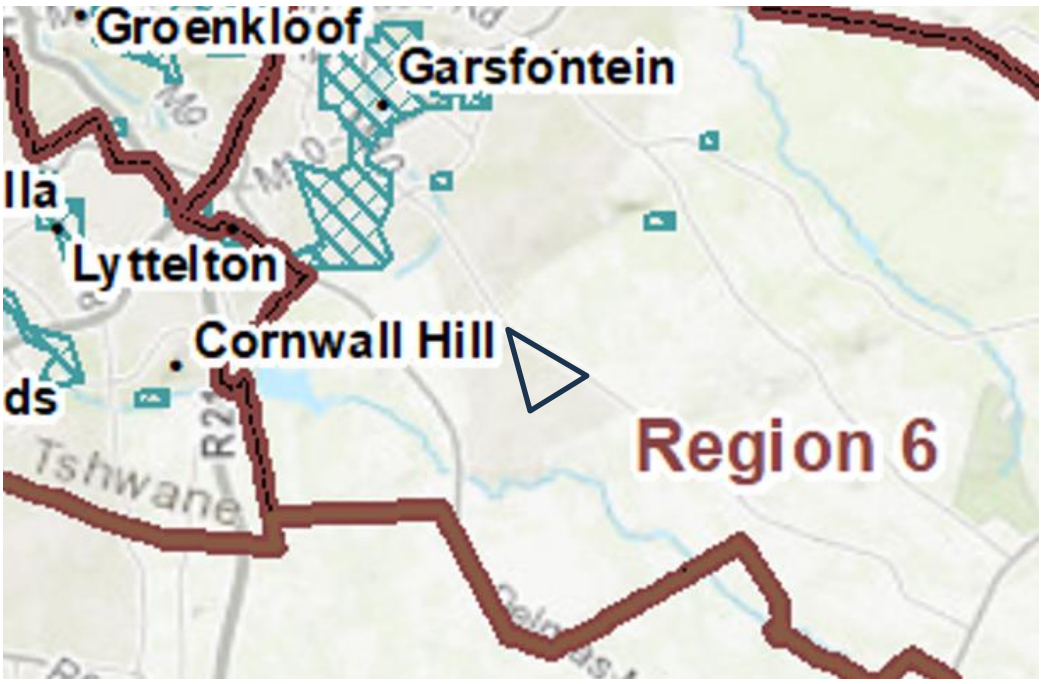


Figure 6: Tshwane Climate Action Plan

3.5 Wetlands and Water Courses

Refer to **Annexure E**. A water course verification report was conducted by SAS in 2020 which indicated that there are no wetlanfs on the site. The conclusion of the verification states:
Scientific Aquatic Services (SAS) was requested to investigate portion 62 of the farm Reitfontein 375 JR, Gauteng Province for any watercourses which could pose a constraint to the proposed high-density Mooikloof Megacity residential development on this property. It was determined that no watercourses are located within the study area. Although the GDARD CPlan (2011) indicates three watercourses within the investigation area, based on visual assessments where possible and analysis of digital satellite imagery, the features are either anthropogenically derived, or have been modified or lost completely as a result of historical activities and existing residential developments. Therefore, the sensitivity of the site, from an aquatic biodiversity perspective is considered low. As such, the study area does not pose any freshwater conservation constraints to the proposed development.

3.5 Floodlines

The 1:100 year floodlines were calculated by Civil Concepts. A small section of the land on the far western side is constraint y a 1:100 year floodline.

Figure 7: Flood lines as per engineers delineation.

3.5 Flora

The DFFE screening tool indicates that the Terrestrial Ecology has a Very High rating. Terrestrial ecology is the study of land-based ecosystems, including the living and non-living components that make them up, and how those components interact with each other. Eco systems on site comprise of soil conditions, available water, flora and faunal characteristics. The site inspection and specialist studied showed that the entire site is compromised and infested with back wattle which is an exotic invader plant species.

To investigate the flora value for the original environmental impact assessment specialist ecological survey was undertaken by Enviroguard in 2003. A brief summary of the report was included in the 2005 Scoping report (Refer to **Annexure A**) and indicates the following :
Three vegetation units have been identified on the site:

- The disturbed grassland areas
- Black wattle dominated woodland
- Disturbed grassland patches occurring with the black wattle woodland

The *Acacia mearnsii* (black wattle) dominated woodland and disturbed grassland patches vegetation unit occurs three quarters of the site. Open grassy patches occur between the woodlands, which are remnants of the natural grassland vegetation before the invasion of the black wattle. The grasslands

are very disturbed from the wattle invasion and overgrazing. There is almost no natural vegetation left in this unit and there are also other alien invaders. There are no Red Data species nor habitat suitable for them.

The disturbed grassland areas are situated towards the southeastern side of the site. It has been heavily overgrazed by cattle and there is erosion present. This community is also under threat from wattle invasion. There are no Red Data species, although the habitat is suitable for 5 protected species. However, due to the degradation of the grassland, they are unlikely to occur.

The report notes that the site is low in species richness and most of the those recorded are exotic or pioneer species. This indicates the general degraded condition of the site an its low conservation value. The report notes that development of the site would not negatively affect the natural environment.

The report recommends that development can take place and that the alien invaders should be totally eradicated.

3.6 Fauna

A brief summary of the faunal conditions was included in the 2005 Scoping report (Refer to **Annexure A**) and indicates the following:

To address the faunal conditions on the site, a specialist faunal survey was conducted by CL Cook, on the Remainder of Portion 1 of the Farm Rietfontein 375-JR, to the east of the site. As the habitat of the application site is exactly the same and the same conditions exist on the application site as the land to the east, elements of this report are applicable. The specialist faunal survey focused on the mammals, birds, reptiles and amphibians of the site and deals with the current status of threatened animal species occurring, or likely to occur within the proposed development site, and describes the available and sensitive habitats on the site. The survey was conducted during the end of summer rainfall period during the months of March and April 2003.

The report notes that no Giant Bullfrogs were observed or are likely to occur on the site due to no suitable foraging or breeding areas. It is highly unlikely that study area comprises important habitat for this species, at a local Rietfontein- Garstfontein scale or at a global or provincial scale.

Two snake species were recorded on the site (Brown House Snake, and Rinkhals) during the field survey, although no threatened reptile species were recorded.

Extremely low bird species diversity and numbers were recorded in the dense thickets of Black Wattle. The majority of species recorded during the field survey are common, widespread and typical Highveld species. No species of conservation importance were recorded, during the field survey.

No sensitive or endangered mammals were recorded during the current survey within the study area. Due to the high level of human activity surrounding the study area it is however unlikely that the study area comprises significant habitat for any species of threatened larger mammals.

The report notes that the western area of the site (RE of Portion 1), containing the invasive black wattles is suitable for development. These conditions of dense black wattle are exactly the same on the application site and as such, a similar status of fauna is existing.

4. INFRASTRUCTURE

The site falls onto the fringe of the established urban area, and all existing municipal engineering services are available in close proximity to the site. The provision and connection of services to the site will be provided in terms of standard agreements with the City of Tshwane according to its requirements. The services arrangements form part of the standard procedure in the local authority's development approval process.

4.1 Roads

The site will contain a formal road system. Access to the site will be along internal roads that link to Garstfontein Road and that will provide regional connectivity. The proposed provincial K147 is planned to traverse the site from west to east and will divide the site into a northern and southern portion. The long-term future of this route and its timing programme for implementation is unknown.

4.2 Stormwater

A storm water masterplan has been prepared according to the requirements of the City of Tshwane. The site is divided into storm water management zones and each zone is managed to direct the water to a central attenuation facility. The City of Tshwane does not have a storm water management policy which requires on-site attenuation, however, in line with responsible land management principals, the release of post development storm water flows will not exceed predevelopment lows.

Although the underlying geology is shale, and not prone to erosion, mitigation measures, such as silt traps and velocity dissipaters, will none-the-less be installed at outlet structures. Sustainable urban drainage systems in the form of bioswales and infiltration trenches will be implemented in natural drainage areas and open spaces.

4.3 Water

Municipal water is to be reticulated to the development from the Mooikloof reservoir, which will be upgraded as required. An onsite sewer treatment is investigated to provide for the sustainable use of water and to reduce water consumption for aspects such as irrigation, wash bays or cleaning solar panels.

4.4 Sewerage

A waterborne sewerage system will be installed according to the service agreements between the developer and the City of Thswane. The existing sewer treatment facility at The Hills is upgraded to accommodate the sewer, while the planning for further bulk lines that will link the City of Tshwane WWTW are proceeding.

An onsite sewer treatment plant is investigated to provide for the sustainable use of water and to reduce water consumption for aspects such as irrigation, wash bays or cleaning solar panels.

4.5 Electricity

The bulk electrical services for Mooikloof Smart City will be provided by Eskom from a new bulk 88/11kV substation which will be constructed within the boundaries of the township. The substation will be called Central Plaza Substation and the establishment of the new substation will include the construction of new 88kV distribution lines and re-conductoring of existing lines. The application to Eskom for the bulk services is for 30MVA capacity, which will be sufficient for both the planned residential and commercial requirements.

To reduce dependency on the ESKOM national grid, the development will implement a centralized solar energy system at each phase of the development. The system may be supported by a battery system that operates at night. Balwin Properties Ltd has been monitoring their development to gauge the success of the solar installations for several years and have proof to what extent the dependency on ESKOM has been reduced by the installation of a Solar PV system

4.6 Waste Disposal

Collection of waste in the area is currently the function and responsibility of the Council, which is undertaken on a regular weekly basis. Waste is collected and disposed of at the regional municipal waste site. This service will be expanded to accommodate the development.

The development will implement the responsible waste management principle of "Separate at Source". By providing the opportunity for residents to separate their waste and to allow for pick-up points that are designed into the layout of the development will encourage recycling. The space must also be easily accessible from the outside, allow recycling companies to easily remove the material.

5. LEGISLATIVE FRAMEWORK

5.1 International Context

Relevant International Conventions to which South Africa is part of and which should influence the proposed site development:

Table 2: International context

CONVENTION	RESPONSE
▪ Ramsar Convention on Wetlands, 1971 ▪ Framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.	The site is part of the Quaternary catchment C22E of the Upper Vaal Water Management Area (WMA). ▪ Development to occur outside of the 1:100-year floodline and the 36-meter buffer of the wetland ▪ Rehabilitation of the wetland and drainage line on the site should be implemented as far as possible.

	Development and particularly storm water management, to be responsive to surrounding hydrological systems. The implementation of attenuation and dissipation measures to minimise the velocity and quantity of storm water and therefore minimising environmental impacts is essential.
▪ Agenda 21 adopted at the United Nations Conference on Environment and Development (UNCED) in 1992 ▪ Action plan and blueprint for sustainable development.	The proposed development is to be planned, constructed, and operated with sustainability as a key prerequisite and baseline standard. The EMP provides practical steps in achieving best practice methodologies.
▪ Convention on Biological Diversity, 1995 ▪ Provided and added stimulus for a re-examining and harmonization of its activities relating to biodiversity conservation.	An ecological specialist completed an assessment of the proposed development site to determine the biodiversity and habitat value. This assessment is to inform the planning and design phases as far as possible.

5.2 National Context:

The following national legislature is to be considered and applied to the development proposal during the environmental process:

Table 3: National Context

LEGISLATURE	RESPONSE
5.2.1 Spatial Planning Land Use Management (SPLUMA) Act No. 16 of 2013	
The Spatial Planning Land Use Management (SPLUMA) Act intends to provide a uniform framework for spatial planning and land use management in the republic. It seeks to promote consistency and uniformity in procedures and decision-making in spatial planning. The objectives of the Act are:	SPLUMA, has great importance with respect to good planning and development and are therefore to be aligned to as far as possible.
Provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic.	The developer has identified this strategically located, inactive land parcel to develop an inclusionary mixed land use development, which will cater for a variety of income groups. Integral to this development will be high densities of residential and commercial uses,

LEGISLATURE	RESPONSE
	innovation and a new way of providing educational and learning facilities in Midvaal. The development will improve ownership for previously disadvantaged individuals. The proposal of a mixed-use establishment will provide for a cohesive social and economic environment, meeting basic needs of local residents as well as addressing past spatial imbalance. The proposed development will improve access and employment opportunities for previously excluded/disadvantaged groups, ensuring a development that is integrated, functional and environmentally sustainable human settlement.
Ensure that the system of spatial planning and land use management promotes social and economic inclusion;	The mixed-use establishment process and the environmental impact assessments are transparent and offer the opportunity for interested and affected parties to participate / comment on the proposed development. The processes have been designed to ensure that people's rights in respect of a healthy and economically viable environment are protected. All these aspects are considered during the environmental process to ensure a sustainable development.
Provide for the sustainable and efficient use of land.	Diverse land use is key to the success of this proposal as a mixed-use nodal development.
Discourage urban sprawl and promote a compact city	The proposed development site is strategically located along accessible transport corridors and urban amenities. In many instances, the legacy of Apartheid planning practices has resulted in sprawling urban areas characterized as being uneconomical and offering one-dimensional opportunities to residents. The proposed development is partly classified as infill development in terms of the Gauteng Spatial Development Framework on vacant land within the urban environment (Provincial Economic

LEGISLATURE	RESPONSE
	Core). The proposed development therefore will contribute to the re-engineering of the existing urban form, the establishment of a more compact city and contribute to the optimization of the use of existing infrastructure such as bulk sewer lines, bulk roads and water.
Redress the imbalances of the past and to ensure that there is equity.	The proposed development will provide for inclusionary housing to those who were previously not able to own/buy property in competitive residential market. Inclusionary Housing is considered the central theme of the development and the proposed development will promote the above principle by making provision for previously disadvantage persons to participate in the property market.
Ensure that special consideration is given to the protection of prime and unique agricultural land.	The land presents undeveloped and underutilised land within an urban setting. Surrounding agricultural areas will not be negatively affected by this proposed township. Furthermore, no natural features like streams and wetlands will be destroyed by the development to the detriment of rural areas. The proposed development strives for the optimum utilization of this site delivering much needed housing and employment opportunities, while increasing the land value.
Uphold consistency of land use measures in accordance with environmental management instruments	The proposed development is structured in a manner that is in accordance with the environmental framework of the Midvaal Municipality and Gauteng Department of Agriculture and Rural Development (GDARD), which aims at managing the city's scarce environmental resources to achieve sustainable development. The application has taken into consideration the existing natural environment and how best to develop the land with minimal impact. The development is aimed at providing a high-quality interface between urban elements and the natural environment in a controlled manner to ensure that these elements benefit from one another. The natural landscape will act as a green strip flowing through the entire

LEGISLATURE	RESPONSE
	development and linking up with the open space in surrounding developments.
5.2.2 National Environmental Management Act (NEMA), 1998 (Act No 107 of 1998) and the Environmental Impact Assessment Regulations	
NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating environmental functions exercised by organs of state and to provide for matters connected therewith. The Act recognises that many inhabitants of South Africa live in an environment that is harmful to their health and wellbeing and focuses on the following:	NEMA principles are to be adhered to, with specific reference to development that promotes integrated environmental management, while being socially, environmentally, and economically sustainable. The proposed development layout must reflect NEMA principles, such as protection of the environment for present and future generations by preventing pollution and ecological degradation, promoting conservation, and securing ecologically sustainable development and utilisation of natural resources.
Everyone has the right to an environment that is not harmful to his or her health or well-being	Please refer to the **EMPr** (**Annexure K**) which discusses health and safety issues during the construction phase.
The State must respect, protect, promote, and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities	This development will provide employment opportunities (construction and operational phase therefore forming an inclusive environment with employment opportunities in close proximity to accommodation.
Inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices;	Good integration is ensured due to the mixed land use character of the proposed development, as well as its location within the urban realm along public and private transport corridors. Several communities and individuals will be able to access and invest in the proposed development.
Sustainable development requires the integration of social, economic, and environmental factors in the planning. implementation and evaluation of decisions to ensure that development serves present and future generations.	Social and environmental aspects are taken into consideration during the environmental impact assessment process, along with appropriate market feasibility research, to ensure that the project is viable and sustainable. The proposed development responds to the Regional Spatial Development Framework of the local municipality.

LEGISLATURE	RESPONSE
Everyone has the right to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that: ■ prevent pollution and ecological degradation ■ promote conservation ■ secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development	The proposed development plan ensures that areas of cultural and ecological value are maintained. Also, please refer to the **EMPr** (**Annexure K**) which thoroughly discusses aspects that are related to ecological preservation, conservation, and sustainable development.
The environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another	Applicable national, provincial, and municipal legislation is taken into account and aligned to during the environmental impact assessment process
Furthermore, this act develops a framework for integrating good environmental management into all development activities, while establishing principles guiding the exercise of functions affecting the environment. Integrated Environmental Management (IEM) is designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning, implementation, and management of all developments. It is intended to guide, rather than impede the development process by providing an approach to gathering and analysing information and ensuring that it can be easily understood by all interested and affected parties in the development. The purpose of IEM is to resolve or lessen any negative environmental impacts and to enhance positive aspects of development proposals.	A thorough impact assessment process has been undertaken – derived from: ▪ Public Participation ▪ Specialist studies ▪ Map assessments ▪ Institutional and legal assessment This process allows for adequate planning and mitigation. Please refer to the section of this report which provides information on the assessment process.
5.2.3 The National Water Act, 1998 (Act No 36 of 1998)	
The National Water Act: ■ Recognizes that water is a scarce and unevenly distributed national resource which occurs in many different forms which are all part of a unitary, inter-dependent cycle ■ Recognizes that while water is a natural resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water, and use of water resources	In essence, the proposed development should align to the purpose of this Act, therefore ensuring that the nation's water resources are protected, utilised, developed, conserved, managed and controlled in ways that take the following into account: ■ Meeting basic human needs of present and future generations ■ Promoting equitable access to water

LEGISLATURE	RESPONSE
▪ Acknowledges the National Government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters ▪ Recognizes that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users ▪ Recognizes 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 ▪ Recognizes the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable everyone to participate	▪ Promoting efficient, sustainable and beneficial use of water in the public interest ▪ Reducing and preventing pollution and degradation of water resources ▪ Facilitating social and economic development ▪ Providing for the growing demand for water use The Act requires that (where applicable) the 1:50 and 1:100-year flood line be indicated on all the development drawings that are being submitted for approval. These flood lines have been indicated, the proposed development is situated outside the 1:50 and 1:100-year floodlines. Where services infrastructure is required to cross the wetland and stream and an application for a Water Use Licence will be submitted to the Department of Water and Sanitation.
5.2.4 National Environmental Management: Biodiversity Act, (Act No 10 of 2004)	
The National Environmental Management: Biodiversity Act aims to provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act1, 1998; including the – ▪ Protection of species and ecosystems that warrant national protection ▪ The sustainable use of indigenous biological resources ▪ The fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources ▪ The establishment and functioning of a South African National Biodiversity Institute; and for matters connected therewith	An ecological specialist was appointed to undertake the biodiversity assessment, with specific attention to Red Data Listed species, habitats and biodiversity. The specialist study is aligned to requirements of this act. The proposed development aligns to the purpose of this Act and the above-mentioned specialist report. The sustainable utilisation of indigenous biological resources, i.e. indigenous vegetation species will be reintroduced to the newly created urban open spaces as far as possible, thereby resulting in an ecological urban regeneration strategy. Please refer to **Annexure K – EMPr** for additional information.

LEGISLATURE	RESPONSE
5.2.5 The National Heritage Resources Act, 1999 (Act No 25 of 1999) (NHRA)	
The NHRA focuses on the following, that have reference to the development of land: ■ To introduce an integrated and interactive system for the management of the national heritage resources ■ To promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations ■ To lay down general principles for governing heritage resources management throughout the Republic ■ To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa ■ To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level ■ To set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance ■ To provide for the protection and management of conservation-worthy places and areas by local authorities; and to provide for matters connected therewith	The proposed development should respond to the requirements of the National Heritage Resources Act as well as that of the South African Heritage Resources Agency (SAHRA). Section 38 of the NHRA makes provision for application by developers for permits before any heritage resources may be damaged or destroyed. A specialist in the field was appointed to conduct a Cultural Heritage Resources Impact Assessment. Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations. It recognises that our heritage is unique and precious, and it cannot be renewed as it – ■ Helps us to define our cultural identity and therefore lies at the heart of our spiritual well-being and has the power to build our nation ■ Has the potential to affirm our diverse cultures, and in so doing shape our national character ■ Celebrates our achievements and contributes to redressing past inequities	The importance of cultural heritage and its related preservation is discussed within the EMPr (**Annexure K**). The EMPr places focus on the education of people regarding places of heritage value and artefacts, should they come across them during their work activities.

LEGISLATURE	RESPONSE
▪ Educates and deepens our understanding of society and encourages us to empathise with the experience of others ▪ Facilitates healing and material and symbolic restitution and it promotes new and previously neglected research into our rich oral traditions and customs	

5.3 Provincial Legislation:

Please note that the below section only highlights some of the most prudent issues in this regard.:

Table 4: Provincial Context

DOCUMENT	RESPONSE
5.3.1 Gauteng Spatial Development Framework 2030 (2017)	
The purpose of the Gauteng Spatial Development Framework (GSDF) is to communicate a shared future spatial vision and structure for the Province. The GSDF is clear and unambiguous about the fact that growth and development within the province should be strategically guided and directed and not purely just a consequence of spontaneous and organic growth. The GSDF provides an overarching spatial vision for the Province and hence provides guidance and influences the Midvaal Spatial Development Framework with specific regards to the location and nature of the physical development. The following key considerations contained within the GSDF are identified and highlighted due to its importance and relevance in as far as the application is concerned: • Urban growth should be contained; • Resource based economic development (resulting in the identification of the economic core); • Re-direction of urban growth (stabilise/limit growth in economically non-viable areas, achieve growth on the land within the economic growth sphere); • Protection of rural areas and enhancement of tourism and agricultural related activities; • Increased access and mobility.	The proposed mixed-use development with associated infrastructure complies to the principles of the Gauteng Spatial Development Framework in light of the fact that the development concept aims to move away from the typical low-density development concepts characteristic of the surrounding area. Through the increase in development density the concept promotes a higher intensity development proposal whilst still acknowledging the importance of the sensitive environment within which the development is located and also preventing urban sprawl. Ample private open space is provided as part of the proposed development ensuring that sensitive areas are protecting and also providing recreational areas.

DOCUMENT	RESPONSE
The primary structuring elements identified within the GSDF are those of: • Urban mixed-use activity nodes; • Open space and green system; • Public transit and movement routes; • Urban corridors and activity spines. In addition to the above the GSDF sets out to guide and structure growth, in a balanced manner, towards the notion of a "sustainable city". Within the GSDF the notion of a "sustainable city" is explained as the focus on achieving a life-enhancing urban environment for all individuals, in which acceptable standards of living are met without compromising the ecological, cultural, social, economic, security or legal pre-conditions necessary for continued viability. In order for South African cities to achieve the status of a "sustainable city" a number of development principles need to be achieved, which include: • A more compact urban from that discourages dispersed low-density urban sprawl; • The promotion of a diverse combination of land-uses that enables a greater intensity of mixed-use development; • A more complex urban system that spawns opportunity through diversity of activity patterns and brings associated economic and employment opportunities through integrated development; • The integration of the historically marginalised areas into the mainstream of urban life by correcting the spatial patterns of the urban environment; • Optimising the utilisation of existing service infrastructure and social amenities particularly where space capacity exists; • Enabling accessibility to affordable and efficient means of public and private transportation; • Furthering the development of employment opportunities and residential areas in close proximity to or integrated with each other;	

DOCUMENT	RESPONSE
• Promoting physical development based on ecological sound principles that bring the natural environment and the urban system into a mutually reinforcing and integrated relationship; and Understanding the open space system of a city-region as an integral part of the city-region's morphology, economic makeup and a defining element of urban quality.	
5.3.2 The Gauteng Draft Red Data Policy	
The primary purpose of the Draft Red Data Policy is to protect red data plant species in Gauteng Province. The Red Data plant policy is based on the following basic principles: Species endemic to the province of Gauteng must be afforded the utmost protection, as they occur nowhere else in the world. As the relevant provincial agency, this Department's responsibility towards Gauteng endemics is absolute; Conservation of only one population essentially ignores the lowest level of biodiversity that is genetic diversity. It is therefore imperative that all populations of Red Data plant species are protected; In situ conservation is preferable to ex situ conservation. Removing a population from its natural habitat and placing it under artificial conditions results in the erosion of the inherent genetic diversity and characteristics of that species; In order to ensure the persistence of a population, it is imperative that the ecological processes maintaining that population persist; In order to ensure the persistence of a plant population, it is vital that pollinators are conserved. To conserve pollinators, the habitat must be managed to provide appropriate nest sites for pollinators and a seasonal succession of suitable forage and host plants. Pollinators must be protected from herbicide and pesticide application and soil disturbance must be prevented;	An ecological specialist was appointed to assess the proposed development sites fauna and flora biodiversity, with specific attention to Red Data Listed species. No red data species were found to be present within the study area. Wetlands should always be conserved and/or rehabilitated. The wetlands should be excluded from development and the flow of water should not be hampered in any way by the development. The wetlands should not be transformed by e.g. landscaping unless it is aimed at rehabilitation/restoration of the habitat. A buffer zone of at least 32 m around the edge of these areas should be present where no development is permitted. The wetlands should be cleared of rubbish and further pollution of the streams prevented (especially at the squatter compound upstream of the site).

DOCUMENT	RESPONSE
Translocation of Red Data species is an unacceptable conservation measure since the translocated species may have undesirable ecological effects; Rural parts of the province should be protected from insensitive developments and urban sprawl/encroachment should be discouraged. Policy guiding developments should therefore be less lenient in rural areas; Red Data plant species historically recorded on a site, but not located during searches within species flowering seasons may be dormant (as a seed bank or subterranean structures such as bulbs/tubers/etc.) due to unfavourable environmental conditions; Suitable habitat adjacent to known populations of Red Data plant species has a high probability of being colonized; In order to protect a plant population that occurs in a fragmented landscape from edge effects, it is necessary to protect it with a buffer zone that extends from the edge of the population; and The transformation of natural vegetation to crops is considered as permanent as urbanization and may cause the extinction of Red Data plant populations and their pollinators.	
5.3.3 The Gauteng Draft Ridges Policy	
The quartzite ridges of Gauteng are one of the most important natural assets in the northern provinces of South Africa. This is because these ridges, and the area immediately surrounding the ridges, provide habitat for a wide variety of fauna and flora, some of which are Red List, rare or endemic species or, in the case of certain of the plant species, are found nowhere else in South Africa or the world. The ridges also fulfil functions that are necessary for the sustainability of ecosystems such as the recharging of groundwater, wetlands and rivers, wildlife dispersal and providing essential habitat for pollinators. Ridges also have a socio-cultural role in that they provide aesthetically pleasing environments that are valued by	The GDARD Conservation Plan (Version 3.3) has indicated that there are no ridge areas on the proposed site. No ridge areas were encountered during the site assessment conducted by the Terrestrial Specialists.

DOCUMENT	RESPONSE
residents, tourists and recreational users. Human activities such as urbanization, mining and the planting of alien vegetation may undermine the contribution that ridges make to the environment. The conservation of ridges falls within the ambit of the environmental right and this policy comprises one of the measures that GDARD has taken to give effect to the environmental right in respect of ridges, therefore ensuring that: ■ The use of ridges is sustainable; ■ Members of the public are able to make informed decisions regarding proposals for development on ridges and the use of ridges; ■ Officials make consistent decisions in respect of planning and environmental applications that involve negative impacts on ridges; and ■ The Department's responsibility in respect of the protection of the environment is carried out in an efficient and considered manner.	
5.3.4 GDARD Conservation Plan, Version 3.3	
A comprehensive Provincial Conservation Plan (C-Plan) was launched as a decision support tool in September 2005 to protect the province's ecosystems and associated biodiversity and to act as an information tool for the conservation of sensitive areas. The C-Plan was an outcome of the Gauteng Biodiversity Gap Analysis Project (BGAP). The C-Plan system maps important biodiversity areas in Gauteng and provides information to protect important and sensitive areas within the province. This information is used by government as a decision-making tool with regard to EIA approvals. The second version (C-Plan version 2) indicated that 25 percent of Gauteng needs to be conserved to meet the Province's biodiversity targets. The C-Plan includes protected areas, irreplaceable and important sites due to the presence of Red Data species, endemic species and potential habitat for these species to occur.	According to C-Plan 3.3 the proposed development site is not affected by irreplaceable. Sections of the site are classified as important and ecological support areas on the site.

DOCUMENT	RESPONSE
5.3.5 Gauteng Provincial Environmental Management Framework (2018)	
Gauteng Provincial Environmental Management Framework (GPEMF) The guiding objectives that emerged during the course of the developed of the GEMF are: • To facilitate the optimal use of current industrial, mining land and other suitable derelict land for the development of non-polluting industrial and large commercial developments. • To protect Critical Biodiversity Areas (CBAs as defined in C-Plan 3.3) within urban and rural environments. • To ensure the proper integration Ecological Support Areas (ESAs as defined in C-Plan 3.3) into rural land use change and development. • To use ESAs as defined in municipal bioregional plans in spatial planning of urban open space corridors and links within urban areas. • To focus on the sustainability of development through the implementation of initiatives such as: o Energy efficiency programmes, plans and designs; o Waste minimisation, reuse and recycling; o Green infrastructure in urban areas; and o Sustainable Drainage Systems (SuDS). **Zone 1:** The intention with Zone 1 is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the Gauteng Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas. Certain currently listed activities (see section 5) may be exempted from environmental assessment requirements at the discretion of the competent authority. **Zone 2:** Zone 2 are sensitive areas within the urban development zone must be conserved and where linear development	The site is designated as a Zone 3 and majority of the investigation area is classified as an EMF Zone 4. This zone is dominated by agricultural uses outside the urban development zone

DOCUMENT	RESPONSE
(roads etc.) cannot avoid these areas, a proper assessment and implementation of alternatives must be undertaken. **Zone 3** Zone 3 are Special control zones are sensitive areas outside the urban development zone. These areas are sensitive to development activities and in several cases also have specific values that need to be protected. **Zone 4** This zone is dominated by agricultural uses outside the urban development zone as defined in the Gauteng Spatial Development Framework. No listed activities may be excluded from environmental assessment requirements in this zone. **Zone 5** The intention with Zone 5 is to streamline non-polluting industrial and large scale commercial (warehouses etc.) activities in areas that are already used for such purposes and areas that are severely degraded but in close proximity to required infrastructure (such as old and even current mining areas). Certain currently listed activities (see section 5), in addition to those intended for Zone 1 may be excluded from environmental assessment requirements in this zone in future.	
5.3.6 Protection of Agricultural Land in Gauteng Revised Policy (June 2006)	
The purpose of this policy is to protect land that has been identified as high agricultural potential from development, for the exclusive use of agricultural production to: ■ Feed the nation; ■ Provide upcoming farmers with access to productive land; and ■ Meet national targets set in this regard. Land with high agricultural potential is a scarce non-renewable resource and the need to protect it is a high priority for GDARD. GDARD applies a risk averse and cautious approach when development of such land for purposes other than agricultural production is proposed. The risk averse and cautious approach should be the basis of decision-making on the transformation of high	The proposed development site, according to the Gauteng Agricultural Potential Atlas (GAPA Version 3), contains areas with moderate agricultural potential Please refer to **Figure 5 – GAPA**

DOCUMENT	RESPONSE
potential agricultural land and land deemed as irreplaceable in terms of meeting Agri-BBBEE and national food security targets and thus legally protected from transformation. GDARD is not in support of development on high potential agricultural land that resides outside the urban edge. Seven agricultural hubs have been identified in the Gauteng Province. All the hubs are located outside the urban edge. The hubs are regarded as areas with a large amount of high agricultural potential land that should be preserved for agricultural use and will accordingly be planned and managed as a holistic agricultural unit. Each of the hubs will be developed to align with its agricultural potential and preferred land use and will be supported by current economic indicators.	
5.3.7 Gauteng Integrated Transport Master Plan 25 (2013)	
Vision: "An integrated and efficient transport system in Gauteng that promotes sustainable economic growth, skills development and job creation, fosters quality of life, socially includes all communities and preserves the environment." **Key Focus Area**: • Priority public transport corridors • Strategic modal transfer nodes and interchanges • Freight routes and logistics centres • Rail as the backbone of an integrated public transport system • Protection of future priority corridors, future road networks, passenger and freight rail networks, and airports. The plan further includes a vision to support and strengthen the Gauteng Global City Region. Geographical Information Systems and Intelligent Transport Systems form a practical basis for the plan.	

5.4 Municipal plans and programs:

Please note that the below section only highlights some of the most prudent issues in this regard.

Table 5: Local Context

No.	Strategic Plan Programme	Description	Project Considerations

1.	City of Tshwane Open Space Framework	Provides high level strategic direction to the city regarding the sustainability of its proposed development path and a spatial indication of where the key opportunities and constraints to development lie. Will form part of the municipal SDF.	Consider key areas of risk and opportunity for the Municipality in terms of the availability of ecosystems that can help to deliver on key social outcomes. Include suitable measures to safeguard sensitive areas in Stages 3 and 4 of the SEA. Identify measures to exploit opportunities and overcome constraints with regards to the Port of Durban in Stage 4 of the SEA.
2	COT IDP & SDF	The SDF identified the eastern part of the City of Tshwane as a growth area.	Consider implications Provides for sustainable, coordinated and orderly development and growth in the municipality Focus should be on skills development and capacity building of the local labour force with support to small, medium, and micro Enterprises (SMMEs). Promote green industries and technologies in the industrial area. Diversify tourism with cultural-historic activities supporting township tourism. The precinct is identified for a Gauteng Mega Housing Project. Additionally, the precinct features several Priority Housing Development Areas (total 13 170 units). The precinct forms part of the district urban conurbation as part of Meyerton, and next to a section of the district's priority public transport network
3	Flooding Vulnerability	A 1:100 year flood is a flood event that has a 1% probability of occurring in any given year. Floodlines are applied in land use control and other regulatory processes. The 100 Year Flood Plain was obtained from the COT GIS	Incorporate 100 Year Flood Plain in sensitivity mapping and assessment of the study area and evaluating the impacts of the PDFP on the related features.
4	COT Bylaws	Sectors as relating to development	Waste Management Property Rates by laws Legal Services Municipal Cemeteries Discharge of Effluent

			Electricity Supply Water Supply
5	COT Climate. Response Plan	Climate change response	Provide guidance of green development to curb climate change and strengthen resilience.

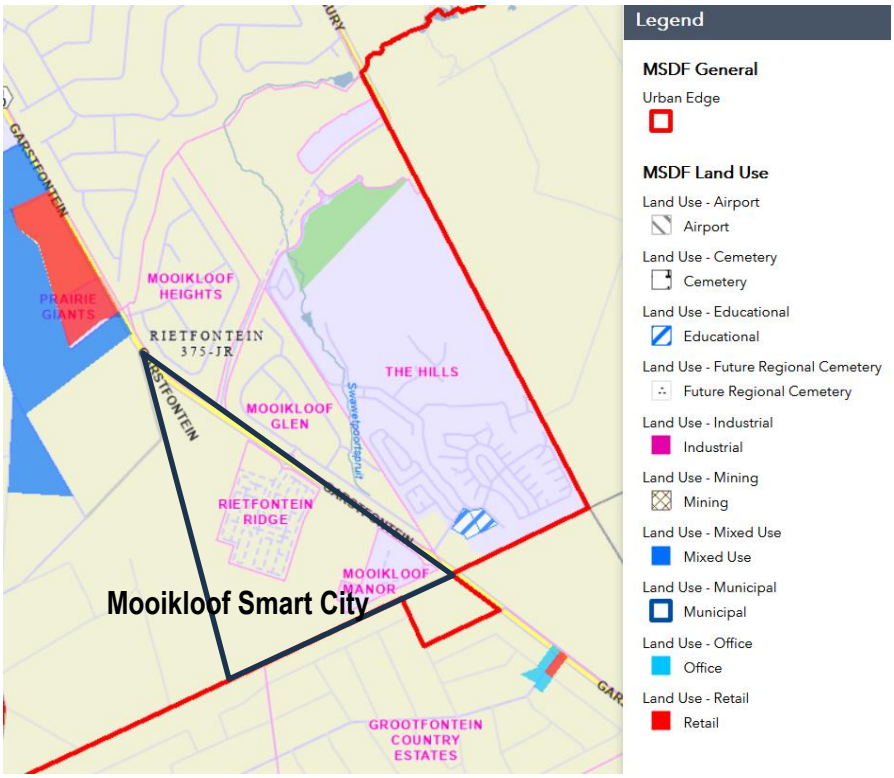


Figure 8: Tshwane Regional Spatial Framework

6. SOCIO-ECONOMIC ASPECTS

6.1 Tshwane Socio-economic Profile

City of Tshwane is classified as a Category A Grade 6 urban municipality by the Municipal Demarcation Board in terms of section 4 of the Local Government Municipal Structures Act, 1998 (Act 117 of 1998). The Municipality was established on 5 December 2000 through the integration of various municipalities and councils that had previously served the greater Pretoria regime and surrounding areas.

On 28 May 2008, a proclamation through the Government Gazette was made to incorporate the former Metsweding District Municipality, including Dinokeng tsa Taemane (Cullinan) and Kungwini (Bronkhorstspruit) into the borders of City of Tshwane. The incorporation, which gave birth to the new City of Tshwane in May 2011 after the local government elections, was in line with the Gauteng Global City Region Strategy to reduce the number of municipalities in Gauteng by the year 2016.

The new City of Tshwane which has a Mayoral Executive System combined with a ward participatory system in accordance with section 2 (g) of the Determination of Types of Municipality Act, 2000 (Act 1 of 2000), and section 2(1) (c) (vii) of the North-West Municipal Structures Act, 2000 (Act 3 of 2000); it has

105 wards, 210 councillors and about 2,5 million residents, and is divided into seven regions. It covers 6 368km² of Gauteng's 19 055km² and stretches almost 121 km from east to west and 108 km from north to south making it the third-largest city in the world in terms of land area, after New York and Tokyo/Yokohama.

As the administrative seat of Government and hosting a number of Embassies, City of Tshwane has proven to be a leader on the African continent in providing affordable industrial sites, various industries, office space, education and research facilities.

An estimated 90% of all research and development in South Africa is conducted here by institutions such as Armscor, the Medical Research Council, the Council for Scientific and Industrial Research, the Human Sciences Research Council and educational institutions such as the University of South Africa and Tshwane University of Technology.

6.1.1 Demographics

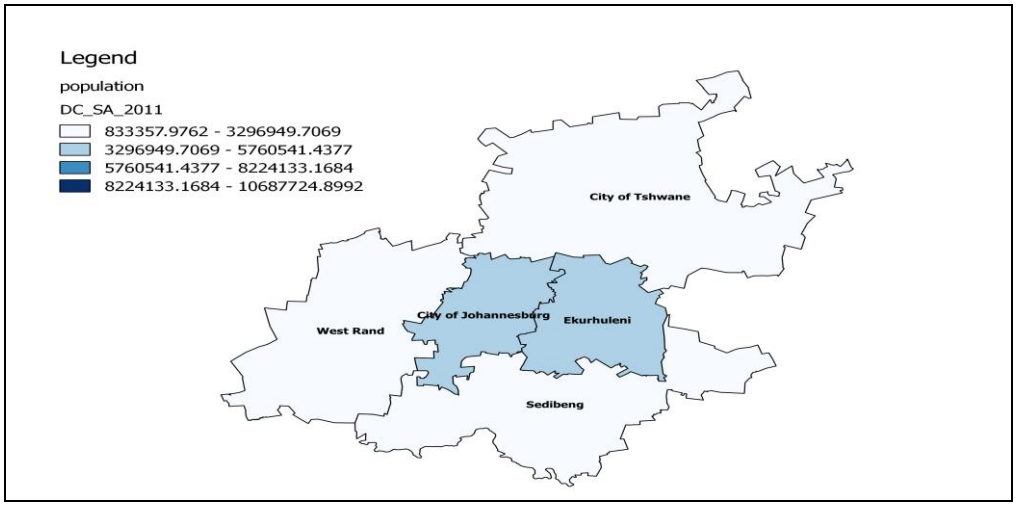


Figure 9: *Geographic representation of Gauteng population, 2015*
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

The total population in the Gauteng province for 2015 is estimated at 13.2 million, which is approximately 24% of South Africa's population (54.8 million). This making Gauteng the most populous province in the country. As indicated in Figure 9, the City of Johannesburg and Ekurhuleni accommodate the largest proportion of Gauteng's population, accounting for approximately 37% and 26% respectively. Tshwane makes up more than 3 million of the total Gauteng population, accounting for approx. 24% of the province's population. This making Tshwane the third most populous municipality in the province. **Error! Reference source not found.** further shows the distribution in Gauteng province both in terms it's land area (km²) and the 2015 population estimates.

Table 6: Population comparison across municipalities in Gauteng

Name	Area (km²)	Population, 2015	As % to GP, 2015
Johannesburg	1 645	4 822 787	37%
Ekurhuleni	1 975	3 386 544	26%
Tshwane	6 298	3 161 809	24%

Sedibeng	4 173	946 818	7%
West Rand	4 087	833 358	6%

Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

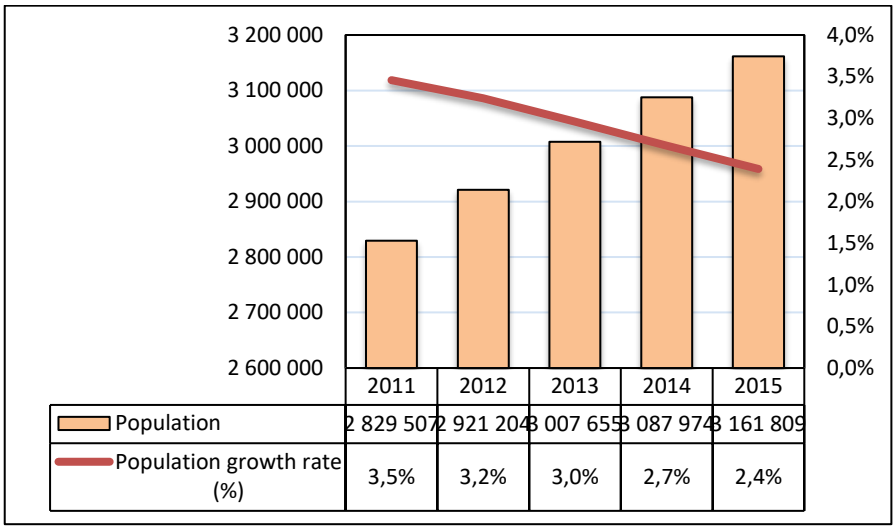


Figure 10: Tshwane's population and population growth rate, 2011–2015

Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 10 provides an overview of how the total population in Tshwane has been changing over the 2011–2015 period. As indicated in the figure, the total population in Tshwane was 2.8 million in 2011 and has since increased to 3.1 million in 2015. For the period 2011–2015, Tshwane's population grew by 332 302. It is worth noting however that the total population in Tshwane has been increasing at a declining rate as indicated by the downward sloping population growth rate graph. In 2011, the growth rate was estimated at 3.5% and this estimate has since decreased to 2.4% in 2015.

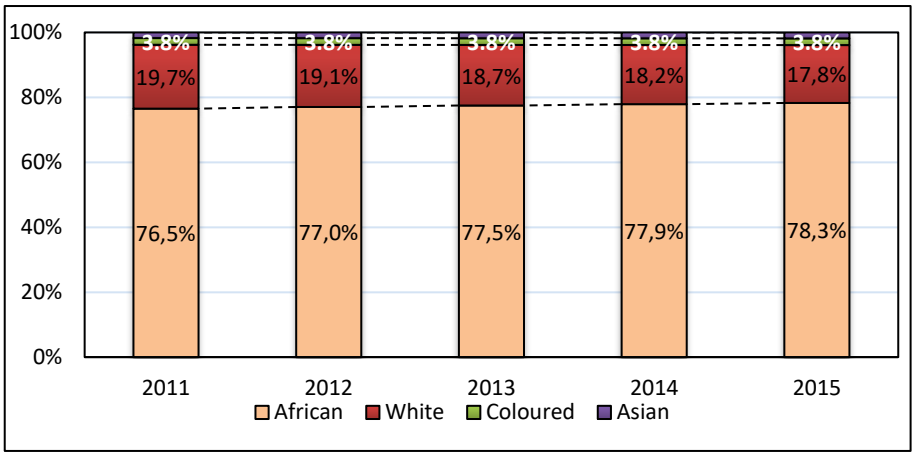


Figure 11: Percentage contribution of population groups to Tshwane's total population, 2011–2014

Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 11 indicates the percentage contribution of the population groups to the total population in Tshwane over the 2011 – 2015 period. As indicated in the figure, the African population is accounted for approximately 76.5 percent of the total population in 2011 and this has since grown to 78.3 percent. The White population group, which accounted for approximately 19.7 percent of the total population and has

since declined to approximately 17.8 percent, and the Coloured and the Asian population groups combined continue to account for approximately 3.8 percent over the 2011 -2015 period.

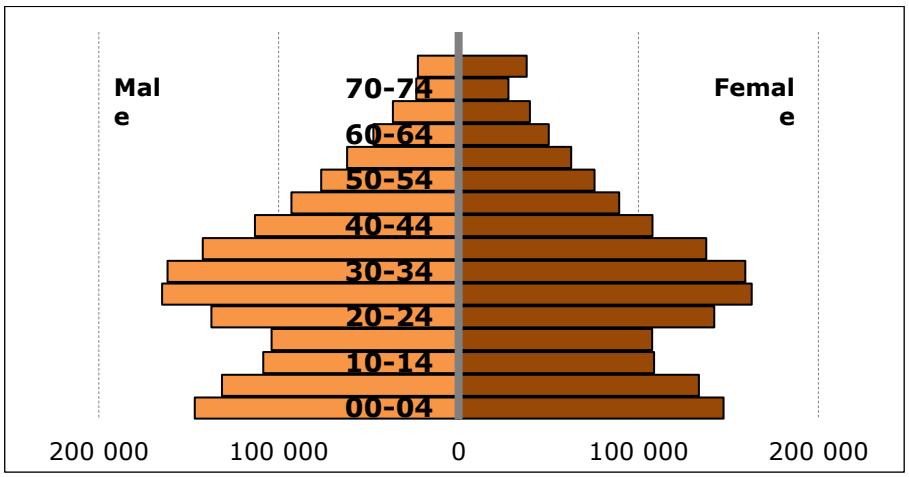


Figure 12: Tshwane's population pyramid, 2015

Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

The 2015 population pyramid for the City of Tshwane is indicated in Figure 12 which provides a graphical illustration that shows the distribution of various age groups in Tshwane's population. As indicated in the figure, there is an apparent youth bulge in Tshwane, this is likely due to the large student population in the city, which results from the large concentration of institutions of higher learning. Approximately 61% of Tshwane's population is younger than 35, with 36% being between the ages of 15 to 34. Senior residents (65+ age group) of Tshwane only account for approximately 6% of the total population.

6.1.2 Education

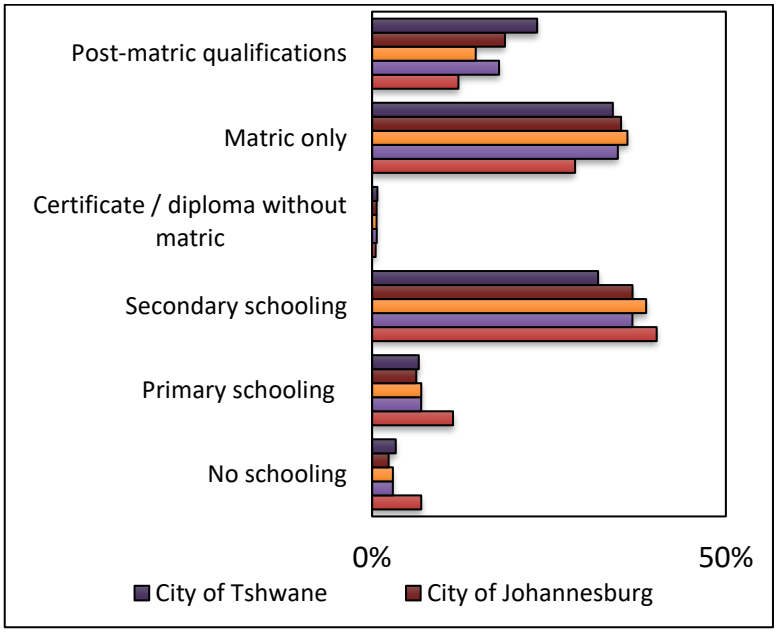


Figure 13: Highest levels of schooling for the population aged 20 years and older in Tshwane, 2015

Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Tshwane being South Africa's Capital City with the largest concentration of higher education institutions in the country, boosts the highest percentage of the 20 years or older population that is with post-matric qualifications (approximately 23% in 2015) in comparison with the national average (approximately 12%), Gauteng (approximately18%), Joburg (approximately 19%) and Ekurhuleni (approximately 15%). This is indicated in Figure 13, the percentage of persons that are 20 years or older with no schooling or some primary schooling is estimated at 10 percent for 2015, i.e. 215 677 persons.

6.1.3 The economy

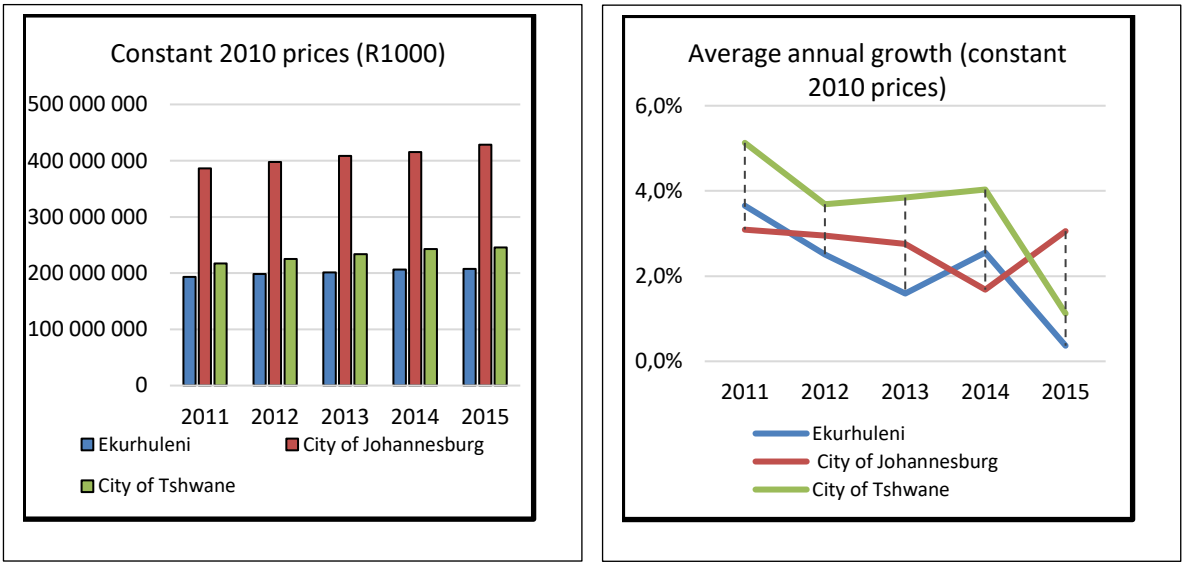


Figure 14: Economic overview – GVA and GVA growth
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

The City of Tshwane is second biggest in Gauteng in terms of gross value added by region, with gross value added of R246 billion (constant prices) in 2015. The City of Tshwane contributed 25% to the provincial economy and for 9% of South Africa's economic output in 2015. Furthermore, the economic output of Tshwane has expanded at an annual average of 4% per annum over the last five years, outstripping the national GDP growth average over the 2011 – 2015 period. Overall, Tshwane's average annual growth has been performing above Ekurhuleni and the City of Joburg over 2011 – 2014 period. However, as indicated in Figure 14, the City of Joburg managed to surpass Tshwane by as much as 1.9 percentage points in 2015.

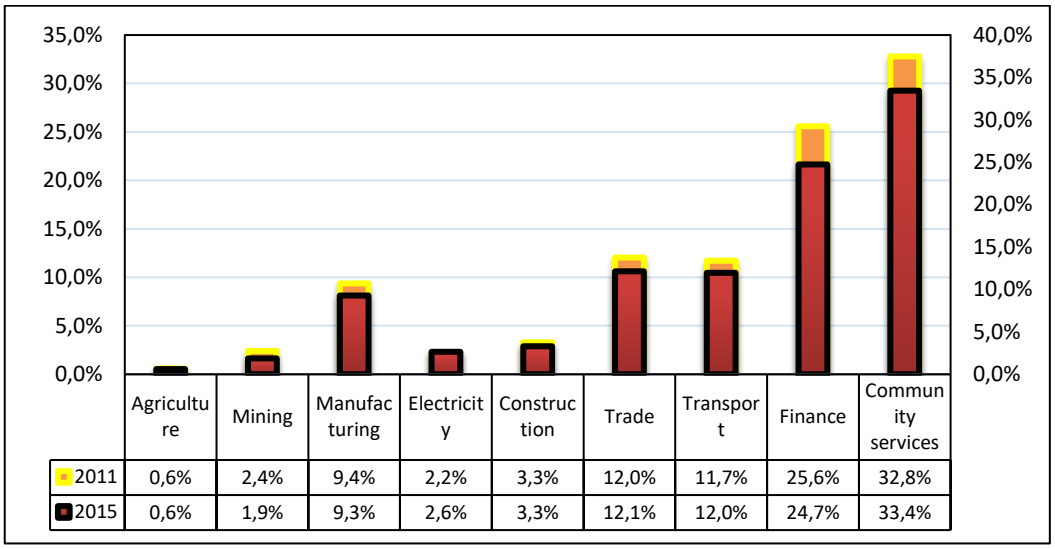


Figure 15: GVA-R sectorial composition, 2011 and 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Tshwane has a diversified economy, emerging as a vibrant economy with significant contributors to its economic make-up comprising of community services, finance, transport and trade. Tshwane has a large government sector (community services), reflecting the presence of national and provincial departments and parastatals. As indicated in Figure 15, the sector recorded 33% contribution to Tshwane's gross value added (GVA) in 2015. Furthermore, other major contributors to Tshwane's 2015 GVA are finance sector (25%), transport (12%), trade (12%) and manufacturing (9%).

6.1.4 Labour Market

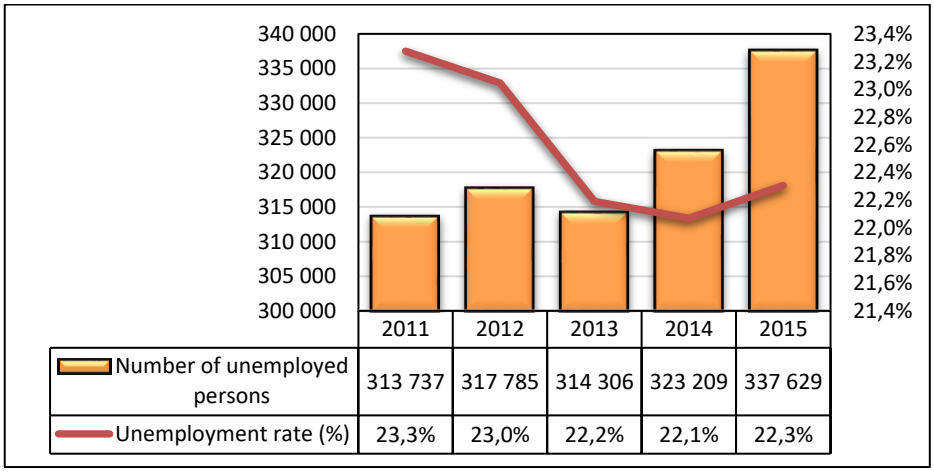
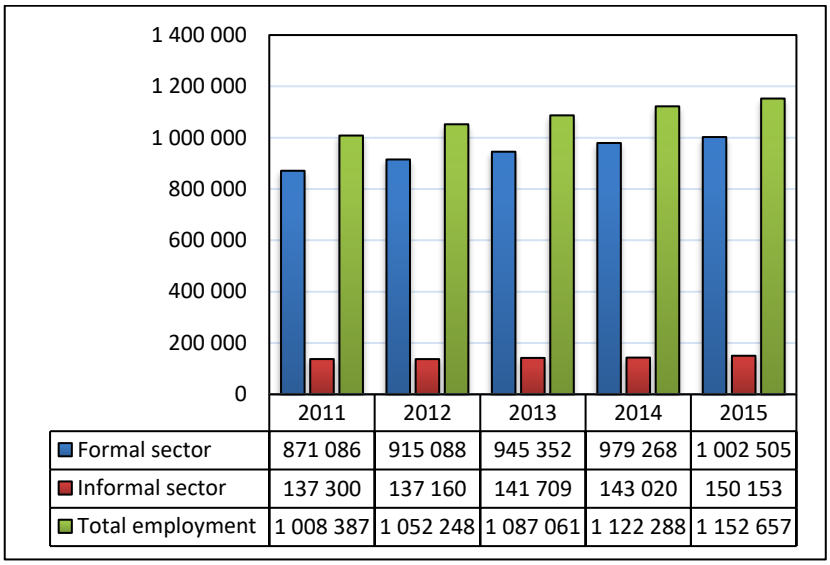


Figure 16: Unemployment (official definition) in Region 5, 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 16 indicates the unemployment rate and the number of unemployed persons in actual terms in Tshwane. It can be noted from the figure that the unemployment rate in Tshwane improved from 23.3 percent in 2011 to 22.3 percent in 2015. This represents a decline from approx. 313 737 unemployed people in 2011 to approx. 337 629 unemployed people in 2015.



	2011	2012	2013	2014	2015
Formal sector	871 086	915 088	945 352	979 268	1 002 505
Informal sector	137 300	137 160	141 709	143 020	150 153
Total employment	1 008 387	1 052 248	1 087 061	1 122 288	1 152 657

Figure 17: Employment in Tshwane, formal and informal sector, 2011–2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 17 indicates the total employment in Tshwane disaggregated by formal or informal sector. As indicated in the figure, employment (in absolute terms) across both sectors in Tshwane has been steadily increasing over the 2011-2015 period. In 2011, total number of individuals employed in Tshwane were approximately 1 008 387 and has since increased to 1 152 657 in 2015. As one would expect, the largest composition of this growth can be attributed to growth in formal sector employment, which grew 871 086 in 2011 and has since increased to 1 002 505 in 2015. Informal sector employment on the other hand has increased from 137 300 in 2011 to 150 153 in 2015.

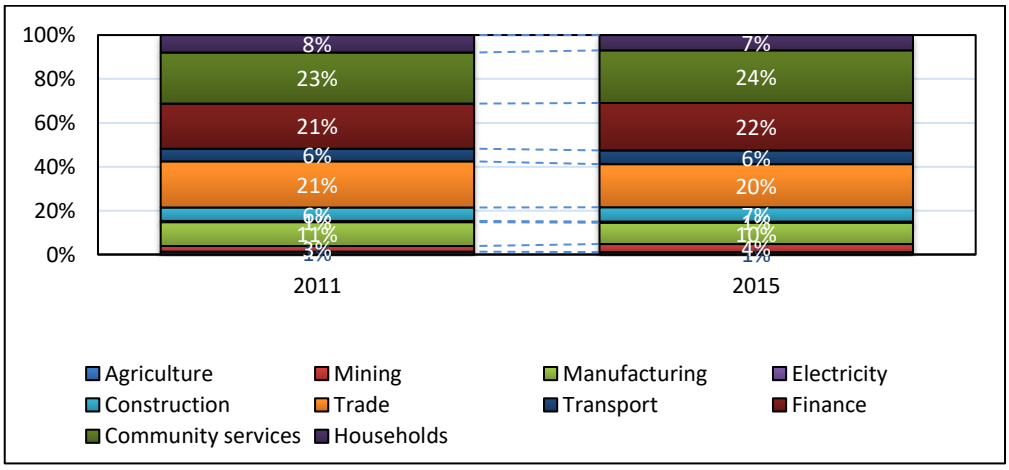


Figure 18: Tshwane's year-on-year percentage change of total employment by industry (official definition), 2011–2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 18 indicates total employment in Tshwane disaggregated by economic sectors over the period 2011 - 2015 period. As indicated in the figure, the community services sector, the finance sector and trade sector are the largest contributors to employment in Tshwane over the 2011 – 2015 period, contributing approximately 24 percent, 22 percent and 20 percent in 2015 respectively. Contrariwise are is the mining (3 percent) and agriculture sector (1 percent) which appear to be the least employment

contributors in Tshwane and this is in line with that the sectors also contribute least Tshwane's economic output

6.1.5 Service delivery

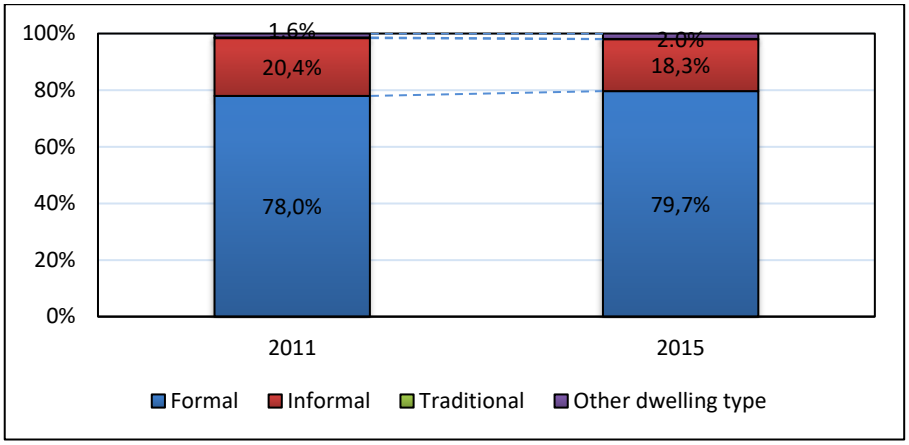


Figure 19: Households in Tshwane by type of dwelling, 2011 vs 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 19 above indicates households in Tshwane by type of dwelling (in proportion to the total number of households in Region 5). As indicated in the figure, approximately 78 percent of the households in Tshwane were occupying formal dwellings in 2011 and this has improved to 79.7 percent in 2015. Approximately 20.4 percent of the households in Tshwane were occupying informal dwellings in 2011 and this has improved to 18.3 percent in 2015. Traditional and other types of dwelling account for less than 2 percent in 2015.

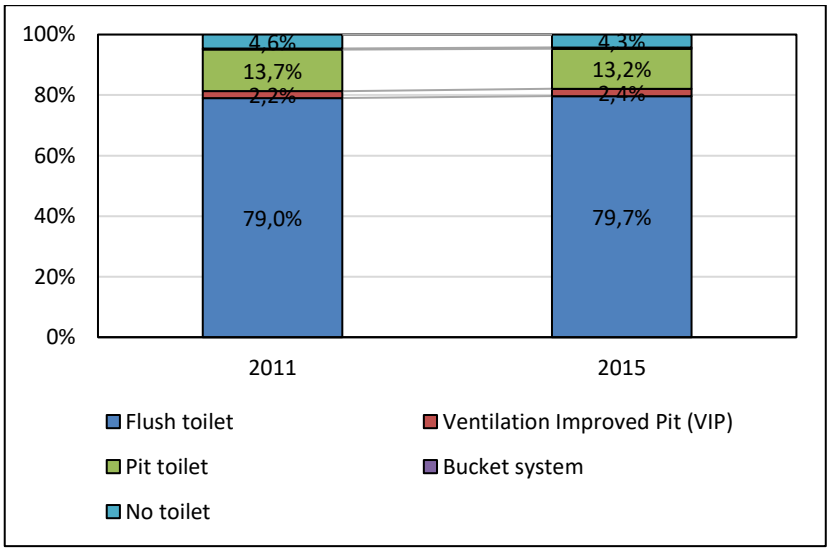


Figure 20: Households in Tshwane by type of toilet facilities, 2011 vs 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 20 indicates households in Tshwane by the type of the toilet facility that accessible (i.e. in proportion to the total number of households in Tshwane). As indicated in the figure, the percentage of households with a flush toilet in Tshwane has slightly increased from 79 percent in 2011 to 80 percent

2015, the percentage of households with a ventilation improved pit (VIP) slightly increased from 2.2 percent in 2011 to 2.4 percent in 2015, the percentage of households with pit toilets declined from 13.7 percent in 2011 to 13.2 percent 2015 and the percentage of households with utilising the bucket system or that have no toilet facilities combined declined from 5.0 percent in 2011 to 4.7 percent in 2015.

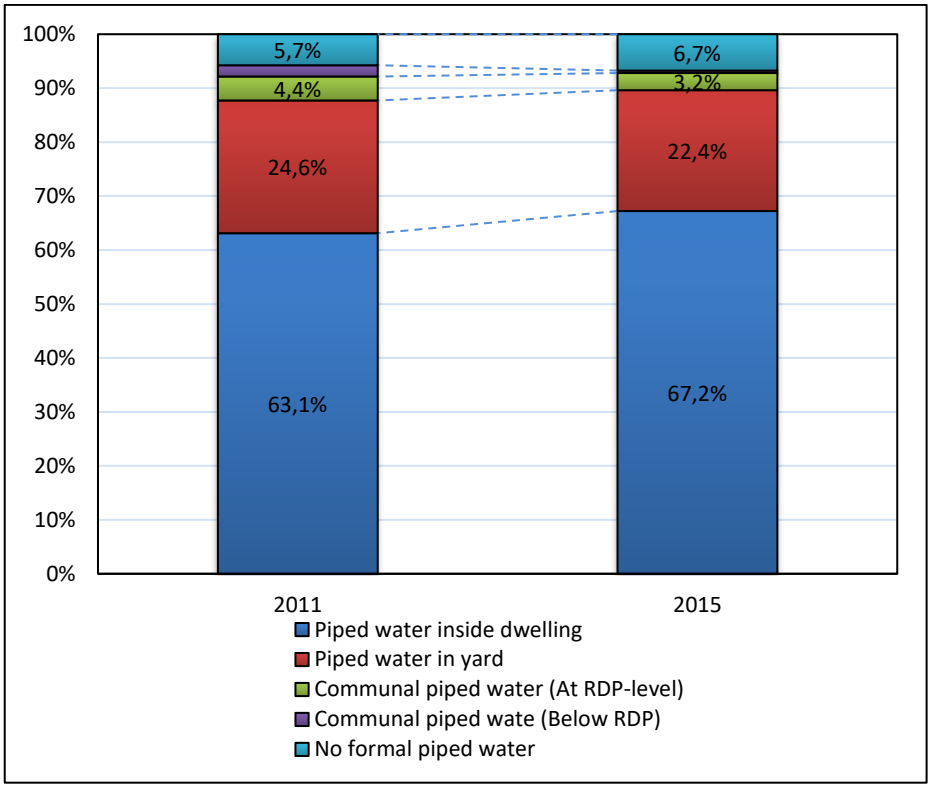


Figure 21: Households in Tshwane by water access level, 2011 vs 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 21 indicates households in Tshwane by water access level (available water infrastructure utilised by households in proportion to the total number of households in Tshwane). As indicated in the figure, the percentage of households in Tshwane with access to piped water inside dwelling has increased from 63.1 percent in 2011 to 67.2 percent in 2015, the percentage of households with access to piped water in yard has declined from 224.6 percent in 2011 to 22.4 percent, the percentage of households with access to communal piped water at RDP level has declined from 4.4 percent in 2011 to 3.2 percent in 2015, the percentage of households with access to communal piped water below RDP level has declined from 2.1 percent in 2011 to 0.5 percent in 2015, and the percentage of households with no access to formal piped water increased from 5.7 percent in 2011 to 6.7 percent in 2015.

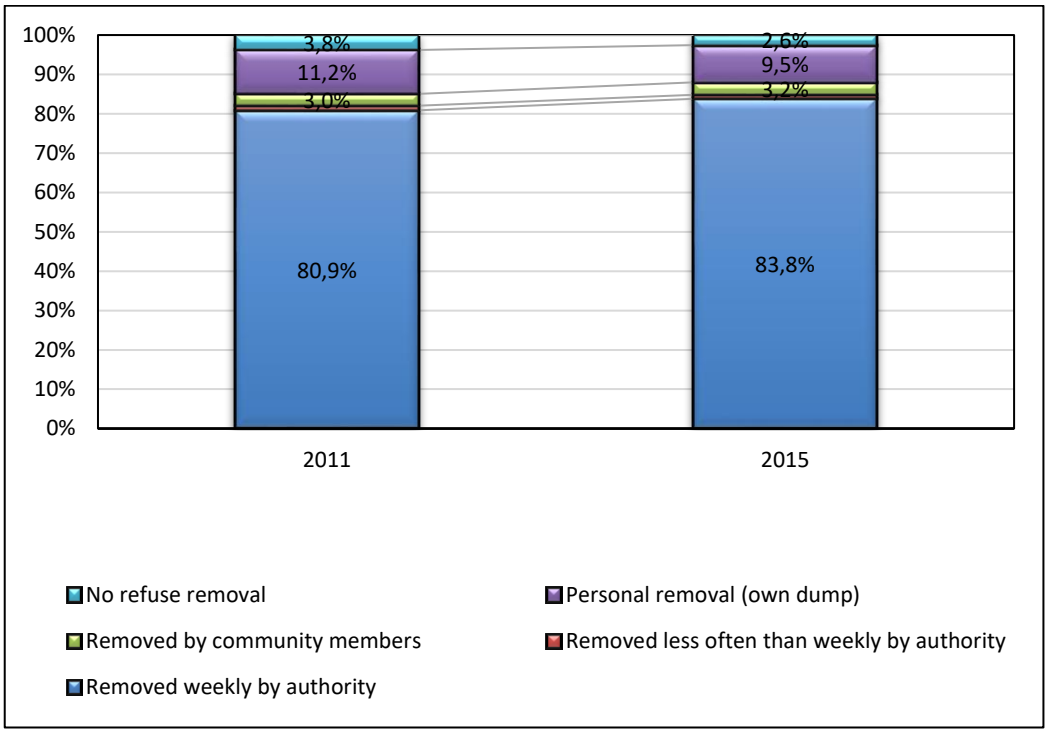


Figure 22: Households in Tshwane by refuse removal service, 2011 vs 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 22 indicates the households in Tshwane by the type of refuse removal service accessed over the 2011 – 2015 period. As indicated in the figure, the percentage of households in Tshwane with access to refuse removal service by authority on a weekly basis increased from 80.9 percent in 2011 to 83.8 percent in 2015, the percentage of households with access to refuse removal service by an authority for less often than weekly declined from 1.2 percent in 2011 to 1.0 percent in 2015, the percentage of households with access to refuse removal service by community members increased from 3.0 percent in 2011 to 3.2 percent in 2015, the percentage of households utilising personal refuse removal efforts (own dump) decreased from 11.2 percent in 2011 to 9.5 percent in 2015 and the percentage of households with no access to refuse removal services declined from 3.8 percent in 2011 to 2.6 percent in 2015.

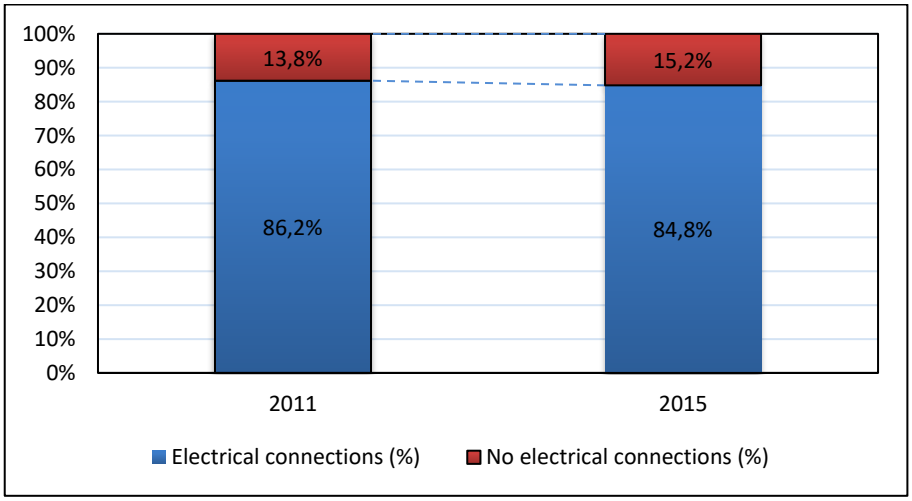


Figure 23: Households in Region 5 with electrical connections (%), 2011 - 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 23 indicates the percentage share of households with electrical connections in Region 5. As indicated in the figure, in 2011, approximately 73.2 percent of the households were connected to electricity and this percentage share has since declined to approximately 69.2 percent in 2015. As alluded to earlier, this decline can be attributed to that the total number of households occupying formal dwelling units over the 2011 -2015 period increased by approximately 7 percent compared with an increase of approximately 36 percent for households occupying informal dwelling units in Region 5.

6.1.6 Welfare indicators

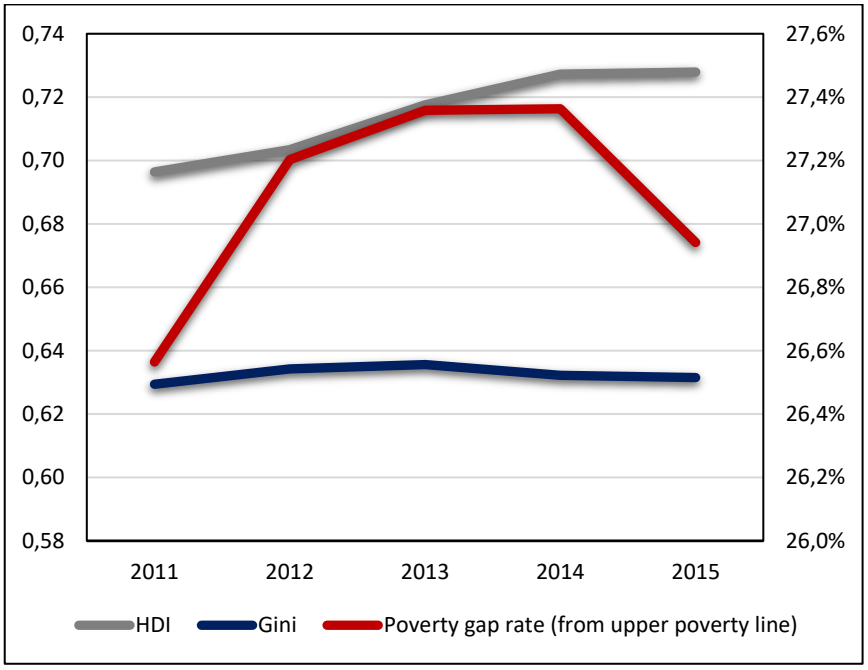


Figure 24: Performance of welfare indicators (HDI, Gini coefficient and poverty gap rate) in Region 5, 2011 – 2015
Source: IHS Global Insight, Regional eXplorer 1029 (2.5w), 2015

Figure 24, indicates the performance of social welfare indicators (Human development index, Gini coefficient and the Poverty gap rate) relating to Tshwane for the period 2011– 2015. The Human Development Index (HDI) is a composite relative index used to compare human development across population groups or regions. HDI is the combination of three basic dimensions of human development which are: long and healthy life; knowledge and a decent standard of living. Tshwane HDI improved from 0.70 in 2011 to 0.73 in 2015.

The Gini coefficient is a summary statistic of income inequality, which varies from 0 to 1. If the Gini coefficient is equal to zero it means that incomes are distributed in a perfectly equal manner, indicating a low variance between high and low income earners in the population. If the Gini coefficient is equal to one, income is completely inequitable, with one individual in the population earning income, whilst everyone else earns nothing. The Tshwane Gini coefficient has remained unchanged over the 2011 - 2015 period at 0.63.

The poverty gap rate is used as an indicator to measure the depth of poverty. The gap measures the average distance of the population from the poverty line and is expressed as a percentage of the upper bound poverty line, as defined by StatsSA. As indicated in the figure, the poverty gap rate has worsened from 26.6 percent in 2011 to 26.9 percent in 2015.

6.2 Project Specific Economic aspects

The development is located close to various industrial areas such as Silverton and other industrial parks which also implies that the development is able to effectively interact with different uses. A wide area has been considered for the catchment area, stretching to include all areas within the City of Tshwane Municipality, i.e. CBD, Centurion, Soshanguve, Ga-Rankuwa, Mabopane, Hammanskraal.

Developments of such nature and scale can strengthen local communities, improve the urban environment, provide quality green spaces and social infrastructure. The direct and indirect economic benefits derived from the property development process include direct added value to the economy, employment opportunities across different segments of the labour market, and the generation of rates and taxes and taxes for different tiers of government. It should be emphasized the benefits of large mixed-use developments are progressively realised as the development progresses over numerous years. Both public and private sectors have a role to play in ensuring that project socio- economic benefits are achieved and that maximum socio-economic benefits are derived.

The proposed development has a role to play in responding positively to priorities set out in the City of Tshwane's IDP. The successful completion of the development will respond positively by;

a) Promoting local economic development,
b) Promoting economic inclusion,
c) The development of safe communities,
d) The delivery of improved infrastructure,
   - building integrated communities and
   - the delivery of affordable housing,
e) The Project will have a profound effect on the City of Tshwane housing market, which also leads to additional schooling, retail and businesses,
f) The significant size of the Project will be the source of massive job and skills creation which in turn will lead to the fast growth of the City of Tshwane and areas in proximity.

It is important to emphasize that the completion of the development would be phased and could take some years to complete, altering final values and costs.

The expected total development costs for this development are R9,8 Bn, with the final value of the completed development estimates at approximately R25,8 Bn. It should be noted that some 40% of total construction costs can be attributed to labour related costs supported both skilled and unskilled labour. It should also be noted that the development costs reflect construction costs and Professional fees, while other costs such as marketing etc. were excluded . This was necessary to focus as much as possible on costs that have a direct impact on employment creation and value added in the construction phase .

Through the multiplier effect (e.g. consumption expenditure created through expenditure from salaries

) the direct value created is enhanced through an income multiplier of approximately 2.5 (Enno Schroder et al Institute of Economic Justice, 2020). This would suggest that the direct and indirect value added to the economy could be in the region of R24,6 billion.

The value added derived from the construction/ development sector tends to be highly supportive of the local economy with imported components being a relatively low proportion of total expenditure.

6.3 Project Specific Social aspects

Building activity generates skilled, semi-skilled and unskilled employment opportunities. Estimates (StatsSA; labour survey/SARB Quarterly Bulletin and projects undertaken by the author (IHS Social Audit 2012 /Cape Town Foreshore), likely socio-economic impacts and preliminary cost benefit review), suggest that between seven to eight direct and indirect employment opportunities (which includes the employment multiplier) are created per one million Rand value spend on construction expenditure. These employment opportunities are often sourced in the local economy and therefore have a direct positive impact on local economic development. On average some 60% of labour time is dedicated to unskilled labour with 40% attributed to skilled labour

Based on a total construction cost of R9,6 billion (excluding land , professional fees and other costs), it is estimated that the project should generate approximately 67,441 direct and indirect employment opportunities during the entire development period; these would be employment opportunities in the direct construction process and the sectors delivering good and services to the construction sector. This employment would be split between skilled and unskilled workers in approximately the following segments.

Table 7: Direct and Indirect Employment Opportunities

	Share of Total Formal Employment	Direct /Indirect Employment
Skilled formal	13%	8,767
Semi-skilled	68%	45,860
Low-skilled	19%	12, 814
Total	**100%**	**67,441**

Employment opportunities are also indirectly created through the leasing and management of completed developments. An estimate suggest that this could be in the region of 5,400 direct and indirect employment opportunities per annum.

A successful property development of this scale provides further indirect softer benefits such as the following.

a) The provision of housing units which alleviates restricted housing supply and potentially improves affordability,
b) The provision of quality housing and an appropriate urban environment. This has positive social implications in spheres of public health, school and quality of life,
c) The provision of social infrastructure, schools, parks, health care facilities and other social infrastructure,
d) Improvement in the urban environment . A successful property provides a further catalyst for

residential and commercial developments in the vicinity of the development,

e) Skills acquired by workers during the construction phase and long-term management of property.

f) Opportunities for large , medium and small-scale developers .

These benefits are difficult to quantify but are significant in meeting the socio- economic broader objectives of the city and can reduce pressure on the public sector to provide social infrastructure

6.4 Project Specific Visual and Aesthetic Issues

The site currently is viewed as an undeveloped rural area of land, although it is surrounded by existing rural residential development, with the established Mooikloof to the north and the approved Grootfontein development to the south. As the site is predominantly covered and invaded with black wattle, it can be viewed as overgrown and densely vegetated.

The proposed development of the residential units are of a high standard, nature, quality, as it is the applicants intention to develop an inclusive residential estate on the site. It is intended that buildings will be developed in accordance with an architectural theme and controlled by means of architectural design guidelines, in an endeavour to achieve a development of exceptionally high quality.

Figure 25: Architectural character allows large open space and tree lines roads.

6.5 Safety and Security

As the various phases are developed it will be enclosed. Currently the site does not experience or create any major security or crime conditions in the area.

6.6 Heritage, Archaeology and Paleontology.

The DFFE screening tool as well as the South African Heritage Resource Information System (SAHRIS) shows that the site has a high potential for fossils due to the geological shale formations. It is not possible to inspect the entire site to determine the actual findings, but the Environmental Management Plan will provide for mitigation measures if any fossils are discovered or found during construction.

7. STAKE HOLDER ENGAGEMENT

The 2003 Environmental application indicates in its summary that:
A public participation programme was initiated with notices on the property, in the press and the circulation of notices to interested and affected parties. Little public interest has been shown.
Four appendices were attached, but these could not be sourced from the original submission:

APPENDIX 3	*Publication of Notice in a Local Paper*
APPENDIX 4	*List of Affected and Interested Parties Contacted*
APPENDIX 5	*Letters Sent to Affected Parties*
APPENDIX 6	*Comments from I&AP's*

The 2023 NEMA Part 2 Amendment application included a public participation process. The process was conducted according to the minimum requirements of NEMA as per Chapter 6 – Public Participation of Regulation GNR 326 of 7 April 2017. This process has been the only public participation process for work conducted on the site. (Refer to **Annexure J**)

Environmental applications that were conducted for work on external services followed the same process.

The PPP forms a fundamental part of the amendment application procedure and is one of the most important aspects of the environmental authorisation process. Its aim is to provide an opportunity for I&APs to obtain clear, accurate and comprehensive information about the proposed development, its alternatives and / or the decision, and the environmental impacts thereof. In addition, the process provides I&APs with the opportunity to indicate their viewpoints, issues and concerns regarding the proposal, alternatives and / or decisions. Inputs from the public, interested and affected groups are considered in the planned project development. As a result, a clear record of issues raised, and comments made is maintained in the Comments and Responses Register (CRR). The CRR is updated as and when new comments and concerns are raised.

7.1 Approach and Methodology

The overarching aim of the PPP is not only to adhere to the required legislation, but also to give as many stakeholders as possible an opportunity to be actively involved in this process. Therefore the approach to this process was to proactively identify the relevant I&APs, inform them of the proposed development

and related procedures, involve them by affording them ample opportunity to raise issues and concerns about the proposed development and consolidate those issues within the planning process.

Based on the above approach, the EAP engaged in the PPP using the following methodology in order to ensure that a complete I&AP communication process was achieved:

- Draft a Background Information Document (BID), including factual information and describing the process including a map of the area affected by the proposed development;
- Advertise the project in the prescribed newspaper, put up site notices, identify authorities and adjacent land owners, and send them a BID (according to the legal requirements);
- As I&APs respond to the advertisements and notices, register them on a I&AP database;
- Communicate relevant information to registered I&APs throughout the process, in order for them to respond and comment on the proposal;
- List the issues raised in a CRR;
- Determine the need for a public meeting and If required advertise, and record issues raised; and
- Once the draft report has been compiled, put the document out for public comment, and systematically inform registered I&APs of the opportunity to give feedback.

This report provides a description of the methodology followed and includes detailed appendices as proof of the procedure followed.

7.2 Advertisements and public awareness

The following procedures were undertaken to inform I&APs about the proposed development and also to invite them to be part of the process.

Background Information Document and Map

A detailed BID was drafted that clearly informed potential I&APs of the following:

- The background of the project;
- What the proposed development will entail;
- Where the proposed development is located;
- How I&APs can become involved in the process;
- Contact details of the relevant contact person at LEAP;
- A locality map of the proposed development area; and
- A registration form for I&APs.

A detailed map was also prepared that indicated the positions of the adjacent landowners and properties relative to the development. This is to identify landowners and occupiers of land in a vicinity of 100m from the proposed development, to register them as affected parties and inform them of the proposed development.

A copy of the BID, as per the application process, is attached to the PP report (**Annexure J**) .

Site Notices

Detailed site notices were prepared in accordance with the requirements of the Regulations:

- Site Notices were placed at the site and in the surrounding area.

A copy of the site notice and proof of placement is attached to the PP report.

Newspaper Advertisements

Newspaper advertisements were published in the following newspaper;

- The Citizen Newspaper on Friday, 17 November 2022.
- The Citizen Newspaper on Friday, 9 December 2022 - Errata
- A copy of the abovementioned newspaper advertisements (as proof) is attached to the PP report.

Adjacent Landowners

The legal requirements are very specific that adjacent landowners and occupiers of land adjoining the boundary of the property where the activity is proposed, should be informed regarding the intentions to submit an application, and should be given the opportunity to register as I&APs and raise issues and concerns on the matter.

The following procedure was followed to identify the landowners and occupiers of adjacent properties:

- Relevant I&APs surrounding the property were identified; and
- Available details of the landowners and occupiers were registered in an I&AP database.

A BID was sent to adjacent landowners and occupiers of adjacent properties in order to inform them of the intended application and development. The BID was distributed in the following manner:

- Notices were sent via e-mail, to landowners and I&APs whose e-mail addresses could be obtained through the above process;
- Notices were sent via fax, to landowners and I&APs whose fax numbers could be obtained through the above process; and
- Notices were hand delivered to those landowners who couldn't be reached by other means.

Copies of notices to I&APs are attached in **Appendix 4** to this report.

Ward Councilor and Community Organizations/Non-Governmental Organisations

The Ward Councilor is one of the key community representatives within the area of development. Therefore, he/she should be informed, and be given an opportunity to provide comments and input into the process. The procedure followed to involve the Ward Councilor was as follows:

- Ward Councilor Mr. Henning Johannes Viljoen (Ward 91) was and will be kept informed of the

proposed development.
- A copy of the above-mentioned Notice to the Ward Councilor attached to the PP report.

Local Authority and other State Organs

Several local authority departments such as Engineering Services, Traffic and Planning, National Department of Roads & Transport were contacted by the various specialists.

7.3 I&AP Registration and Written Submissions

The procedure to inform the public and I&APs regarding the process has been described in detail under the previous item.

As I&APs became aware of the project, they were requested to register as I&APs and provide initial inputs to LEAP.

The above procedure has been recorded as follows:
- The complete CRR is appended
- I&AP Registration forms and letters with initial inputs have been included in the PP report.
- The complete I&AP register is attached .

7.4 Information to I&APs and meetings

I&APs were registered during the initial phases of the project, as described under item 3 and 4 above, and provided with a BID that described the background of the project. This chapter describes how information was disseminated to the registered I&APs for feedback.

Public Meetings

Due to poor participation, ut was determined that a public participation meeting was not required. I&APs were informed that should they require individual meetings that they must contact LEAP to arrange a meeting. No requests for meetings were received.

Written Submissions

During the PPP, I&APs were requested to raise their concerns and thoughts regarding the proposed development. Furthermore, they were also provided with the opportunity to make written submission regarding their issues and concerns (Email, fax, telephone, or personal contact).

Written submissions received by LEAP have been attached to the PP report.

Summary of process

ACTION	HOW ACHIEVED
Draft a Background Information Document (BID), including factual information and describing the process including a map of the area affected by the proposed development;	BID was sent to I&APs as they register.
Advertise the project in the prescribed newspapers, put up site notices, identify authorities and adjacent landowners, and send them a BID (according to the legal requirements);	The Citizen Newspaper Again second time The Citizen Newspaper
As I&APs respond to the advertisements and notices, register them on a I&AP database;	I&AP register included in PPR.
Communicate relevant information to registered I&APs throughout the process, for them to respond and provide input on the proposal;	BID was sent out.
List the issues raised in a Comment and Response Report;	Comments and Response Register (CRR) included in the PPR
Determine the need for a public meeting and If required, arrange, advertise and hold public meetings, and record issues raised; and	No public meeting was held. Individual meetings with I&APs were not requested.
Once the Final Part 2 Amendment Report has been compiled, put the document out for public review, and systematically inform registered I&APs.	Document will be put out for comment for 30 days

This report describes the process and outcome of the PPP followed for the proposed development Part 2 Amendment process up and till April 2023. This PPP supports the formal compliance processes for the proposed development.

The Public Participation Process can, from a professional point of view, be described as having been successful and inclusive.

7.6 Stake holder engagement during construction

Stakeholder engagement is an integral part of all construction projects. It involves identifying, analyzing, and communicating with stakeholders throughout a project.

Stakeholders are the adjacent landowners, the locally affected communities and individuals and their formal and informal representatives, national and local government authorities, politicians, religious leaders, civil society organisations and groups with special interests, the academic community, and / or businesses.

The goal is to ensure that stakeholders' concerns are considered, and their feedback is incorporated into

the project's decisions. The steps that are followed during the stake holders engagement are:\

- Identify stakeholders: Consider who may be affected by the project, has an interest in it, or can influence it.
- Analyze stakeholders: Use a stakeholder analysis matrix to categorize stakeholders by their interests, influence, and impact on the project.
- Plan engagement: Develop strategies for engaging with each stakeholder group.
- Execute engagement: Communicate with stakeholders and incorporate their feedback into the project.
- Monitor engagement: Use stakeholder mapping to visualize stakeholder data and track the impact of engagement.
- Review engagement: Evaluate the effectiveness of the engagement and make improvements.

The benefits that are experiences via stakeholder engagement are:

- Stakeholder engagement can lead to more successful projects.
- It can help decision makers gain a broader range of insights and concerns.
- It can help build strong relationships with stakeholders.

The Environmental file is held at the site office, and contains the documents required by the environmental authorisation. A complaint register forms part of the Environmental file. Each complaint is logged on a form that is specifically designed to address the complaints in a concerned manner.

The complaints must be resolved and the conclusion included in the Complaint register, and it is reported in the monthly environmental audit report to be sent to the Provincial Mandated Authority.

8. RISK AND IMPACTS ASSESSMENT

8.1 Definition of terms

Construction Phase:	All construction or related activities, from occupation by the contractor, until the contractor leaves the site.
Operational Phase:	All activities related to and including the operation and maintenance of the proposed development.
Nature:	The type of effect the specific activity will have on the environment
Probability:	Degree of certainty of impacts
Duration:	Lifetime of the impact
Scale:	Spatial scale of the impact
Magnitude:	Degree/severity of impact

8.2 Methodology to identify impacts

A combination of the following methods was used to identify impacts during the EIA Processes:

Numerous sources were assessed to identify the impacts that include the specialists studies. However, to identify the gaps in the impact, other sources are also used.

8.2.1 Specialist Study Findings

The required specialist studies were conducted (as required by GDARDE as per DEA guidelines). Often more than one study was conducted in the same discipline to verify or to supplement findings. The findings of such specialist studies highlighted potential impacts on protected or endangered species and/or environments. The following shows a list of the impacts according to specialist studies:

Table 8: **Possible impacts according to specialist studies**

SPECIALIST STUDY	IMPACT IDENTIFICATION
Flora & Fauna	The habitat within the study area is mostly transformed and the indigenous vegetation was scarce. It supports a low species richness. **Anticipated Impacts** • Potential failure to relocate or monitor floral Species of Conservation Concern (SCC) will lead to loss of faunal or floral SCC within the development footprint areas in the study area. • Site clearing and the removal of vegetation will an impact on faunal and floral habitat, diversity, and the possible loss of floral SCC • Proliferation of Alien and Invasive Plants (AIP) species that colonise in areas of increased disturbances will lead to loss of favourable faunal and floral habitat outside of the direct development footprint, including a decrease in species diversity • Impaired water quality and altered flow of water within Freshwater habitats due to the proposed activities will cause loss of ecologically important floral and faunal habitat and consequently a further loss of diversity and species reliant on the Freshwater Habitats • Risk of contamination from urban spills which may pollute receiving environment will cause potential displacement and /or loss of floral and faunal species and habitat • Dumping of construction material within areas of increased sensitivity will cause loss of preferred faunal and floral habitat, diversity and SCC as AIPs outcome and replace these species • Dust generated during construction and operational activities accumulating on the surrounding floral individuals will result in declines in plant functioning leading to loss of floral species and habitat for optimal growth • The proposed development is likely to result in significant clearing of vegetation within the study area, leading to an unavoidable bare soil that could cause erosion. • The proposed development will result in the clearance of vegetated areas and further isolation and displacement of faunal species. Furthermore, ineffective control and monitoring of edge effects can result in the spread

SPECIALIST STUDY	IMPACT IDENTIFICATION
	of AIP species, which will further alter faunal habitat and subsequently faunal diversity both within the study area and the surrounding areas • Numerous species will be attracted towards the light sources and this will result in the disruption of natural cycles, such as the reproductive cycle and foraging behaviour. The lights may destabilise insect populations, which may alter the prey base, diet and ultimately the wellbeing of nocturnal insectivorous fauna • Alteration of the vegetation of the proposed site will directly, and indirectly, impact on the smaller sedentary species (insects, arachnids, reptiles, amphibians and mammals) adapted to their ground dwelling habitats.
Wetlands	**Functional and Present Ecological State** There is no wetland located on site. Water bodies within 100m from the site will be considered when development are planned within 100m.
Cultural Heritage	From a heritage perspective it is subsequently recommended that the proposed Mooikloff Smart City be approved subject to the mitigation of the heritage site. The mitigation may include the exhumation and relocation of the graves to an existing cemetery or alternatively incorporate heritage sites into the development where they can be incorporated into an open space or similar use. An archaeologist must be on stand by to be called at short notice to investigate any finds considered to be of heritage value.
Social impact	The existing communities that lies to the north, west and east of the site are currently impact by increase crime, illegal hunting, loitering and theft of farming produce, equipment, fences, and other belongings. The community must be protected by limiting access and by providing screen between the proposed development and the adjacent lands. More of the aniticipated impacts include improved livelihoods, community infrastructure development, influx of people seeking jobs and loss of agricultural land If necessary the road access must be reduced to provide only one access to the farming community and to erect gates to create a closed community
Services provision	Communication with the applicable municipal departments will be maintained to ensure adequate supply plans without hindering the supply to the surrounding areas. Bulk services are available or will be available along with required upgrades. The appropriate links will be installed to these services. No additional impact is expected with the implementation of the Environmental Management program.

The specialist findings provide mitigation measures that will be implemented to the required standards

as indicated by the legislative standards or site conditions.

8.2.2 Site Inspection

The environmental consultant and specialists conduct several site visits and identified potential sensitive environments. These areas are then red flagged to be investigated further and excluded from development.

8.2.3 Public Participation

Conducting public participation produces an issues list. Such are screened for relevant impacts which are addressed by specialist studies or identified for further investigation. A comprehensive public participation process was followed.

8.2.4 GDARDE Policies, Review / Terms of Reference

GDARDE C-Plan 3.3 as well as the policies provides the red flags that must be investigated by the specialists. These data sets include biodiversity, ridges, water bodies water courses and wetlands, high potential agricultural land and others.

Furthermore, the GDARDE officials and the different sub-directorates within the department review the application and give comments to the relevant environmental officer. The issues identified are forwarded to the environmental consultant and these issues are addressed or translated as impacts.

8.3 Impact SUMMARY

Environmental impacts can be classified according to physical impacts, bio-physical impacts and socio-economic impacts and can occur during the construction and / or operational phases.

8.3.1 Physical Impacts

- Geological impacts
- Topographical impacts
- Air quality
- Soil and land capability
- Water quality and availability – surface and ground water

8.3.2 Biophysical

- Impacts on flora and flora habitats
- Sensitive landscapes (flood plains and or wetlands with buffers)

8.3.3 Socio-economic Impacts

- Cultural and historical significance
- Noise pollution
- Visual impact
- Sites of cultural significance
- Safety and security
- Impact on ambience of the area
- Traffic increase on roads

- Services being inadequate and malfunctioning (including electricity, waste management, water, sewage management systems)
- Runaway fires due to poor fire management and lack of capacity to fight fires.
- Improved tax base
- Bulk contributions which result in the improvement of infrastructure in the area
- Crime, hunting, loitering and theft.

8.4 Anticipated and Cumulative Impacts

The impacts identified include

- changes to the sociocultural and ecological service provision,
- loss ecological structure introduction and spread of invasive vegetation,
- impacts on water quality as well as impacts on hydrology and sediment balance as the most prominent impacts during the construction and operational phases of the proposed development.
- Disturbance of soil leading to potential increased alien vegetation proliferation within the CVB wetland
- Altered runoff patterns within the landscape, leading to the potential for increased erosion and sediment laden runoff into the CVB wetland
- Increased hardened surfaces within the study area resulting in altered runoff patterns within the landscape, leading to increased erosion and sedimentation of adjacent water courses.
- Possible contamination of adjacent wetland habitat soil and surface water from hardened surface runoff leading to reduced ecoservice provision and ability to support biodiversity
- Potential changes to the hydrological and geomorphological regime as a result of increased stormwater inputs

The significance of the identified impacts will be determined using the approach outlined below.

Table 9: Methodology to Assess Impacts

1. Occurrence		**2.** Severity	
Probability of occurrence	Duration of occurrence	Magnitude (severity) of impact	Scale / extent of impact

To assess each of these factors for each impact, the following four ranking scales are used:

Probability	**Duration**
Definite/don't know	Permanent
Highly probable	Long-term
Medium probability	Medium-term (8-15 years)
Low probability	Short-term (0-7 years) (impact ceases after the operational life of the activity)
Improbable	Immediate
None	
Scale	**Magnitude**
International	Very high/don't know

National	High
Regional	Moderate
Local	Low
Site only	Minor
None	

Once these factors are ranked for each impact, the significance of the two aspects, occurrence and severity, is assessed using the following formula:
SP (significance points) = (probability + duration + scale) x magnitude
Impact significance is rated as follows:

SP - H	Indicates **high** environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP - M	Indicates **moderate** environmental significance	An impact or benefit which is sufficiently important to require management, and which could have an influence on the decision unless it is mitigated.
SP - L	Indicates **low** environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.

Also, please refer to **Annexure K** for the Final Environmental Management Program (EMPr).

Legend:	M:	Magnitude of impact	High	>70	**SBM**: Significance Before Mitigation
	D:	Duration of impact	Mod.	30 -70	**SAM**: Significance After Mitigation
	S:	Scale of impact	Low	0 - 30	
	P:	Probability of unmitigated occurrence occurring			

9. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Please refer to **Table 19** which indicates the quantification of impacts related to construction activities and **Table 20** which indicates the quantification of impacts related to the operational activities, as per the methodology identified above.

Also, please refer to **Annexure K** for the Final Environmental Management Program (EMPr).

Legend:	M:	Magnitude of impact	High	>70	**SBM**: Significance Before Mitigation
	D:	Duration of impact	Mod.	30 -70	**SAM**: Significance After Mitigation

	S:	Scale of impact	Low	0 - 30	
	P:	Probability of unmitigated occurrence occurring			

9.1 Construction Phase

Table 10: Quantification of impacts related to construction activities

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
9.1.1 Physical Impacts										
Geology	There is no expected construction related impacts on the geology of the proposed development site and surrounding areas		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• None, although geological monitoring should commence during the Construction Phase by the Geotechnical engineer
Topography	Construction activities including levelling of road and building surfaces	Erosion	4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Demolition and construction activities should preferably take place during the dry months • All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur • All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed • Where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion.
Air quality	Construction activities and vehicles on site.	Dust pollution that affects adjacent developments.	3 2	2 2	2 1	6 4	42 20	SBM SAM	M L	• Dust to be minimised by spraying down (water truck) of construction site daily • Prohibit vehicles from idling when not in use • Enforce vehicle speed limits
Soils and land capability	Site clearance for road construction and construction of units and other structures	Compaction of topsoil	4 2	2 2	1 1	6 4	42 20	SBM SAM	M L	• The top (200-300mm) layer (as applicable) of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. • This stockpiled material shall be used for the rehabilitation of the site. • Weeds appearing on the stockpiled topsoil shall be removed by hand before seeding.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
	Site vehicles and storage of fuel on site	Contamination by fuel and lubricant spillages from vehicles	3 2	2 2	1 1	5 4	30 20	SBM SAM	M L	• Provision of proper re-fueling and maintenance facilities and procedures will reduce the likelihood of soil contamination • Drip trays should be used when all construction vehicles are packed.
Water quality and availability	Storage of fuel and re-fuelling of construction vehicles	Fuel or chemical spillage and pollution of surface and/or ground water	3 1	2 2	2 2	8 4	56 20	SBM SAM	M L	• Good housekeeping by contractor • Store new and used oils in bunded areas • No co-handling of reactive liquids or solids should be allowed • Create and monitor an inventory of chemicals held on site
	There will be no construction related impact on the quantity of groundwater available to surrounding borehole users									• None, although groundwater monitoring should commence during the Construction Phase
Generation of Waste	The building rubble and solid construction waste (such as sand, gravel, concrete and waste material)		3 3	2 2	1 1	4 4	24 24	SBM SAM	L L	• The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site, i.e. a landfill licensed in terms of Section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
9.1.2 Biophysical Impacts										
Flora	Site clearing for construction activities	Loss of species diversity and habitat characteristics	5 4	2 2	1 1	10 8	80 56	SBM SAM	H M	• Most of the site will be transformed due to the requirement to develop this site as a regional node • The Environmental Control Officer (ECO) is to be trained to be able to identify any possible red data species • Set up a planting list together with the ecologist from which all rehabilitation in the development must be done – only indigenous and non-invasive species • Further information will be provided in the EMP which will be attached to the Environmental Impact Assessment Report.
Fauna	Site clearing for construction activities	Loss of species diversity and habitat characteristics	5 4	2 2	1 1	10 8	80 56	SBM SAM	H M	• Most of the site will be transformed due to the requirement to develop this site as a regional node • The wetland and riparian zones with associated flood lines to be retained • The Environmental Control Officer (ECO) is to be trained to be able to identify any possible red data species
9.1.3 Socio-economic Impacts										
Noise pollution	All construction activities	Nuisance to surrounding landowners	3 3	2 3	2 1	6 4	42 28	SBM SAM	M L	• Locate noisy machines and equipment maintenance areas as far away from sensitive receptors as possible • Adherence to acceptable working hours • Adherence to Occupational Health and Safety Act • Ear protection for workers that may be affected by noise • Further information will be provided in the EMP which will be attached to the Environmental Impact Assessment Report.
Visual integrity	Construction activities	Visibility of dust and construction activities from surrounding	3 2	2 3	2 2	6 4	48 28	SBM SAM	M L	• Apply dust control measures diligently, especially on provincial roads • Apply recommendations of specialist regarding colour and construction of site structures during the Construction Phase

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
		roads, properties and tourist locations								
Sites of cultural significance	The Heritage Impact Assessment has been undertaken and no sites, features or objects of cultural significance exist in the proposed site.		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Should any other potentially culturally significant artefacts or graves, etc. be found during construction activities all activities should be stopped until an assessment by a Cultural Heritage practitioner has been completed
Safety and security	Construction workers in the area	Increase in crime in area and increase in squatters of vacant land	4 2	3 3	3 2	8 4	80 28	SBM SAM	H L	• Proper management and planning • No construction work will be allowed on Sundays • A limited number of workers along with security guards will be allowed to sleep on site, however within a cordoned-off secure area • All staff will carry identification, access control will be enforced, and the site will be swept, and a search will be done each night • The development will have 24-hour access control and security • A CLO (Community Liaison Officer) should be employed
	Construction works	Migration of job seekers into the area in search of employment	3 2	3 3	2 2	6 4	48 28	SBM SAM	M L	• No on-site recruitment is to take place • The CLO (Community Liaison Officer) to be consulted regarding employment of members of the surrounding communities.
		Increase in construction traffic	4 3	3 3	3 2	8 4	80 32	SBM SAM	H M	• The access of large trucks will be investigated to provide a suitable access route that does not become a nuisance to existing residents

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
										• Only a specified number of trucks at any one time will be allowed onto the property • Construction vehicles and activities must aim to avoid peak hour traffic times (weekdays 7-8am and 5-6pm) • Establish an all-weather site access and wheel wash or shake down to prevent soil and materials from being trekked onto the road
		Decrease in safety due to increased traffic	4 3	3 3	2 2	10 6	90 48	SBM SAM	H M	• Security fencing and barriers • Perimeter fence patrols
Local services	Construction activities that utilise local services	Inadequate service provision to adjacent properties and malfunctioning of services	2 1	3 3	2 2	4 2	28 12	SBM SAM	L L	• The service systems are to be designed according to the minimum requirements of and submitted to the Local authority for approval. • No construction activities must commence on site prior to obtaining the necessary approval
Fire	Cooking fires by construction workers	Veld fires	3 1	3 3	3 2	6 4	54 24	SBM SAM	M L	• A designated area shall be assigned for fire making by the construction workers, so as to ensure that run-away veld fires do not occur • This will reduce air pollution by excessive smoke
Improved tax base for local municipality	Employment of construction workers	Decrease in unemployment and crimes related to unemployment	4 5	3 3	2 2	8 8	72 80	SBM SAM	M H	• Local labour to use as far as possible for the installation of services and the construction of the retirement village and associated infrastructure • Local training and capacity building programmes • Construction timeframe could be lengthy due to the extent and phased nature of the proposed development
		BEE development opportunities	2 3	3 3	2 2	4 6	28 48	SBM SAM	L M	• Contract requirements to involve and train BEE companies

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
	Local demand for goods and services	Decrease in unemployment and empowerment of local trade and industry	2 3	3 3	2 2	4 6	28 48	SBM SAM	L M	• Local products, goods and services to be utilised as far as possible during the construction phase • Local training and capacity building programmes

9.2 Operational Phase

Table 11: Quantification of impacts related to the operational phase

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
9.2.1 Physical Impacts										
Geology	There are no expected operational related impacts on the geology of the proposed development site and surrounding areas		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• None, although geological monitoring should possibly commence during the Construction Phase by the Geotechnical engineer.
Topography	Construction activities including levelling of road and building surfaces continued during operational phase	Erosion	3 2	2 2	2 1	6 4	42 20	SBM SAM	M L	• Demolition and construction activities should preferably take place during the dry months. • All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur. • All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed. • Where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Air quality	Construction activities and vehicles on site continued during operational phase	Dust pollution that affects adjacent developments Dust from the slims dams	2 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Roads will be paved, and dust will thus be eliminated
Soils and land capability	There are no expected operational related impacts on soils and land capability of the proposed development site and surrounding areas		2 0	1 1	1 0	4 2	16 2	SBM SAM	L L	• Weeds appearing on the area must be maintained and eradicated
Water quality and availability	General usage of water (household, business, irrigation, etc)	Water wastage	4 2	4 1	3 2	6 4	66 20	SBM SAM	M L	• Wastewater to be recycled and re-used as far as possible to ensure that minimum amounts are required for aspects like irrigation. • Good monitoring and management measurements to be set in place by facilities managers
	There will be no operational activities that should impact on the quantity of groundwater available to surrounding borehole users									
9.2.2 Biophysical Impacts										
Flora	General human interference and impact	Loss of species diversity and habitat characteristics	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways throughout the open spaces and conservation zones will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Landscaping guidelines which include an allowable indigenous vegetation list that attracts fauna is to be formulated and made a condition of sale • No exotic vegetation will be allowed

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Fauna	General human interference and impact	Loss of species diversity and habitat characteristics	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways throughout the open spaces (drainage line area) will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Landscaping guidelines which include an allowable indigenous vegetation list that attracts fauna is to be formulated and made a condition of sale • Minimal to no exotic vegetation will be allowed
Sensitive landscapes	General human interference and impact	Loss of valuable landscape and habitat associated to drainage line to the west of the proposed development site	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways through sensitive landscapes will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Individuals will be enforced to only use delineated walkway areas so as not to damage surrounding habitats
Conservation	Delineation of conservation corridor associated to flood lines	Rehabilitation, conservation and maintenance of this landscape and habitat – benefit to local and regional biodiversity by minimising fragmentation of ecological systems	2 4	1 4	2 5	4 8	20 88	SBM SAM	L H	• Conservation management to be done in collaboration with the local municipality

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
9.2.3 Socio-economic Impacts										
Impact on Adjacent farming community	• Increased crime • Hunting with packs of dogs. • Lack of jobs for residents. • Lack of activity for youngsters • Conflict between farming community, vagrants and loitering. • Lack of quality of life for both residents and farming community. • Continuous social despair at informal		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Dependable policing services to be provided in the new community. • Surveillance of the boundaries of the farming community. • Impenetrable wall to be erected on the boundary of the farming community for the full length of the small holdings where it borders the open space. • Full title stands for the beneficiaries to ensure the residents are also concerned about safety and security and deter vagrant and loitering. • Provide industrial and commercial services to alleviate unemployment under new residents. • Allow areas for agricultural farming to allow residents to farm the land adjacent the water course. • Provide large regional park adjacent to water course to accommodate youngsters and give the community a place to gather, picnic and recreate.
Noise pollution	As the site will be established no major impacts are expected, however, due to the phased nature of the project construction activities will continue for a lengthy period		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Please refer to the noise mitigation measures during construction phase
Visual integrity	Higher density caused by development and change in land use	Change in sense of place of the specific site, however appropriate and good design will	4 3	4 4	2 2	8 4	88 36	SBM SAM	H M	• Architectural guidelines (including aspects of roof and wall finishes, colors, heights of buildings, and lighting), as well as Landscape Architectural guidelines (screening, buffering, functioning, aesthetics etc.) for the development will be developed to promote the enhancement of this urban area and therefore creating new and valuable places with a

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
		result in an improved urban character and will positively enhance the site and surrounding urban context potentially raising economic value of surrounding areas								modified and positive urban mixed-use sense of place that is vibrant and diverse
Sites of cultural significance	The Heritage Impact Assessment was undertaken		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Should any potentially culturally significant artefacts or graves, etc. be found during the operational phase, the development management is to be informed and a Cultural Heritage practitioner is to be contacted to decide on a way forward
Safety and security	Active operational phase with variety of functions and activities ranging from residential, business and commercial	Decrease in crime due to the creation of a more secure environment and minimising of vacant land	2 4	2 4	1 2	4 8	20 80	SBM SAM	L H	• Security provided via passive surveillance • Appropriate environmental design to address safety and security issues (CSIR publication) • Good accessibility for emergency and police services
Traffic increase	Increase of residents and users of the area	Additional vehicles on road	5 3	4 4	2 2	8 4	96 36	SBM SAM	H L	• All requirements of local municipality to be adhered to • All improvements to road infrastructure as recommended by traffic engineer to be adhered to

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Local services	Operational activities not to influence the availability of services to surrounding landowners									• The engineers compiling the services report and designing services are to ensure that adequate measures are in place to ensure adequate service delivery that does not influence surrounding areas • All requirements by local municipality to be adhered to regarding service reticulation and delivery
Fire	There are no expected operational related occurrences other than normal urban activities that may result in site fires.									• Adequate positioning of fire hydrants according to Municipality's standards.
Improved tax base for local municipality	Employment of workers during the operational phase – business sector, landscaping and maintenance, cleaning, medical staff, etc.	Decrease in unemployment and crimes related to unemployment	4 5	2 4	2 3	4 8	32 96	SBM SAM	M H	• Local labour and employees to be made use of as far as possible for all aspects of the operational phase • Local training and capacity building programmes
		BEE development opportunities	2 3	2 4	2 2	4 6	24 54	SBM SAM	L M	• BEE companies to be trained and involved in during the operational phase of the development – e.g. Management of retail facilities, maintenance, landscaping, etc.
	Local demand for goods and services	Decrease in unemployment and empowerment of local trade and industry	2 3	2 4	2 2	4 6	24 54	SBM SAM	L M	• Local products, goods and services to be utilised as far as possible during the operational phase – shops, craft centre, etc. • Local training and capacity building programmes
	Increase in service delivery	Increase in taxes raised on property								• None required

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
	and number of erven									
Bulk Contributions	Improvement of infrastructure	Increased service provision, minimisation of traffic congestion								• Should we well have planned and strategically implemented in coordination with the Municipality and GAUTRANS

10. COMPARATIVE ASSESSMENT

It is believed that the subdivision of the site for residential development, commercial, business, education, public amenities and providing the required infrastructure, as determined in the various land use and spatial development plans and policies, is both logical, feasible and economically and socially sound. This is based on optimising the existing available infrastructure in the area. Additionally, the site forms an rural agricultural infill site, adjoining and in close proximity to other existing and approved low density rural residential developments. In addition, the site is highly accessible for future residents to existing community facilities, shops, other places of work, etc. The site is surrounded by existing communities and the community on the site will be of a similar high income status.

The specialist studies for the indicates that is densely invaded with black wattle and the grassland areas are highly disturbed and have no conservation value.

The subdivision of the site, therefore, will not contribute to loss of ecologically sensitive or valuable vegetation or habitat. The important and valuable habitat to the east of the site, will however, be retained.

Considerable authority emphasis is placed on the policies of “infill” and “densification,” optimisation of infrastructure and rationalising an efficient functioning of the urban form. This has its place within and close to the urban and economic cores of the urban footprint. However, these policies do not have the same applicability within rural areas, where efficient, effective and optimal use of “rural” land also has a role. Portions of land within rural areas do not all have the attributes for proactive agricultural and productive farming use and many have become degraded and neglected. The site in question has become overgrown with black wattle, which is highly invasive and creates sterile environments.

Such rural properties, served with good access and within short travelling times to places of work, shops, schools, community services and facilities, have become desirable (and becoming more so) residential environments communities. This use of otherwise unusable rural land, provides a sustainable and economically viable use to this land.

From the aforegoing, it is apparent that the site is envisaged to be used for residential living in terms of adopted and approved development policies and which is compatible with existing and approved developments in the area.

The assessment of vegetation and faunal components indicate the habitat on site has been lost to invasive exotic black wattles, although the land to the east of the site, which is relatively pristine, has been retained.

From a social perspective, the development rights shall be in accordance with the uses as indicated in the subdivision application and in accordance with the development controls in the subdivision application.

The ***benefits to the environment***, therefore, will include the sustainable and positive use of the land, which has no valuable habitat. This would also include the removal of the invasive black wattles, with the

opportunity for the re- establishment of vegetation formerly indigenous to the area.

Social benefits have noted that there is a demand for rural living to the middle and upper income community and the application forms an infill to existing and approved developments of a similar nature.

Economic benefits include the proactive and positive use of the land that otherwise has no future use or conservation value. The application is aligned with City of Tshwane policies and will provide returns in the form of rates and taxes to the Council, that would not otherwise have been accrued.

Environmental costs of the proposed development relate predominantly to an increase in physical development, with the contribution of additional impacts associated with human occupation of land, although these have been considered to be marginal.

Social costs can be associated with the increased distance for travelling for residents to places of work and community facilities, although, all residents in this income level own motor vehicles.

Economic costs can be associated with costs involved in the provision of extended infrastructure and services.

However, we are of the opinion that the benefits of the proposed development, as identified above, outweigh the costs.

11. RECOMMENDATIONS AND CONCLUSION

LEAP have undertaken an Environmental and Social Impact Assessment for the proposed development of the Reminder of Portion 1 of the Farm Rietfontein 375-JR

The impact of the proposed development on the site and surrounding areas was considered to be insignificant, particularly in the light of the nature of the existing surrounding and adjoining uses and that the development proposal is of a similar nature.

An ecological assessment indicated that the site has minimal indigenous fauna remaining on the site and that the vegetation is dominated by invasive exotic species. The geology of the site indicates no problems for construction. There will be a minimal increase in stormwater runoff, which will not impact on the Swavelpoortspruit drainage system.

The development of the site for residential activities would be of great benefit to the wider area, as it will increase the available accommodation in the area and is compatible with this existing and adjoining rural residential uses. The visual implications of the development were also assessed, particularly in terms of impact on areas surrounding the site.

A comparative assessment of the social, economic and environmental costs and benefits of the proposed

development indicated that the benefits outweigh the costs, predominantly due to the site have low environmental attributes.

Controls were recommended on the nature of the proposed development, particularly in respect of the removal of the invasive exotics and incorporating vegetation formerly indigenous to the area, to aesthetic and visual issues. Further recommendations were made with respect to the undertaking of service agreements for stormwater management and bulk infrastructural services, in accordance with service agreements with the Council. These recommendations have been made to ensure that the negative impacts of development on the environment will be minimised and positive impacts enhanced.

The consultant has identified a number of potential environmental impacts. However, the professional opinion of the environmental consultant is that, with the effective and professional implementation of an Environmental Management Plan, these impacts can be mitigated.

This environmental impact assessment was prepared in terms of the well recognised environmental management procedure as well as the provisions of the National Environmental Management Act 107 of 1998 and on the strengths of the information prepared at the time.

11.1 IFC - ENVIRONMENTAL AND SOCIAL CHECKLIST

11.1.1 Introduction from IFC

IFC guidelines requires that the checklist should be used in conjunction with them and, where appropriate, the relevant E&S Briefing Notes.

This checklist provides a general overview of typical E&S issues which may be encountered in an investment. However it is important to assess every investment based on its own specific circumstances and risk factors including main business activities, scale of operation, technology, location, as well as company commitment capacity and track record. For example, depending on the company's operations and locations, issues such as negative impacts on Indigenous Peoples and cultural heritage may apply. Similarly each investment will provide different opportunities.

11.1.2 MOOIKLOOF SMART CITY

The checklist provide the responses for the development anticipated at Mooikloof Smart City

11.1.3 Performance Standard 1- General E&S management

Guideline:

Evidence of an effective Environmental and Social Management System (ESMS) is a leading indicator of a company's ability to assess and manage risk, as well as identifying opportunities where better E&S performance can drive value creation. Underpinning the effectiveness of the ESMS is the Company's Commitment, Capacity and Track Record (CCTR), and guidance on assessing CCTR is provided in CDC Guidance: Assessing Company Management's Commitment, Capacity and Track Record.

The structure of a company's ESMS will in many instances be similar to that developed in the Fund ESMS (ie (i) development of an appropriate Policy, (ii) identification of risks and issues, (iii) development of management practices and Standard Operating Procedures, (iv) development of internal capacity and accountability mechanisms, (v) implementation of an appropriate stakeholder engagement program and grievance mechanism, and (vi) monitoring and reporting procedures. Additionally for company's it may be appropriate to develop emergency preparedness and response capacity where a company's operations generate physical risks for workers or local communities.

The questions below will help clarify the extent to which the company has an ESMS that is appropriate in terms of scope, sophistication and efficacy. Refer to CDC E&S Briefing Note - Environmental and Social Management System (Company-level).

Discussion points/questions	Verification and information sources	Response to questions
E&S policy		
• Does the company's policy focus on the key E&S risks and opportunities? • Does it cover the full range of issues (including labour and employment practices, supply chains or other third parties) and clearly articulate the standards that the company will seek to achieve? • What E&S standards does the Policy seek to achieve?	Hold meetings with (as appropriate): • Senior management. • HR staff. • E&S staff. • Employees.. • Contractors (where relevant). Review:	• The policy is short and clearly worded. • The Policy meets the criteria to - Clearly articulate the E&S objectives and principles that guide the company to achieve sound E&S performance. - Provide a framework for the E&S assessment and management process. - Specify that the company will comply with the local and international applicable laws and regulations and, where

Discussion points/questions	Verification and information sources	Response to questions
• What are the accountabilities for implementation and oversight of policy implementation? • Has the Policy been communicated to employees or others (including investors)? • Is the Policy public and are there commitments to report on progress? • What evidence that the policies evolve over time?	• E&S Policy.	appropriate, with international standards (e.g. IFC Performance Standards). - Specify the individuals who will be accountable and responsible for the implementation of the policy. - Be communicated to and available to all levels of the organisation. - Approved by a representative of the senior management team and dated.
Identification of risks and opportunities		
• How have E&S issues been identified (ESIA, E&S audit) and what evidence is there that the company has implemented recommendations? • Does the baseline assessment seem credible and accurate? Does it fully assess impacts in the company's "area of Influence" Does it focus on the key risks and issues that are identified in the CDC sector and briefing notes? • Consider in particular whether labour, Green House gas emissions, supply chains, third party construction, and community health and safety have been assessed. • Ask how the company adjusts its focus between construction and operational phases if relevant. • What controls and expectations does the company have in managing the E&S performance of third party contractors (especially during construction work)?	Hold meetings with (as appropriate): • E&S staff. • HR staff. • Employees. • Contractors (where relevant). Review: • E&S Impacts Assessments (ESIAs). • Internal/External audits • Relevant procedures to assess risks and impacts. Site visits.	• Mooikloof Smart City received and Environmental Authorisation on 2005 and subsequent amendments have been done to ensure compliance with the National Environmental management Act 107 of 1998 regulations. • Monthly Environmental Audit reports are compiled and provided to the development team to address the non-compliances and the report is also submitted to the provincial mandated authority.
Management programmes		
• To what extent is there a document (s) or evidence of systematic processes that would ensure the effective implementation of an ESMS?	Hold meetings with (as appropriate): • HR staff. • E&S staff • Employees.	The Environmental Audit report ad compiled according to the IFC standards, The reports are filed on site, a copy is kept in the administration office, and a copy is sent to the Mandated Authority.

Discussion points/questions	Verification and information sources	Response to questions
• Who is responsible for these documents (ie in terms of updating, communicating their requirements, ensuring that they are implemented)? • Is there evidence of evolution of approaches and practices over time?	• Contractors (where relevant). Review: • Management programmes and plans (e.g. waste management plan, Occupational Health and Safety management plan, Biodiversity Management Programmes). Site visits.	The reports provide a summary checklist for the environmental authorisation and the Environmental management plan
Development of internal capacity and accountability mechanisms		
• Do staff with responsibilities for implementing the ESMS have appropriate skills, capacity and authority to ensure it is implemented? • Which member of the senior management team has oversight for the ESMS, do they seem engaged and do they have sufficient time to devote to oversight? What do they see their role as being? • Are the responsibilities of other employees clear and understood?	Hold meetings with (as appropriate): • HR staff. • E&S staff • Employees. • Contractors (where relevant). Review: • Training programmes and records. • Internal/external audits. Site visits.	• The auditors are registered Environmental Assessment Practitioners who do induction meetings with the staff on site at a regular basis and refresher courses are given twice a year. • The onsite staff then has toolbox talks with all the labourers and supervisors on site at least once a week to address issues of concern and to provide reminders of required actions and conduct on sire.
Emergency preparedness and response		
• Are there risks of infrastructure failure, chemical release or other emergency circumstances that could affect employees or others? • What communication and outreach is in place to ensure that these parties understand risks and response in the case of incidents?	Hold meetings with (as appropriate): • HR staff. • E&S staff • Employees. • Contractors (where relevant). • Local communities (if relevant).	• Emergency preparedness and response systems are in the site file and is regularly assessed for completeness, to ensure continued and appropriate prevention and mitigaion any harm to people and/or the environment. • The emergency preparedness and response activities is periodically reviewed and revised, as necessary, to reflect changing conditions.

Discussion points/questions	Verification and information sources	Response to questions
• Are government emergency response services able to manage the consequences of an incident? What support will the company provide?	Review: • Training programmes and records. • Internal/external audits. Site visits.	• Where applicable, Balwin assist, inform and collaborate with potentially Affected Communities and local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to ensure effective response.
Stakeholder engagement program (SEP) and grievance mechanism		
• Does the company have a SEP? • Does the company disclose information on E&S performance to local communities? If so what information and does it seem appropriate to the audience? • Do communities (or other stakeholders) feel that their interests have been taken seriously by the company? • How does the company respond to any criticisms that it receives from stakeholders? • Is the SEP the responsibility of other parties (usually government agencies?) Assess the adequacy and completeness of this.	Hold meetings with (as appropriate): • HR staff. • E&S staff - Community Liaison Officer. • Employees. • Contractors (where relevant). • Local communities (where relevant). Review: • Stakeholder engagement programme/plan. • Grievance mechanism (for workers and local communities). • Stakeholder engagement reports and records. • Grievance register. Site visits.	Refer to the SEP under separate document.
Monitoring and review		
	Hold meetings with (as appropriate):	

Discussion points/questions	Verification and information sources	Response to questions
• What does the company monitor and who does it report this information to? • What evidence is there that monitoring shapes and informs company practices? • Does the company use external monitors, if so why? • Are there specific E&S performance targets? If so how are they identified and who monitors progress in achieving them? What consequences if targets are not met? • Which external audiences receive E&S reports and why?	• Senior management. • HR staff. • E&S staff. • Employees. • Contractors (where relevant). • Local communities (where relevant). Review: • Annual reports • E&S committee meeting notes • Evidence of evolution of practices and targets as a consequence of monitoring • Senior management (or Board) minutes that indicate E&S monitoring has been discussed and that oversight of E&S performance is acknowledged as senior management responsibility Site visits.	• The onsite E&S monitoring and audit system is adjusted to meet the requirements of new and updated regulations and/ or municipal bylaws. • The onsite monitoring programme is overseen by contracts managers, who are senior management.

11.1.4 Performance Standard 2: Labor and Working Conditions.

Labour and working conditions are addressed in the in SHEQ procedures

11.1.5 Performance Standard 3: - Pollution prevention and resource use efficiency

Guideline
Many companies will use chemicals, generate waste and effluents, or use energy and water in significant amounts. It is therefore important that E&S DD specifically considers how these factors can be managed, and reduced where possible, and whether there are opportunities to enhance E&S performance through a more efficient approach.

Discussion points/questions	Verification & Information Sources	Response to questions
Reducing waste and preventing pollution.		
• What production processes does the company use? Can these adversely impact the air, water, soil, local communities, fauna and/or flora? • Does the company produce or use any hazardous chemicals, (agrochemicals, pharmaceuticals, CFCs etc) and wastes that are deemed illegal under applicable local or national regulations. Does it use materials which are subject to internationally agreed phase-outs or bans? • What are the arrangements for storage, handling and management of chemicals (training, control of spills, disposal of chemical containers, provision of PPE etc.)? • How does the company minimise storage, handling transfer and disposal of hazardous, toxic and other waste and effluents? • What waste and effluent streams does the company generate and what evidence is there that the company is actively reducing and managing these as much as possible? • If contractors are used to dispose of solid waste, does the company monitor them and have documentary evidence of safe and legal disposal (i.e. duty of care for waste management)? • Could there be liabilities from the use of chemicals or from historic / more recent pollution (e.g. soil contamination)?	Meetings with (as appropriate): • E&S staff. • Operators. • Contractors (where relevant). Review (as appropriate): • Process flow diagram / Process description. • ESIA (particularly in the case of greenfield Projects / expansions). • Historical site uses, current and former bulk storage of hazardous materials. • Air emissions monitoring plan. waste and wastewater management plans, integrated pest management plan (IPM) for agribusiness. • Other plans as appropriate (e.g. radiation management plan); • Data/records on air emissions, wastewater discharges, waste generation and hazardous materials usage. • Material safety data sheets (MSDS).	• The use storage and disposal of chemicals and other materials and as well as the risks, and impacts is addressed in the Environmental Management Plan (EMP) which are in the site office. • It is used to conduct inductions and tool box talks. • Emergency response plans indicates how to treat accidental exposure and to contain any spills or discharges. • When required, MSDS that define safe storage and handling of hazardous material is filed on site. • Regular training is conducted to ensure the workforce is aware of safe working requirements. • Site have a designated waste facility where the waste is separated and stored for collection by recyclers.

Discussion points/questions	Verification & Information Sources	Response to questions
• Could the company be associated with other forms of pollution (e.g. noise, electromagnetic fields, odours, pathogens, visual impacts)?	• Internal and external audit reports (may include audits on contractors); and • Relevant certificates (e.g. ISO 14001). Perform site visits.	
Energy and water use efficiency		
• What is the company's primary energy and water source? • Does the company have a clear understanding of energy and water costs (or are they aggregated within a general operating budget)? • Has the company undertaken an energy or water use audit? If so, what were the conclusions and what actions were taken. If not, explore the rationale for not undertaking one. • Where energy is supplied by the national grid, are there any risks associated with this supply (e.g. power outages or dramatic price increases). • What technically and financially feasible renewable energy options are available to the company?	See above.	• The site has installed a central solar facility
Greenhouse gas (GHG) emissions and Climate Change		
• What are the main energy sources used by the company? Does this include fossil fuels? • Does the company generate GHGs? • What plans or actions has the company undertaken to control and/or reduce emissions? • Are GHG emissions seen as a business risk? • Are the company's operations or assets at risk from climate change (including increased flooding, drought or other severe	See above.	• The development actively addresses the Climate Action plan of the City of Tshwane with focus on reducing energy, water, waste while also addressing potential flooding and heat spells. • Electric car charging points are provided at the lifestyle centre of the development

Discussion points/questions	Verification & Information Sources	Response to questions
weather events), business disruption or damage to assets and production from these events?		
Pesticides and other Agrochemicals		
• Does the company produce or use agrochemicals that are deemed illegal under applicable local or national regulations, or which are subject to internationally agreed phase-outs or bans? • Can the company provide an inventory of the agrochemicals it uses and are any of these rated as extremely hazardous (1a) or hazardous (1b) according to the World Health Organisation (WHO)? • Ask the company to describe how it uses agrochemicals, specifically: I. How and where chemicals are stored, what controls are in place to access and use chemicals, and what measures are in place to dispose of old agrochemical containers; II. What training and safety procedures are in place for people who use chemicals; III. What monitoring is undertaken to ensure maximum efficiency and efficacy of use, and what monitoring is undertaken of the receiving environment (e.g. water courses, local communities) to ensure that adverse impacts are not evident? Is there any consultation with local people? IV. What alternatives to agrochemical use are evident? Integrated pest management – IPM should form part of all farming systems – is this systematic or *ad hoc*?	See above	• The concept of an eco estate is promoted and the management company receives a Operational Management plan that • Specifically addresses the aspect of no pesticides in open areas. • Residents are also encourage to use natural pest control rather than store bought pesticides or insecticides.

11.1.6 Performance Standard 4: - Community Health, Safety, and Security

The Community Health, Safety and Security is addressed in the SHEQ policy of Balwin

11.1.7. Performance Standard 5: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Guideline

Biodiversity includes flora and/or fauna, their supporting habitats (e.g. forests, wetlands) and the services that nature provides to mankind (ecosystem services) such as clean water or an environment that enables foods and fibre crops to grow. Biodiversity provides the inputs and materials for many production processes and corporate impacts such as habitat conversion, water pollution or poor natural resource management can threaten biodiversity. Therefore biodiversity management is a significant - if under-recognised - issue for many companies.

Sectors such as agribusiness, forestry and extractives have the potential to cause the most significant biodivesity impacts, but it is important to ensure the risks and impacts on biodiversity are adequately considered for all sectors. Every effort should be made to avoid and reduce impacts which could significantly affect key ecosystem services used by local communities, as well as protected or internationally recognised areas and/or critical habitats.
Understanding biodiversity is often complex. If there are material risks and/or impacts associated with an investment, fund managers should consider appointing third party professionals for technical advice, particularly where an investment is likely to present significant risks or adverse impact to biodiversity and ecosystem services..

Discussion points/questions	Verification & information sources	Hints and tips
The value of biodiversity and the risks to biodiversity		
• Does or could the company impact biodiversity (e.g. through conversion of habitats to other land uses, introduction of non-native species, extensive water abstraction)? What is the company doing to prevent or minimise these risks and impacts? Is there a Biodiversity Management Plan (BMP)? • Does the company adversely impact legally protected and/or internationally recognised areas (e.g. RAMSAR sites)? • Could the company impact endangered or critically endangered species?	Hold meetings with (as appropriate): • E&S staff. • Where necessary other relevant parties (e.g. authorities responsible for managing legally protected areas). Review (as appropriate): • ESIAs. • Biodiversity Management Plan.	• Mooikloof Smart City can be considered a Brownfield site sice it is entirely invested with alien vegetation in the form a=of Black wattle which is an aggressive invasive species which is very difficult to eradicate due to its vigorous seed bank and ability to germinate for ears after the plants have been removed. • A Alien removal plan is being implemented at the site. • Due to the low biodiversity value of the land, the faunal richness is almost non-existent. • To increase and restore the biodiversity on the site, indigenous plant materialise used that promote insects to return which brings birds and

Discussion points/questions	Verification & information sources	Hints and tips
• Does the company rely directly or indirectly (via supply chains) on the goods or services provided by ecosystems? If so, how does it ensure these are from sustainable sources? • Could the company's operations contribute to the protection or restoration of biodiversity in any way? • Could the company introduce invasive alien or non-native species of flora and fauna in areas where they are not normally found? • Has the company been targeted by (or is the sector subject to) NGO programmes or campaigns in relation to biodiversity?	• Biodiversity Action Plan. • Stakeholder engagement plan (particularly relevant where ecosystem services used by local communities are impacted). • Relevant data/records (e.g. data on water consumption where this can impact ecosystem services) Relevant certificates and related audit reports covering biodiversity (e.g. Global GAP, RSPO) Perform site visits.	small mammals to the site an thus steadily increases the biodiversity level.
Management of ecosystem services		
• If the company relies on renewable natural resources (for example agribusiness, food, forestry and fisheries companies), how is it managing biodiversity risks and impacts? How does it ensure its supply chains are not creating biodiversity impacts? • How does the company assess risks to production from changes in ecosystem services (particularly water and climate related)? • Could the company create impacts on ecosystems services used by local communities (e.g. water, soil, timber)? Are there measures in place to mitigate and/or compensate for such impacts?	See above.	• Fossil fuel is not used in the operations functions of the site. • The development actively addresses the Climate Action plan of the City of Tshwane with focus on reducing energy, water, waste while also addressing potential flooding and heat spells. • Electric car charging points are provided at the lifestyle centre of the development

11.1.8. Performance Standard 6: Indigenous People

Indigenous people are celebrated in the tangible and intangible heritage

Cultural heritage

Guideline

Occasionally, investments may impact cultural heritage. Cultural heritage includes physical heritage which may be obvious (archaeological features and ancient buildings) as well as intangible heritage (e.g. sacred graves or natural features that have historic and cultural significance) which may be less obvious and may only be identified through consultation with local communities. Cultural heritage also includes 'chance finds' which may be discovered during construction or development activities.

Managing impacts on cultural heritage can be complex and can create significant risks for companies and investors. Fund managers should seriously consider appointing third party professional to provide technical assistance if required.

Discussion points/questions	Verification & information sources	Hints and tips
Protection of cultural heritage		
• Could the company's operations directly or indirectly affect cultural heritage? • Have the extent/relevance of the impacts on cultural heritage been properly assessed? (e.g. through an ESIA). • If cultural heritage may be impacted, has the company obtained the necessary permits/approvals for its operations? • If cultural heritage may be impacted, has the company implemented a formal consultation and engagement process with relevant stakeholders to discuss the impacts and any mitigation measures? • Does the company have an effective grievance mechanism? • Has the company developed and implemented 'chance find' procedures? • Is the company going to use cultural heritage for commercial gain? If yes, will these benefits be equitably shared with the affected communities?	Hold meetings with (as appropriate): • Company's E&S staff. • Affected communities • In some cases, other relevant parties (e.g. government, NGOs). Review (as appropriate): • ESIAs. • Archaeological studies. • 'Chance find' procedures and relevant management plans. • Stakeholder engagement plans. • Grievance mechanism. • Agreements with affected communities. • Relevant records, including grievances, minutes of meetings with affected persons and compensation agreements. • Evidence of approvals from statutory agencies / authorities • Perform site visits.	• A heritage impact assessment was conducted nad no artefacts or structures of heritage value as fond • A small cemetery will be retinae din is current location since the descendants of the deceased cannot be found and soe the graves do not have gravestones that could identify the families of the deceased. • The EMP addresses the potential of finding any heritage artefacts, or elements and instruction is given to seize excavation or construction until a heritage specialist can investigate the site.