

REPORT

Draft Consultation Basic Assessment Report for the Upgrade of the Bezuidenhout Valley Clinic and Associated Infrastructure in Johannesburg, Gauteng Province

Client: Johannesburg Development Agency

Reference: T&PMD3463R001F0.1

Revision: 0.1/Final

Date: 01 October 2018





ROYAL HASKONINGDHV (PTY) LTD

21 Woodlands Drive
Building 5
Country Club Estate
Woodmead
Johannesburg
2191
Transport & Planning
Reg No. 1966/001916/07

+27 11 798 6000 **T**
+27 11 798 6005 **F**
Johannesburg@rhdhv.com **E**
royalhaskoningdhv.com **W**

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Author(s): Sibongile Gumbi

Drafted by: Sibongile Gumbi

Checked by: Malcolm Roods

Date / initials: MR

Approved by: Malcolm Roods

Date / initials: MR

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Executive Summary

The Johannesburg Development Agency (JDA) is proposing to upgrade the Bezuidenhout Valley Clinic and the Parking Area in Johannesburg, Gauteng Province. The existing clinic together with the parking area will be extended towards the east on a land that is zoned as Open Space and owned by City Parks. The existing clinic will be demolished and reconstructed to fit with the new design specifications. The footprint details of the proposed upgrade are listed below:

- Full site area = 6 600m²;
- Proposed clinic site = 10 00m²;
- Proposed building area = 1 550m²;
- Proposed outbuilding areas = 65m²;
- Proposed covered parking area = 265m²;
- Total coverage area = 1 880m²;
- Total consulting rooms =14.

Royal HaskoningDHV has been appointed by **Akweni Consulting Pty Ltd** to provide independent Environmental Consulting Services for the proposed project by conducting a Basic Assessment (BA) Study in terms of the Environmental Impact Assessment (EIA) Regulations 2014 (as amended in April 2017), promulgated under the National Environmental Management Act (NEMA) (Act No. 107 of 1998)(as amended). ***The upgrade of the Bezuidenhout Valley Clinic and the Parking area requires an Environmental Authorisation (EA) prior the commencement of the upgrade activities.***

A screening of the Gauteng Environmental Management Framework (EMF) Standard promulgated in March 2018 identified that the site falls within Zone 1 (Urban Development) and it was determined that the activity [LN3-15b(i)] triggered by the proposed development does not have to comply with the requirements of the Gauteng Provincial Environmental Management Framework Zone. Thus, an application for Environmental Authorisation (EA) must be lodged with the Gauteng Department of Agriculture and Rural Development (GDARD) in order to obtain an approval prior the implementation of the project.

The open canal south of the clinic property receives stormwater from the underground network directly to the west of the clinic property and overland runoff from surrounding areas and conveys water to the downstream natural watercourse in the low lying areas in the landscape. The system was developed to convey urban stormwater to the nearest natural watercourse. The canal was constructed by the local authority many years ago and cannot be defined as a wetland or watercourse as the per the National Water Act (Act No 36 of 1998) and the National Environmental Management Act (Act 107 of 1998) definitions and is not considered a natural feature. The proposed development thus poses no quantum of risk to any watercourse.

Due to the risk of activities and related stressors which are considered to be **low**, the project would qualify for licensing under a **General Authorisation (GA)**. The recent GA (August 2016) also includes a number of activities that are generally authorized for State Owned Companies (SOC's) and institutions that are then subject only to compliance with the conditions of the GA, which includes the Johannesburg Development Agency (JDA) .

The potential impacts identified by the ecological study include habitat destruction and associated disturbance to remaining faunal species, erosion and surface runoff as well as other construction related impacts. During the assessment process these impacts were found to be of low significance and can be mitigated with ease by implementing the mitigation measures provided in the EMPr.

There were no heritage impacts identified for the proposed project and a Phase One Heritage Assessment identified the Road Bridge along 6th Street across the Jukskei River in the proximity of the study area which dates back to the Historic Period.

This consultation (cBAR) follows the legislative process prescribed in the Environmental Impact Assessment (EIA) Regulations 2014 (as amended in 2017). This report constitutes the Basic Assessment process which details the environmental outcomes, impacts and residual risks of the proposed activity. The report aims to assess the key environmental issues and impacts associated with the development, and to document Interested and Affected Parties' (I&APs) issues and concerns. Furthermore, it provides background information of the proposed project, a motivation and details of the proposed project, and describes the public participation undertaken.

The objective of this report is to provide the Competent Authority (CA), with a thorough project description and BA process description. The outcome being to engender productive comment / input, based on all information generated to date and presented herein.

In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant environmental legislation that were taken into consideration during this study and are elaborated on in this report.

The **Gauteng Department of Agriculture and Rural Development (GDARD)** is the Competent Authority for this BA process and the development needs to be authorised by this Department.

This cBAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. Having duly considered the project, the Environmental Assessment Practitioner's (EAP's) opinion is that the project does not pose a significant detrimental impact on the receiving environment and can be mitigated with ease. **Alternative 1** was chosen as the preferred option. The Applicant must be bound to stringent conditions to maintain compliance and ensure a responsible execution of the project.

The impacts identified and assessed by way of risk ratings, have been extensively reported herein. This cBAR will together with all addenda be submitted to the GDARD, for decision making. The cBAR report is a culmination of scientific specialist studies' findings, public contribution *via* formal comment, and the drawing of conclusions by the EAP as the environmental specialist.

ACRONYMS

BA	Basic Assessment
BAR	Basic Assessment Report
BGIS	Biodiversity Geographic Information Systems
BID	Background Information Document
CA	Competent Authority
CBA	Critical Biodiversity Area
CBAR	Consultation Basic Assessment Report
CoJ	City of Johannesburg
DAFF	Department of Agriculture, Fisheries and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development
GIS	Geographic Information System
GNR	Government Notice Regulation
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM: AQA	National Environmental Management Air Quality Act (Act No. 39 of 2004)
NEM: BA	National Environmental Management Biodiversity Act (Act No. 10 of 2004)
NEM: PAA	National Environmental Management Protected Areas Act (Act No. 57 of 2003)
NEM: WA	National Environmental Management – Waste Act (Act No. 59 of 2008)
NFA	National Forests Act (Act No. 84 of 1998)
NGO	Non-Governmental Organisation
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NWA	National Water Act (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act (Act No 85 of 1993)
PPE	Personnel Protective Equipment
PPP	Public Participation Process
SACNASP	South African Council of Natural Scientific Professionals
SAHRA	South African Heritage Resource Agency
SWMP	Stormwater Management Plan
WUA	Water Use Authorisation
WUL	Water Use Licence

Glossary

NAME	DESCRIPTION
Activity (Development)	An action either planned or existing that may result in environmental impacts through pollution or resource use. For the purpose of this report, the terms 'activity' and 'development' are freely interchanged.
Alternatives	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
Applicant	The project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.
Biodiversity	The diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.
Buffer	A buffer is seen as an area that protects adjacent communities from unfavourable conditions. A buffer is usually an artificially imposed zone included in a management plan.
Construction	The building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.
Cumulative Impact	The impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	The demolition of a building, facility, structure or infrastructure.
Direct Impact	Impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.
Ecological Reserve	The water that is necessary to protect the water ecosystems of the water resource. It must be safeguarded and not used for other purposes. The Ecological Reserve specifies both the quantity and quality of water that must be left in the national water resource. The Ecological Reserve is determined for all major water resources in the different water management areas to ensure sustainable development.
Ecosystem	A dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous.
Environment	In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), "Environment" means <i>the surroundings within which humans exist and that are made up of:</i> <ol style="list-style-type: none"> i. the land, water and atmosphere of the earth; ii. micro-organisms, plants and animal life; iii. any part or combination of (i) and (ii), and the interrelationships among and between them; and iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
Environmental Assessment	The generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.
Environmental Authorisation	An authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.
Environmental Assessment Practitioner (EAP)	The individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.
Environmental Control Officer (ECO)	An individual nominated through the Client to be present on site to act on behalf of the Client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities.

NAME	DESCRIPTION
Environmental Impact	Change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.
Environmental Impact Assessment (EIA)	In relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application as defined in NEMA.
Environmental Issue	A concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.
Environmental Management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Environmental Management Programme (EMPr)	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.
Fatal Flaw	An event or condition that could cause an unanticipated problem and/or conflict which will could result in a development being rejected or stopped.
Groundwater	Water in the ground that is in the zone of saturation from which wells, springs, and groundwater run-off are supplied.
Hazardous Waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles as outlined in the National Environmental Management: Waste Amendment Act (No 26 of 2014).Schedule 3: Category A – Hazardous Waste.
Hydrology	The science encompassing the behaviour of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Indirect Impacts	Indirect or induced changes that may occur as a result of the activity. These types if impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity
Integrated Environmental Management	A philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity - at local, national and international level – that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision support systems or advisory councils).
Interested and Affected Party (I&AP)	Any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Method Statement	A method statement is a written submission by the Contractor to the Engineer in response to the specification or a request by the Engineer, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer when requesting a Method Statement. It contains sufficient detail to enable the Engineer to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.
Mitigate	The implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.
No-Go Option	In this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.
Pollution	The National Environmental Management Act, No. 107 of 1998 defines pollution to mean any change in the environment caused by – substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or

NAME	DESCRIPTION
	will have such an effect in the future.
Public Participation Process	A process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
Re-use	To utilise articles from the waste stream again for a similar or a different purpose without changing the form of properties of the articles.
Rehabilitation	A measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.
Sensitive Environments	Any environment identified as being sensitive to the impacts of the development.
Significance	Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).
Stakeholder Engagement	The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.
Sustainable Development	Development which meets the needs of current generations without hindering future generations from meeting their own needs.
Visual Contrast	The degree to which the development would be congruent with the surrounding environment. It is based on whether or not the development would conform to the land use, settlement density, forms and patterns of elements that define the structure of the surrounding landscape.
Watercourse	Defined as: <ol style="list-style-type: none"> i. a river or spring; ii. a natural channel or depression in which water flows regularly or intermittently; iii. a wetland, lake or dam into which, or from which, water flows; and iv. any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.
Water Pollution	The National Water Act, 36 of 1998 defined water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it – less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful <ol style="list-style-type: none"> (aa) to the welfare, health or safety of human beings; (bb) to any aquatic or non-aquatic organisms; (cc) to the resource quality; or (dd) to property”.
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

1 Introduction

The Johannesburg Development Agency (JDA) is proposing to upgrade the Bezuidenhout Valley Clinic and the Parking Area in Johannesburg, Gauteng Province. The existing clinic together with the parking area will be extended towards the east on a land that is zoned as Open Space and owned by City Parks. The existing clinic will be demolished and reconstructed to fit with the new design specifications. The footprint details of the proposed upgrade are listed below and also see **Appendix C** of this document:

- Full site area = 6 600m²;
- Proposed clinic site = 10 000m²;
- Proposed building area = 1 550m²;
- Proposed outbuilding areas = 65m²;
- Proposed covered parking area = 265m²;
- Total coverage area = 1 880m²; and
- Total consulting rooms =14.



Figure 1: Location of the Study Area



Figure 2: Location of the Proposed Clinic and Parking

1.1 Broader Description of the Study Area

City of Johannesburg (CoJ) Metropolitan Municipality is located at the centre of the Gauteng Province. The Metro is bordered by the City of Tshwane Metropolitan Municipality in the northerly direction; Ekurhuleni Metropolitan Municipality in the easterly direction, Sedibeng District Municipality in the south easterly direction and West Rand District Municipality in the westerly direction (Refer to **Figure 3**).

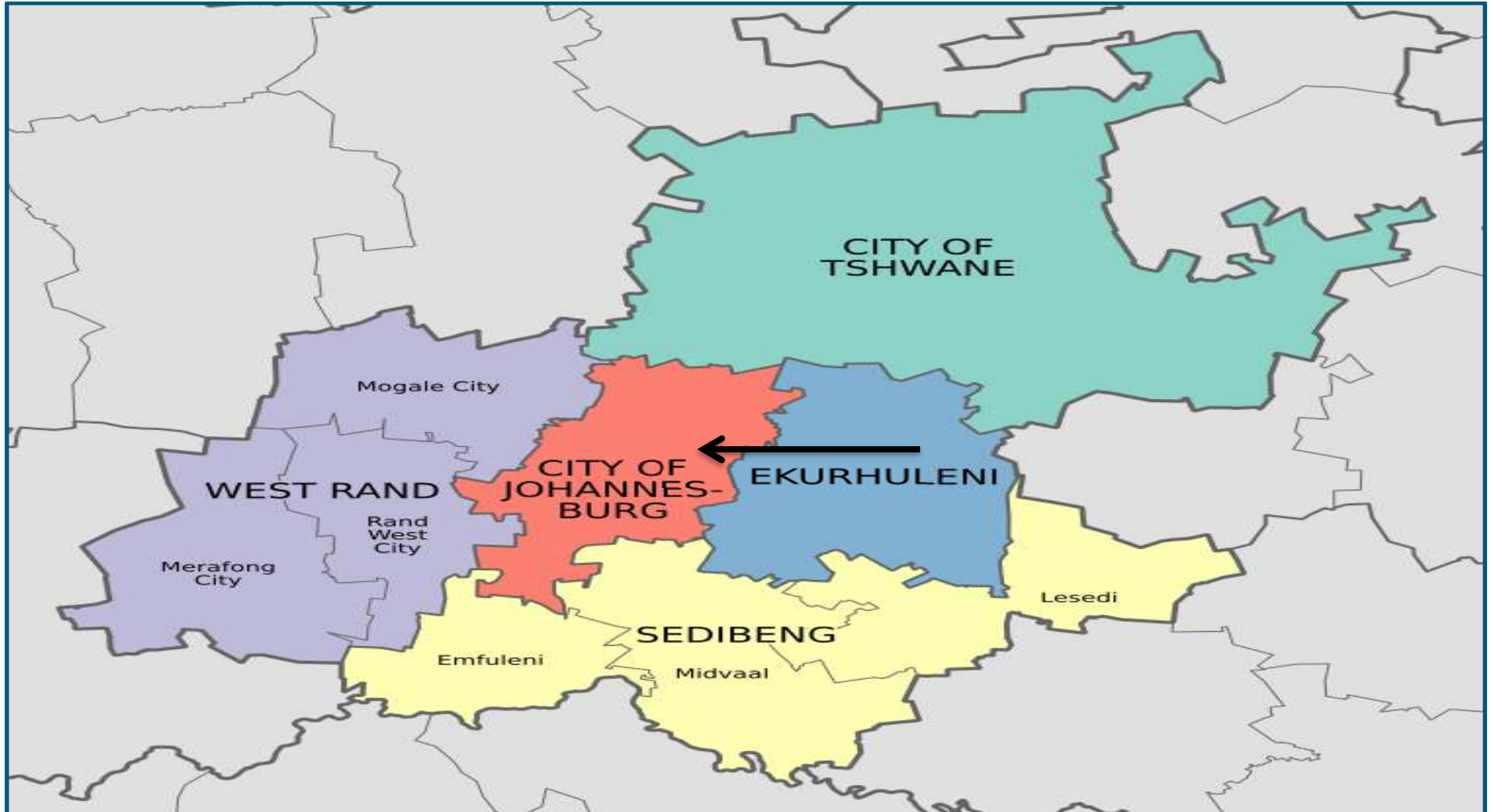


Figure 3: Broader Location of the Study Area www.demarcation.org.za/2016

1.2 Approach to the Study

1.2.1 Desktop Screening Assessment

During the desktop screening assessment to determine listed activities applicable to the project in terms of the EIA Regulations 2014 (as amended in 2017), promulgated under the National Environmental Management Act (Act No 107 of 1998)(as amended), the following were noted (**Figure 4**):

- The proposed project and the associated infrastructure are located within an Ecological Support Area (ESA).
- The major river that occurs within the study area is the Jukskei River.
- A heritage feature (bridge) dating to Historic Age was identified within the proximity of the site.
- Listing Notice 3 – Activity 15(b)(i) of Government Notice Regulation (GNR) 985 of 4 December 2014 (as amended by GNR 324 of 6 April 2017) is triggered by the proposed project.

A screening of the Gauteng Environmental Management Framework (EMF) Standard promulgated in March 2018 identified that the site falls within **Zone 1 (Urban Development)** and it was determined that the activity [LN3-15b(i)] triggered by the proposed development does not have to comply with the requirements of the Gauteng Provincial Environmental Management Framework Zone. Thus, an application for Environmental Authorisation (EA) must be lodged with the Gauteng Department of Agriculture and Rural Development (GDARD) in order to obtain an approval prior the implementation of the project.

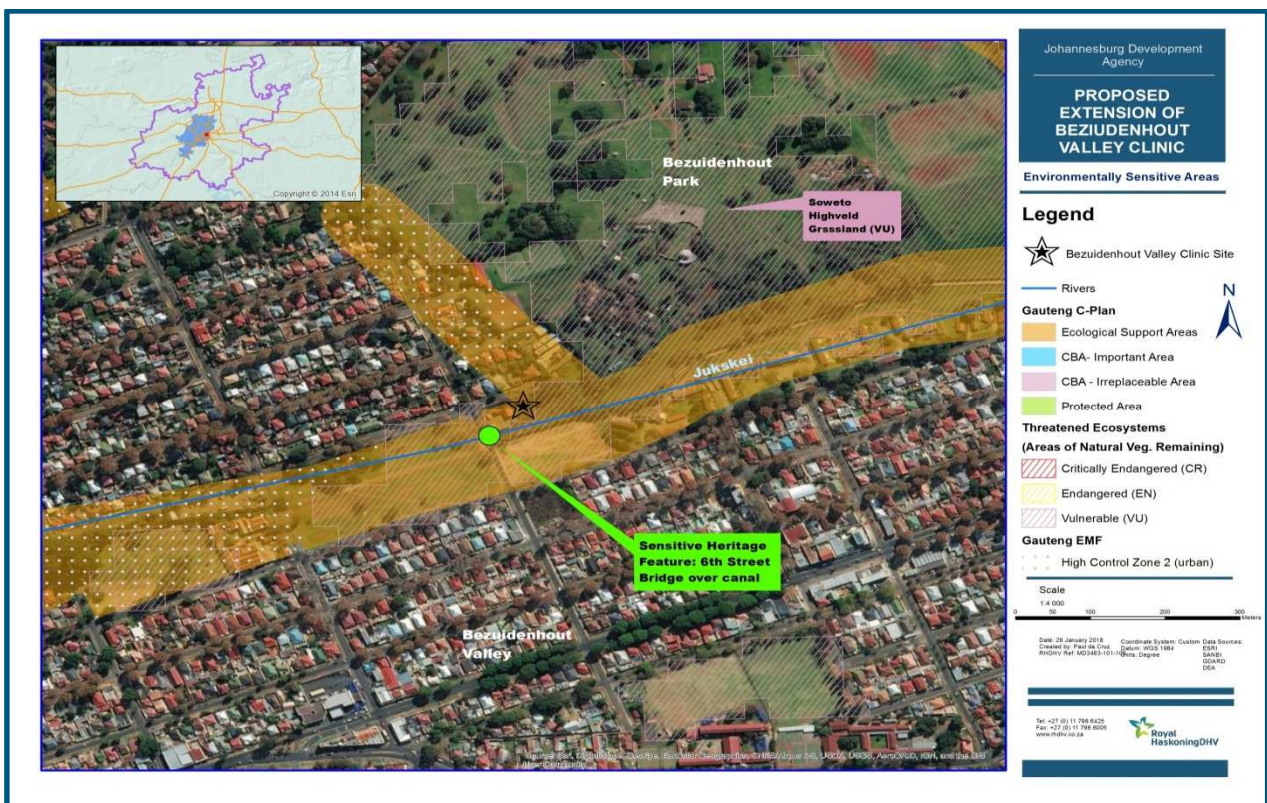


Figure 4: Sensitive Geographical Areas

1.2.2 Basic Assessment Study

A Basic Assessment (BA) study is the level of environmental assessment applied to activities listed in Listing Notices 1 and 3. The BAR aims to achieve the following:

- Determine the policy and legislative context within which the proposed activity is undertaken and how the activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed project;
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the project and the risk of impact of the proposed activity on these aspects to determine the nature, significance, consequence, extent, duration, probability and cumulative of the impacts occurring to; and the degree to which these impacts:
 - Can be reversed;
 - May cause irreplaceable loss of resources; and
 - Can be avoided, managed or mitigated.

This cBAR has been compiled in accordance with the requirements stipulated in Appendix 1 of GNR 982 of the EIA Regulations 2014 (as amended in 2017), which outlines the legislative BA process and requirements for assessment of outcomes, impacts and residual risks of the proposed development. The BAR further incorporates the findings and recommendations of the Ecology, Heritage and Surface Water specialist studies conducted for the project.

An Environmental Management Programme (EMPr) has been compiled according to Appendix 4 of GNR 982 of the EIA Regulations 2014 (as amended in 2017) for the construction and operational phases of the project. The EMPr has been compiled as a stand-alone document from the BAR and will be submitted to the GDARD along with the BAR. The EMPr provides the actions for the management of identified environmental impacts emanating from the project and a detailed outline of the implementation programme to minimise and/or eliminate any anticipated negative environmental impacts and to enhance positive impacts. The EMPr provides strategies to be used to address the roles and responsibilities of environmental management personnel on site, and a framework for environmental compliance and monitoring.

1.3 Structure of the BAR

The BAR is structured as follows:

Table 1: Structure of the Report

Chapter	Description
1	Introduction – Provides the background to the project as well as details of the specialist studies conducted and contact details for the project proponent and EAP.
2	Environmental Legislative Context – Details the pertinent environmental legislation and the applicability to the project
3	Project Context & Motivation – Provides the site locality, project description and need and desirability of the project
4	Project Alternatives – Describes the alternatives considered, including the 'no-go' option
5	Description of the Baseline Environment – Describes the pre-development context of the site
6	Public Participation Process – Explains the public consultation undertaken
7	Specialist Assessments – Describes the impact assessment and findings of the specialist studies
8	Impact Assessment – Details the impact assessment methodology and quantifies the impacts anticipated
9	Conclusion & Recommendations – Provides the EAP opinion and summarises the impact assessment as well as the recommendations.

1.4 Specialist Assessment


To ensure the scientific vigour of the BA study, as well as a robust assessment of impacts, Royal HaskoningDHV commissioned the following specialist studies in order to comprehensively identify both potentially positive and negative environmental impacts (social and biophysical), associated with the project, and where possible provide mitigation measures to reduce the potentially negative impacts and enhance the positive impacts.

- Ecology: Clayton Cook;
- Heritage: Dr Johan van Schalkwyk; and
- Surface Water: Stephan van Staden.

1.5 Details of the Project Developer

The Developer is the Johannesburg Development Agency (JDA) a subsidiary of the City of Johannesburg Metropolitan Municipality and the details of the responsible person are listed in **Table 2** below.

Table 2: Applicant Details

Applicant	Johannesburg Development Agency	
Representative	Ms Nombuso Nxumalo	
Physical Address	3 Helen Joseph St, Newtown, Johannesburg, 2001	
Postal Address	P O Box 61877, Marshalltown, 2107	
Telephone	011 688 7851	

Applicant	Johannesburg Development Agency	
Facsimile	011 688 7899	
E-mail	nnxumalo@jda.org.za	

1.6 Details of the Environmental Assessment Practitioner

The environmental team of Royal HaskoningDHV have been appointed as an independent Environmental Assessment Practitioner (EAP) by the JDA to undertake the appropriate environmental studies for this proposed project.

The professional team of Royal HaskoningDHV has considerable experience in the environmental management field. Royal HaskoningDHV been involved in and/or managed several of the largest EIAs undertaken in South Africa and within the SACD region to date. A specialist area of focus is on the assessment of multi-faceted projects, including the establishment of linear developments (national and provincial roads, and power lines), mixed-use developments, bulk infrastructure and supply (e.g. wastewater treatment works, pipelines, landfills), electricity generation and transmission, urban, rural and township developments, environmental aspects of Local Integrated Development Plans, as well as general environmental planning, development and management. The contact details of the responsible person are provided in **Table 3** below.

Table 3: EAP Details

Consultant	Royal HaskoningDHV
Contact Persons	Ms Sibongile Gumbi
Physical Address	Building No 5 Country Club Estate, 21 Woodlands Drive, Woodmead , 2191
Postal Address	PO Box 867, Gallo Manor, Johannesburg, 2052
Telephone	011 798 6449
Facsimile	011 798 6005
E-mail	Sibongile.gumbi@rhdhv.com
Qualification	MSc Environmental Science
Expertise	Sibongile Gumbi has eleven years of experience in the environmental field. Her expertise ranges from Environmental Training, Environmental Auditing and Monitoring, Environmental Impact Assessment studies, Environmental Management Plans and Programmes, Stakeholder Engagement, Project Management. Sibongile is also a registered Pri.Sci.Nat.
Signature	

2 Environmental Legislative Context

In order to protect the environment and ensure that the development is undertaken in an environmentally responsible manner, there are a number of significant environmental legislation that need to be considered during this study. This section outlines the legislation that is applicable to the proposed project and has been considered in the preparation of this report.

Table 4: Key Legislation Considered

Acts	Objectives, Important Aspects, Associated Notices and Regulations
National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended	<p>Objectives: To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state.</p> <p>Relevant Notices and Regulations:</p> <ul style="list-style-type: none"> ▪ Environmental Impact Assessment Regulations, 2014 (GNR 982 of 4 December 2014) as amended by GNR 326 of 7 April 2017 ▪ Listing Notice 3 (GNR 985 of 4 December 2014) as amended by GNR 324 of 7 April 2017 <p>Relevance to the Proposed Project:</p> <ul style="list-style-type: none"> ▪ Development must be socially, environmentally and economically sustainable. ▪ Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated; the social, economic and environmental impacts of activities including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration. ▪ 'Polluter Pays' principle. ▪ Any activity that is proposed and which is listed in the NEMA EIA Regulations requires environmental authorisation.
National Water Act (Act No. 36 of 1998) (as amended)	<p>Objectives: The National Water Act (NWA) is a legal framework for the effective and sustainable management of water resources in South Africa. Central to the NWA is recognition that water is a scarce resource in the country which belongs to all the people of South Africa and needs to be managed in a sustainable manner to benefit all members of society. The NWA places a strong emphasis on the protection of water resources in South</p>

Acts	Objectives, Important Aspects, Associated Notices and Regulations
	<p>Africa, especially against its exploitation, and the insurance that there is water for social and economic development in the country for present and future generations.</p> <p>Relevance to the Proposed Project:</p> <ul style="list-style-type: none"> ▪ Sustainable protection, use, development and conservation of water resources – including aquatic ecosystems. ▪ Defines 11 water uses and provides licencing procedures. <p>Notices and Regulations:</p> <ul style="list-style-type: none"> ▪ General Authorisation in terms of Section 39 of the National Water Act (Act No. 36 of 1998, Water Uses Section 21 (c) and (i) (GNR 509 of 26 August 2016).
<p>National Heritage Resources Act(Act No 25 of 1999)</p>	<p>Purposes: The Act provides general principles for governing heritage resources management throughout South Africa including national and provincial heritage sites, burial grounds and graves; archaeological and palaeontological sites, and public monuments and memorials.</p> <p>Relevance to the Proposed Project: South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and believes. However, according to Section 27(18) of the National Heritage Resources Act (NHRA), Act 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site. In accordance with Section 38 of the NHRA.</p>

2.1 Other Relevant Legislation and Instruments

Table 5: Other Relevant Legislation and Instruments Considered

Acts/Guideline/Policies/Environmental Management Instruments	Considerations
The Constitution (No. 108 of 1996)	Chapter 2 – Bill of Right Section 24 – Environmental Rights
National Environmental Management Biodiversity Act (Act No. 10 of 2004) and Regulations.	Provide for the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources.
National Environmental Management: Waste Act (Act No. 59 of 2008)(as amended)	Section 17 - Every attempt must be made to reduce, recycle or re-use all waste before it is disposed. Section 25 - All waste (general and hazardous) generated during construction may only be disposed of at appropriately licenced waste disposal sites.
National Environmental Management: Air Quality Act (Act No 39 of 2004)(as amended)	Section 32 - Control of dust. Section 34 - Control of noise. Section 35 - Control of offensive odours.
Occupational Health and Safety Act (Act No. 85 of 1993)	Section 8 - General duties of employers to their employees. Section 9 - General duties of employers and self-employed persons to persons other than their employees.
Construction Regulations (2014)	Contractors must comply with the Construction Regulations which lay out the framework for construction related activities.
Municipal By-laws	
Environmental Management Framework	
Spatial Development Plans	

2.2 Sustainable Development

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

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- Waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;

- A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- Negative impacts on the environment and on people's environmental rights be anticipated; and, prevented and where they cannot altogether be prevented, are minimised and remedied.

2.3 Climate Change Consideration

The proposed project will take into account energy efficient technologies and consider international best practice in terms of the construction methodologies and management of finite resources. Since climate change concerns include unpredictability and severity in weather patterns, the provision of basic human needs, such as fresh water supply, is considered critical.

The Gauteng Department of Agriculture and Rural Development (GDARD) is exploring how climate change is likely to affect the Gauteng City-Region (GCR). As part of this wider and ongoing study into where and how risks may arise from climate change, a Map has been developed collaboratively between GCRO and GDARD to map household vulnerability to disasters (Culwick et.al. 2018). Gauteng has already recorded temperature increases and changes in rainfall patterns over the past few decades (Engelbrecht et al. 2015). These changes, in combination with rapid urbanisation, population growth and poorly planned and designed settlements, pose significant disaster risk for the province.

It must be noted that the proposed project occurs in an area that is less vulnerable to climate change (refer to **Figure 5**).

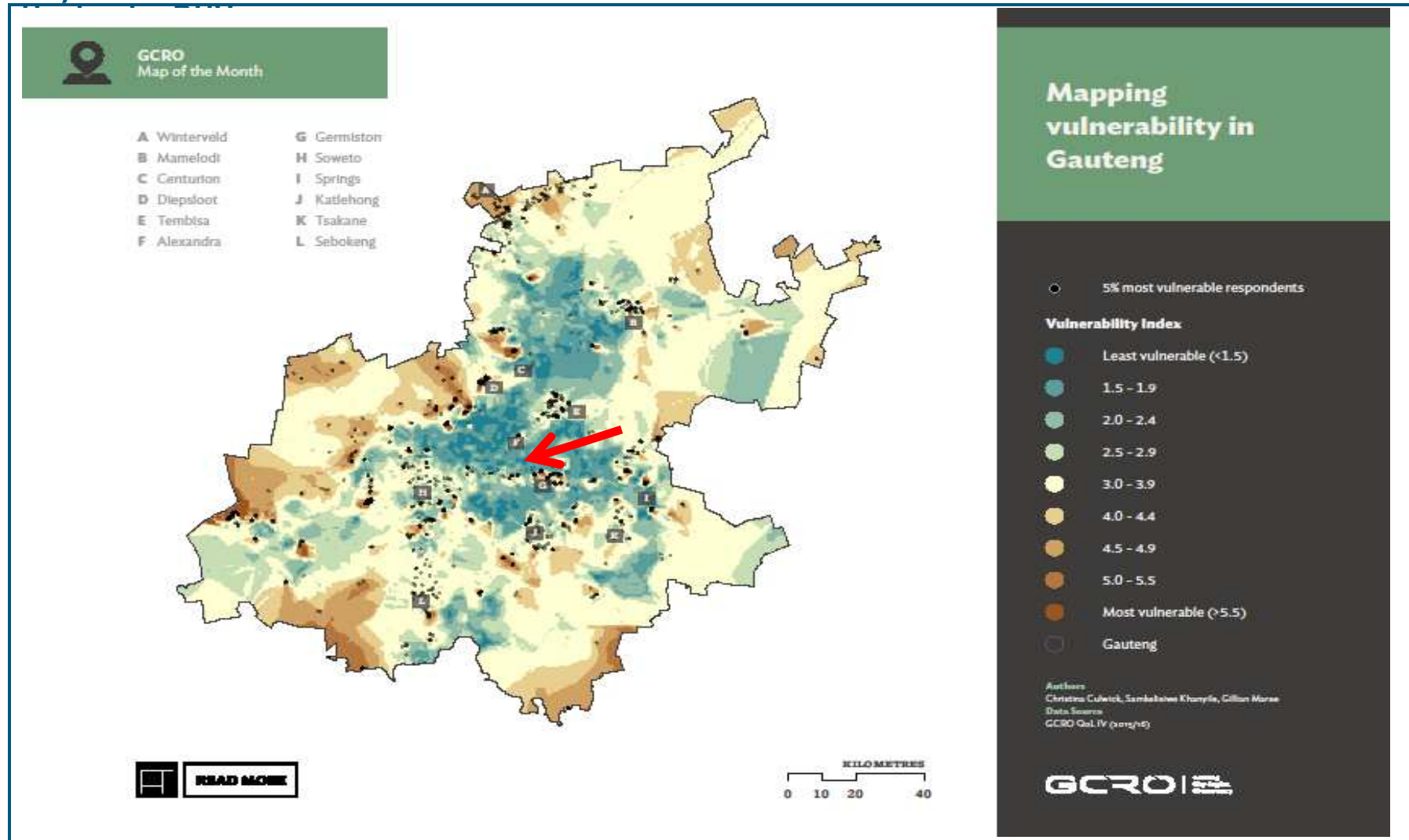


Figure 5: Gauteng Climate Change Hotspots

3 Project Context & Motivation

3.1 Site Description and Ownership

The site where the proposed upgrade will take place is located at the corner of 6th Street and 4th Street and is surrounded by residential areas of Bezuidenhout valley. The buildings of the clinic are single storey structures in acceptable condition. The land in which the proposed project is sited is owned by the CoJ – City Parks.

3.2 Co-ordinates

3.2.1 Bezuidenhout Valley Clinic

Table 6: Co-ordinates of the Site

Centre Point	
Start	End
26°11' 12.90"S	28° 05'19.58"E

3.2.2 Surrounding Land Uses

Table 7: Surrounding Land uses within a 500m Radius of the Site

Description	Y/N	Description	Y/N
Natural area	N	Light industrial	N
Low density residential	N	Medium industrial	N
Medium density residential	Y	Heavy industrial	N
High density residential	N	Power station	N
Informal residential	N	Military or police base/station/compound	N
Retail commercial & warehousing	N	Spoil heap or slimes dam	N
Office/consulting room	N	Dam or reservoir	N
Quarry, sand or borrow pit	N	Hospital/medical centre	Y
School	N	Tertiary education facility	N
Church	N	Old age home	N
Sewage treatment plant	N	Train station or shunting yard	N
Railway line	N	Major road (4 lanes or more)	N
Harbour	N	Plantation	N
Sport facilities	N	Agriculture	N
Golf course	N	River, stream or wetland	Y
Polo fields	N	Nature conservation area	N
Filling station	N	Mountain, koppie or ridge	N
Landfill or waste treatment site	N	Museum	N
Historical building	N	Protected Area	N
Graveyard	N	Archaeological site	N

Description	Y/N	Description	Y/N
Airport	N	Other:	N

Key: Y = Yes N = No

3.3 Project Description

Table 8: Existing and Recommended Infrastructure

Existing Infrastructure	Recommended Infrastructure
Stormwater and Sewage	
A Bulk Sewer reticulation system exists in the area and the clinic is serviced by the Municipality. The system is prone to silting up and possible random blockages as it was reported to back fill up during rainy days.	Log test is required to assess the flow and capacity of existing pipe to cope with existing and future demand.
Water	
Municipal bulk water reticulation system exists in the area and the clinic is supplied through a municipal connection. The clinic does not have a storage capacity for human consumption and fire.	Provision of a 24 hour elevated water tank storage facility equipped with water purifier and upgrading / improvement of the existing internal reticulation.
Building, Roads and Parking Areas	
There are no visible wall cracks detected and the roads and parking areas are paved.	Although the hairline cracks are unsightly, they do not structurally impair the building/s. The cracks should be raked out and re-caulked.

3.3.1 Triggering of Environmental Authorisation

The triggering of the environmental authorisation is outlined in **Table 9**.

Table 9: NEMA EIA Regulations 2014 (as amended in 2017): Listed Activities Triggered

GN R. 985-(2014) Listing Notice 3	Description
Activity 15	The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010. b. Gauteng i. All areas.

3.4 Project Motivation

3.4.1 Need & Desirability

The Bezuidenhout Valley clinic and surrounding clinics are currently experiencing pressure in terms of rendering adequate health care services due to the large number of people seeking these services. The



Bezuidenhout Valley clinic has four consulting rooms and services approximately 2000 patients a month in a very small space with limited resources. Therefore, the proposed upgrade is needed to improve the status quo.

Table 10: Project Need, Desirability and Benefits

Project Need			
1.	Was the relevant provincial planning department involved in the application?	YES	
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	
	As the project is for the upgrade of the existing clinic and parking space, it does not constitute a new land use and is therefore considered to be in line with the provincial framework.		
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / Explanation – N/A.		
Desirability			
1.	Does the proposed land use / development fit the surrounding area?	YES	
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	
	The existing clinic is in need of an upgrade and therefore the benefits are to ensure that there are additional health facilities provided in order to continue serving the local community.		
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / Explanation – N/A.		
5.	Will the proposed land use / development impact on the sense of place?		NO
	The clinic is already in existence.		
6.	Will the proposed land use / development set a precedent?		NO
	The project is limited to the upgrade of an existing clinic and parking area.		
7.	Will any person's rights be affected by the proposed land use / development?		NO
8.	Will the proposed land use / development compromise the "urban edge"?		NO
	The project will have no effect on the urban edge.		
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation – N/A.		
Benefits			
1.	Will the land use / development have any benefits for society in general?	YES	
2.	Explain: The upgrade of the clinic and parking area is aimed at ensuring that the local community is served well.		

3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	
4.	Explain: The community will continue to have access to the health care facility.		

3.4.2 Socio-economic Value

Table 11: Socio-economic Value

Anticipated CAPEX of the project on completion	R 8 000 000.00
What is the expected capital value of the activity on completion?	R 8 000 000.00
What is the expected yearly income that will be generated by or as a result of the activity?	Expected income is not known as this is a municipal asset not for gain.
Will the activity contribute to service infrastructure?	Yes
Is the activity a public amenity?	Yes
How many new employment opportunities will be created in the development phase of the activity?	It is not known as yet.
What is the expected value of the employment opportunities during the development phase?	Value of employment will be based on 30% construction cost (less P&G, around R 40m)
What percentage of this will accrue to previously disadvantaged individuals?	It is not known as yet.
How many permanent new employment opportunities will be created during the operational phase of the activity?	Permanent employment will depend on the City of Johannesburg's operational plan for the clinic.
What is the expected current value of the employment opportunities during the first 10 years?	Refer to the above statement.
What percentage of this will accrue to previously disadvantaged individuals?	It is not known at this stage.

4 Project Alternatives

In terms of the EIA Regulations 2014 (as amended in 2017), feasible alternatives are required to be considered as part of the environmental investigations. In addition, the obligation that alternatives are investigated is also a requirement of Section 24(4) of the NEMA (Act No. 107 of 1998) (as amended). An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity which may include alternatives to:

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

4.1 Activity Alternatives

The project involves the upgrade of the existing clinic and associated infrastructure therefore; no off-site or other site-specific alternatives have been investigated.

- **Alternative 1 (Preferred)** – this entails demolishing the existing clinic, and to build a new parking area and new clinic on the current site (including extended site to the east) (**Figure 6**).
- **Alternative 2** – this entails retaining the existing clinic, and only extending it to the new site on the east. It also entails a new parking area and bridge across the channel (**Figure 7**)



Figure 6: Proposed Alternative 1



Figure 7: Proposed Alternative 2

4.2 NO-GO Alternative

The current structure and layout of the clinic as well as the associated infrastructure do not meet all the health amenities of the local community and the upgrade is needed urgently for an efficient service. Should the proposed project not proceed as planned, the clinic will not meet the growing needs of the community. The NO-GO option is therefore, not preferred.

5 Description of the Baseline Environment

5.1 Climate

Johannesburg normally receives about 604mm of rain per year, with most rainfall occurring during summer. It receives the lowest rainfall (0mm) in July and the highest (113mm) in January. The monthly distribution of average daily maximum temperatures for Johannesburg range from 16.6°C in June to 26.2°C in January. The region is the coldest during July when the mercury drops to 0.8°C on average during the night (SA Explorer, 2017).

5.2 Geology

The Johannesburg area is composed of crystalline rocks of Archean age. They are broadly classified as granitic rocks, meta-sedimentary and meta-volcanics (**Figure 8**). The Johannesburg dome which is located between Johannesburg and Pretoria which is circular in outline consists of Archean greenstones remnants and intruded by tonalite, granodiorite, granite and migmatites, unconformably overlain by metasedimentary rocks of. The tonalites are the oldest rock types, migmatites are intermediate in age and granodiorite and granite are the youngest. The oldest granitic rocks comprise a suite of tonalitic and trondjemitic gneisses and migmatites that occupy most of the northern half of the dome. Exposure of similar rocks also occurs on the southern edge of the dome and unconformably underlies the Witwatersrand Supergroup. The Witwatersrand basin is an arcuate structural basin lying within the Kaapvaal Craton. The Witwatersrand Supergroup is divided into the Lower West Rand Group and the upper Central Rand Group.

The former conformably overlies volcanics of the Dominion Group and non-conformably overlaps Archean basement rocks of the Kaapvaal Craton. The south central portion consists mainly of a variety of homogeneous, medium grained granodioritic rocks. Locally, all rocks contain a gneissic fabric and are less developed in the granodiorite and the tonalities. The Witwatersrand Supergroup unconformably overlies basement granitoids and greenstones, as well as sedimentary and volcanic rocks of the Dominion Group. It is made of thick terrigenous sequence comprising arenaceous and argillaceous sedimentary rocks. The deposition took place between 3074 and 2 714 Ma. The part of Witwatersrand basin that lies close to Johannesburg dome is grouped under West Rand, Central Rand and East Rand Groups. The west rand group consists primarily of quartzites and shales. The Central Rand Group consists of different proportion of quartzites and shales where the sequence consists mainly of quartzites and conglomerates.

The Early Proterozoic Transvaal Supergroup comprises of relatively undeformed, unmetamorphosed volcanic rocks, quartzites, shales, dolomites iron formations, conglomerates and diamictites. The Transvaal Su-pergroup is made of relatively undeformed, unmetamorphosed volcanic rocks, quartzites, shales, dolomites, iron formations, conglomerates and diamictites. The Su-pergroup includes dolomites and iron formations of Chuniespoort Group which is overlain by Pretoria Group that comprises of predominant mud rocks alternating with quartzitic sandstones, significant interbedded basaltic-andesitic lavas and subordinate conglomerates, diamictites and carbonate rocks all of which have been subjected to low grade metamorphism (Mengistu and Demlie, 2011).

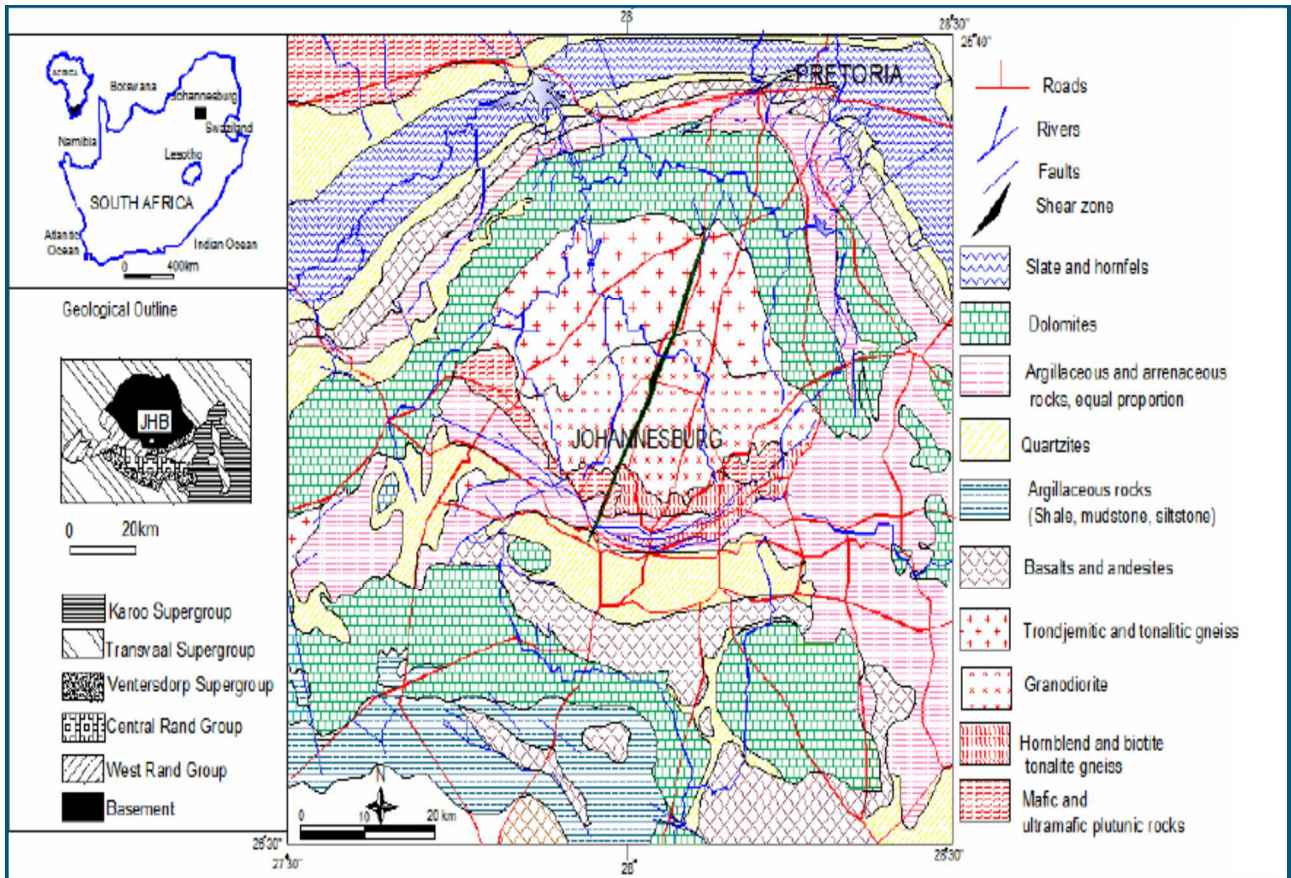


Figure 8: Simplified Geological Map of the Johannesburg Area (Mengistu and Demlie, 2011)

5.3 Soils and Topography

The soils of Johannesburg vary greatly from deep, red friable soils, to shallow soils with rock. Smaller areas with soils with medium depth, often structured, also occur. In the lower-lying areas adjacent to streams/rivers, deep, usually dark, structured soils with signs of waterlogging occur. The terrain is generally gently undulating to almost flat in places, with slopes of less than 5% in general. However, there are occasional small zones of steeper topography where steeper slopes occur, up to 20% in places. The altitude varies from around 1 450 to 1 650 metres above sea level.

6 Public Participation process

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

The primary aims of the public participation process are:

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

The public participation process must adhere to the requirements of Chapter 6 of the EIA Regulations 2014 (as amended in 2017) promulgated under the NEMA (as amended), as well as Public Participation Guideline documents published by the Competent Authority. The public participation process for proposed project will be undertaken according to the stages outlined below.

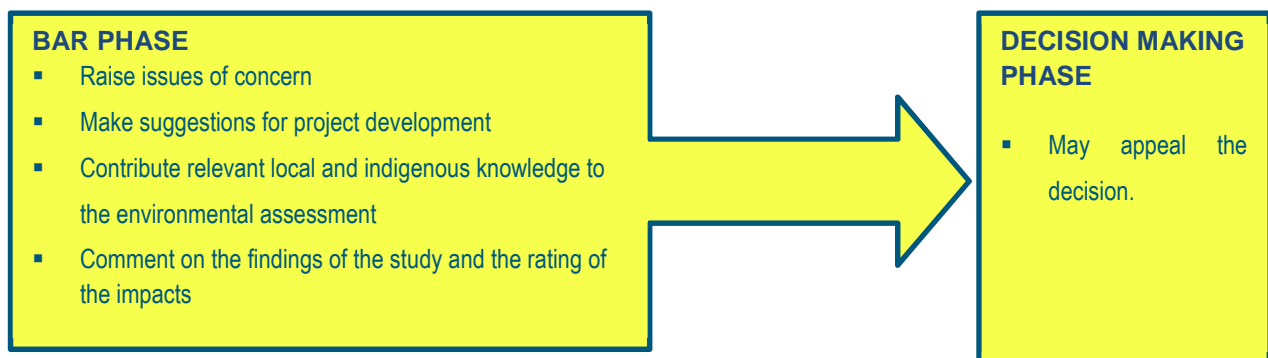


Figure 9: Responsibilities of I&APs

In order to achieve a higher level of engagement, a number of key activities have taken place and will continue to take place. These include the following:

- The identification of stakeholders is a key deliverable at the outset of the project;
- The development of a living and dynamic database that captures details of stakeholders from all sectors;
- The handling of queries from I&APs and others, and providing appropriate information;

- The convening of specific stakeholder groupings/forums as the need arises;
- The preparation of reports based on information gathered throughout the BA *via* the PPP and feeding that into the relevant decision-makers;
- The distribution of the Background Information Documents (BIDs) and other information packs; and
- Where appropriate site visits may be organised, as well as targeted coverage by the media.

6.1 Authority Consultation

The competent authority, the GDARD, is required to provide an EA (whether positive or negative) for the project. The GDARD was consulted from the outset of this study, and has been engaged throughout the project process. Authority consultation included the following activities:

- Submission of an application for environmental authorisation in terms of Section 26 of the EIA Regulations 2014 (as amended in 2017);
- Submission of the draft consultation Basic Assessment Report; and
- Submission of the final Basic Assessment Report.

6.2 Consultation with Other Relevant Stakeholders

Consultation with other relevant key stakeholders were, and will continue, to be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the BA process.

Relevant key stakeholders were consulted and sent pamphlets or BIDs and other information packs (where requested). All relevant stakeholders will be allowed an opportunity to comment on the draft consultation Basic Assessment Report (cBAR). The identified stakeholders of this project are provided in **Table 12**.

Table 12: Key Stakeholders

OWNERS AND OCCUPIERS OF LAND ADJACENT TO THE SITE	
▪ City of Johannesburg	
LOCAL AUTHORITY	
Maishe Makwela (Environmental Sustainability)	City of Johannesburg Metropolitan Municipality
Mr Carlos da Rocha -Bezuidenhout Valley (Ward 66-Councillor)	City of Johannesburg Metropolitan Municipality
STATE DEPARTMENTS	
Andrew Mbedzi	Gauteng Department of Water & Sanitation
Maria Mmasalesa	Gauteng Department of Health
Tebogo Molokomme	South African Heritage Resources Agency: Provincial Heritage Resources Authority Gauteng (PHRAG)

6.3 Site Notification

The EIA Regulations 2014 (as amended in 2017) require that a site notice be fixed at a place visible to the public at the boundary or on the fence of the site where the activity to which the application relates and at points of access or high through traffic. The purpose of this is to ensure that the I&APs were identified primarily from responses received from the notices erected and notify the public of the project as well as to invite the public to register as stakeholders and inform them of the PP Process. Royal HaskoningDHV erected a site notice at the Bezuidenhout Valley Clinic and Rhodes Park Clinic (refer to **Table 13**).

Table 13: Site Notices

Site Notices	
	<p>Placed at Bezuidenhout Valley Clinic</p>
	<p>Placed at Rhodes Park Library</p>

6.4 Identification of Interested and Affected Parties

As mentioned above, e-mails were sent to key stakeholders and other known I&APs, informing them of the application for the project, the availability of the draft Consultation BAR for review and indicating how they could become involved in the project. The contact details of all identified I&APs are updated on the project database. This database will be updated on an on-going basis throughout the BA process.

6.5 Briefing Paper

A BID for the proposed project was compiled in English and distributed to key stakeholders. The aim of this document is to provide a brief outline of the application and the nature of the development. It is also aimed at providing preliminary details regarding the BA process, and explains how I&APs could become involved in the project. The briefing paper was distributed to all identified I&APs and stakeholders, together with a registration / comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the project.

6.6 Advertising

In compliance with the EIA Regulations 2014 (as amended in 2017), a notification of the commencement of the BA process for the project was advertised in a local newspaper **Joburg East Express 02 October 2018**. I&APs were requested to register their interest in the project and become involved in the BA process. The primary aim of these advertisements was to ensure that the widest group of I&APs possible was informed and invited to provide input and questions and comments on the project.

6.7 Issues Trail

Issues and concerns raised in the public participation process during the BA process have been and will continue to be compiled into an Issues Trail together with the responses thereof.

6.8 Public Review of the draft BAR

The draft Consultation BAR was made available for authority and public review for a total of 30 days from **03 October 2018 to 03 November 2018**. The report was made available at the following public locations within the study area, which are all readily accessible to I&APs:

- Placed at Rhodes Park Public Library: Cnr Kitchener Avenue and Montagu Street, Kensington, Johannesburg; and
- Electronically on the Royal HaskoningDHV Website: www.rhdhv.co.za/projects.

6.9 Final Consultation BAR

The final stage in the BA process entails the capturing of responses and comments from I&APs on the BAR in order to refine the BAR, and ensure that all issues of significance are addressed. The final BAR (i.e. fBAR) is the product of all comments and studies, before being submitted to GDARD for review and decision-making.

6.10 PPP Summary

A summary of the PPP is provided in **Table 14** below. It must be noted that there were no public meetings scheduled for the project.

Table 14: Summary of Public Participation Process

Activity	Description
Identifying Stakeholders	Stakeholders were identified and a database of all I&APs was compiled.
Publishing Newspaper Adverts	Joburg East Express

Distribution of a BID	BIDs were distributed electronically and by hand to I&APs.
Erection of Site Notices	A number of A2 site notices were erected on the perimeter of the site.
Preparation of an on-going Issues Trail	Comments, issues of concern and suggestions received from stakeholders thus far have been captured in an Issues Trail.
Release of Draft Report	The draft cBAR was advertised and made available for a period of 30 days (03 October 2018 to 03 November 2018) for public review and comment.
Release of final Report	The fBAR will be the product of all comments and studies, before being submitted to GDARD for review and decision-making.

7 Specialist Assessments

7.1 Ecological Assessment

This study was undertaken by an independent specialist: Clayton Cook.

7.1.1 Vegetation and Faunal Habitat Availability

Vegetation structure is generally accepted to be more critical in determining faunal habitat than actual plant composition. Therefore, the description of vegetation presented in this study concentrates on factors relevant to faunal species abundance and distribution, and does not give an exhaustive list of plant species which occur in the study area. The study area falls within the Johannesburg 2628 AA quarter degree grid cell. Vegetation composition in the area consists of Mesic Highveld Grasslands in various stages of transformation and degradation falling within the Soweto Highveld Grassland (Gm 8) vegetation unit. No natural Soweto Highveld grassland occurs on the site or within the adjacent Bezuidenhout Valley area (**Figure 10**).

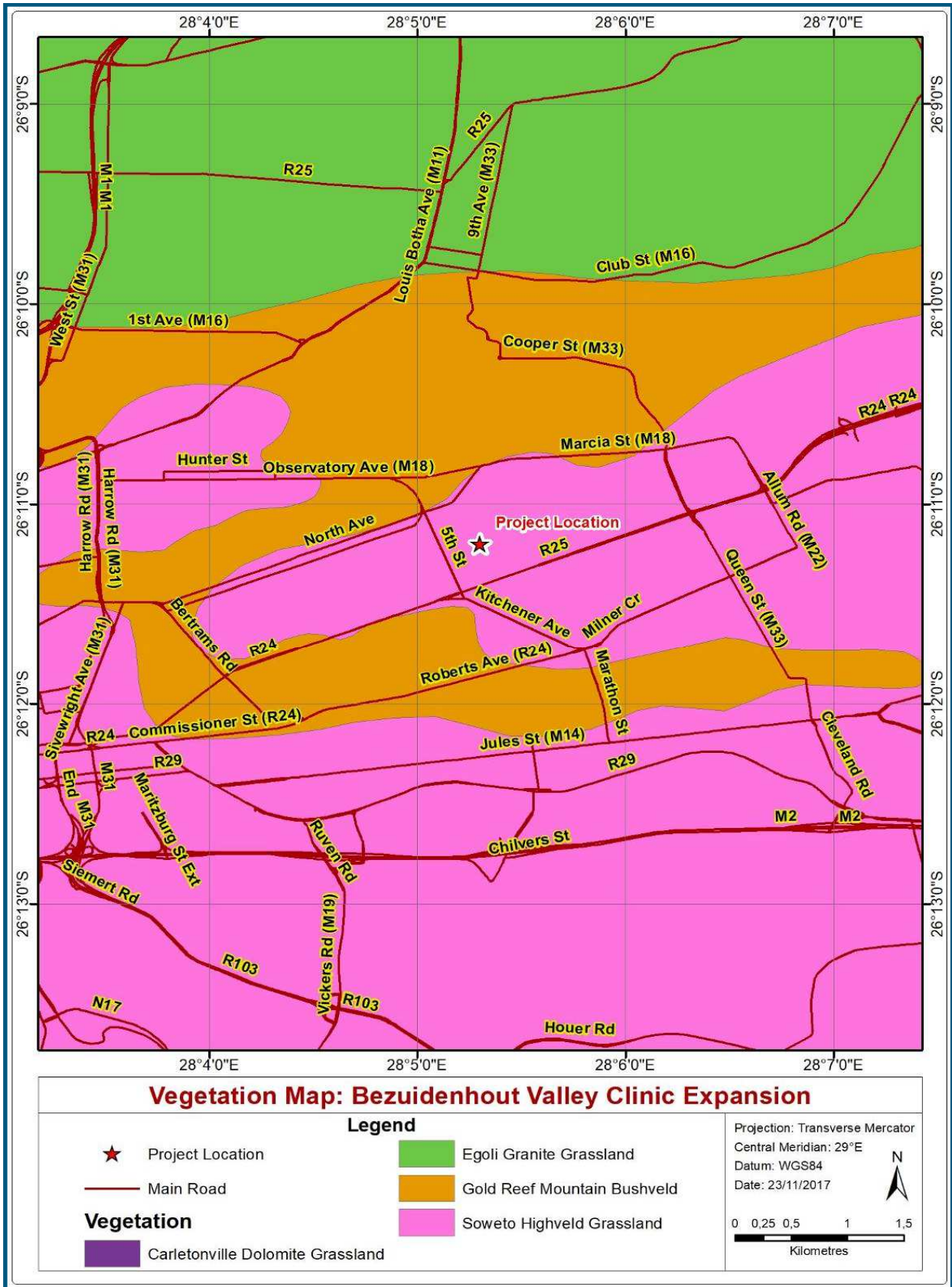


Figure 10: Vegetation Types of the Study Area

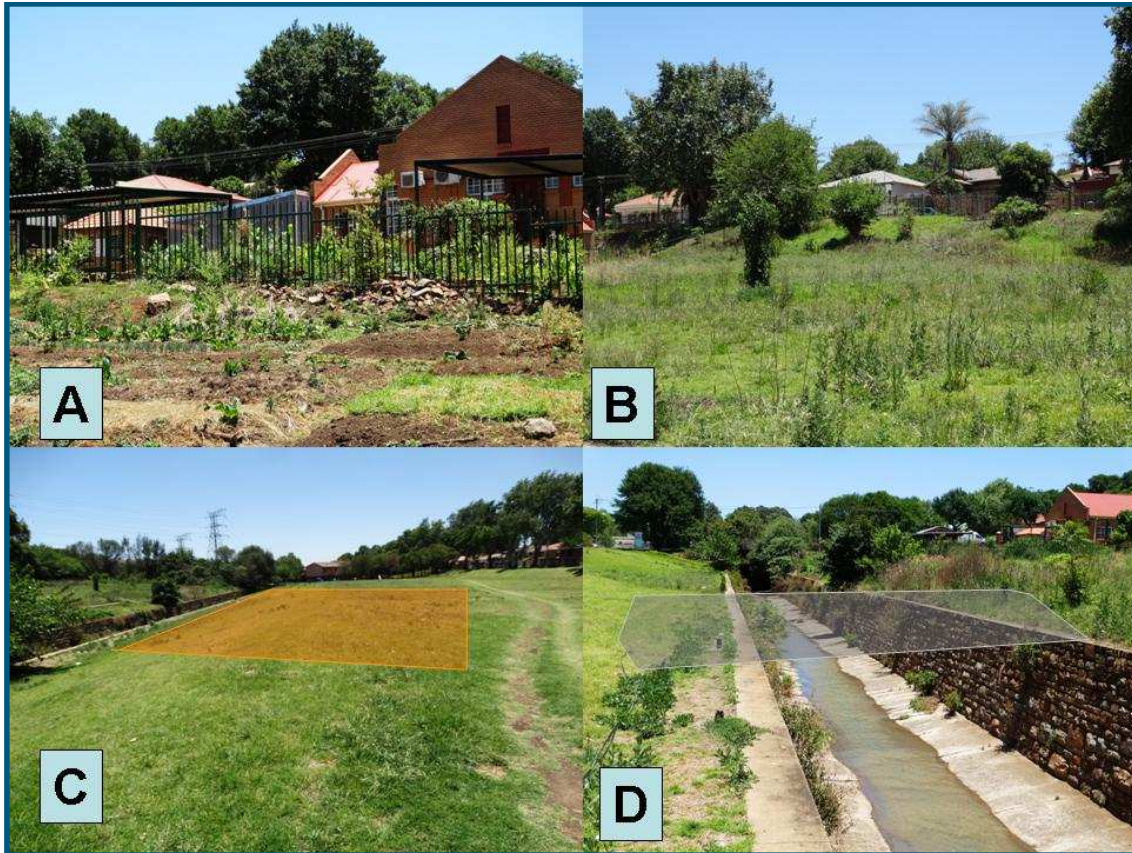


Figure 11: Habitats Observed within the Study Area.

- **A:** The project involves the expansion of the existing Bez-valley Clinic. The clinic and adjacent residential properties and parks comprise of completely transformed Soweto Highveld Grassland.
- **B:** The proposed expansion site is situated within a completely transformed vacant stand immediately adjacent to the clinic. The vacant stand is dominated by the exotic and alien invasive Kikuyu (*Pennisetum clandestinum**), pioneer weedy plant and grass species as well as scattered alien invasive plant and tree species.
- **C:** ***The proposed parking area is situated within a completely transformed kikuyu dominated park. No indigenous vegetation remains within the regularly maintained expansive lawns.***
- **D:** The two sites are separated by the artificially channelled Jukskei River. The artificially concreted lined channel displays no natural riparian vegetation and no 'in-stream' habitats. A burst bulk sewer line occurs immediately adjacent to the concrete stormwater channel results in deterioration of water quality. Medium-High levels of alien invasive vegetation occur along the canalised section of the Jukskei River.

7.1.1.1 Transformed and Weed Invaded Kikuyu Grasslands

The transformed grasslands occur within and adjacent to the proposed sites are dominated by exotic and alien invasive Kikuyu (*Pennisetum clandestinum**) lawns as well as extensive stands of alien invasive and exotic tree species. The grass layer is well-developed in certain areas and dominated by exotic and invasive *Pennisetum clandestinum** and pioneer weedy plant and alien invasive species. The transformed

grasslands comprising road reserves/pavements, alien and exotic tree parklands and kikuyu weed invaded grasslands are considered to be of low sensitivity and conservation potential.



Figure 12: Transformed and Weed Invaded Kikuyu Grasslands

Table 15: Synopsis of the Soweto Highveld Grassland

Vegetation Type	Soweto Highveld Grassland (Gm 8)	Tree cover	0-20 %
Soil	Brown sandy soils	Shrub cover	0-1%
Topography	Flat to gently undulating	Herb cover	0-5 %
Land use	Residential, clinic and parks	Grass cover	20-80 %
Dominant Tree species	<i>Celtis sinensis*</i> , <i>Morus alba*</i> , <i>Ligustrum japonicum*</i> , <i>Melia azedarach*</i> , <i>Quercus robur</i> , <i>Vachellia karroo</i> , <i>Robinia pseudoacacia*</i> , <i>Solanum mauritianum*</i> , <i>Acer buergerianum*</i> , <i>Grevillea robusta*</i> , <i>Phytolacca dioica*</i>		
Dominant Grass spp.	<i>Pennisetum clandestinum*</i> , <i>Bromus catharticus</i> , <i>Cyperus esculentus</i> , <i>Hyparrhenia hirta</i> , <i>Cynodon dactylon</i> , <i>Typha capensis</i>		
Dominant Herb spp.	<i>Plantago lanceolata</i> , <i>Bidens pilosa</i> , <i>Conyza bonariensis</i> , <i>Tragus</i> , <i>Sonchus asper subsp. asper</i> , <i>Tagetes minuta</i> , <i>Tragopogon dubius</i> , <i>Dichondra micrantha</i> , <i>Trifolium repens</i> , <i>Verbena brasiliensis*</i> , <i>Verbena bonariensis*</i>		
Alien Invasive Species	<i>Araujia sericifera*</i> , <i>Canna indica*</i> , <i>Celtis sinensis*</i> , <i>Cardiospermum grandiflorum*</i> , <i>Ipomoea purpurea*</i> , <i>Morus alba*</i> , <i>Ligustrum japonicum*</i> , <i>Melia azedarach*</i> , <i>Quercus robur</i> , <i>Vachellia karroo</i> , <i>Robinia pseudoacacia*</i> , <i>Solanum mauritianum*</i> , <i>Acer buergerianum*</i> , <i>Grevillea robusta*</i> , <i>Mirabilis jalapa*</i> , <i>Phytolacca dioica*</i> , <i>Cirsium vulgare*</i> , <i>Lantana camara*</i> , <i>Solanum mauritianum*</i> , <i>Pennisetum clandestinum*</i> , <i>Verbena brasiliensis*</i> , <i>Verbena bonariensis*</i>		
Red Data Species	None observed or likely to occur.		

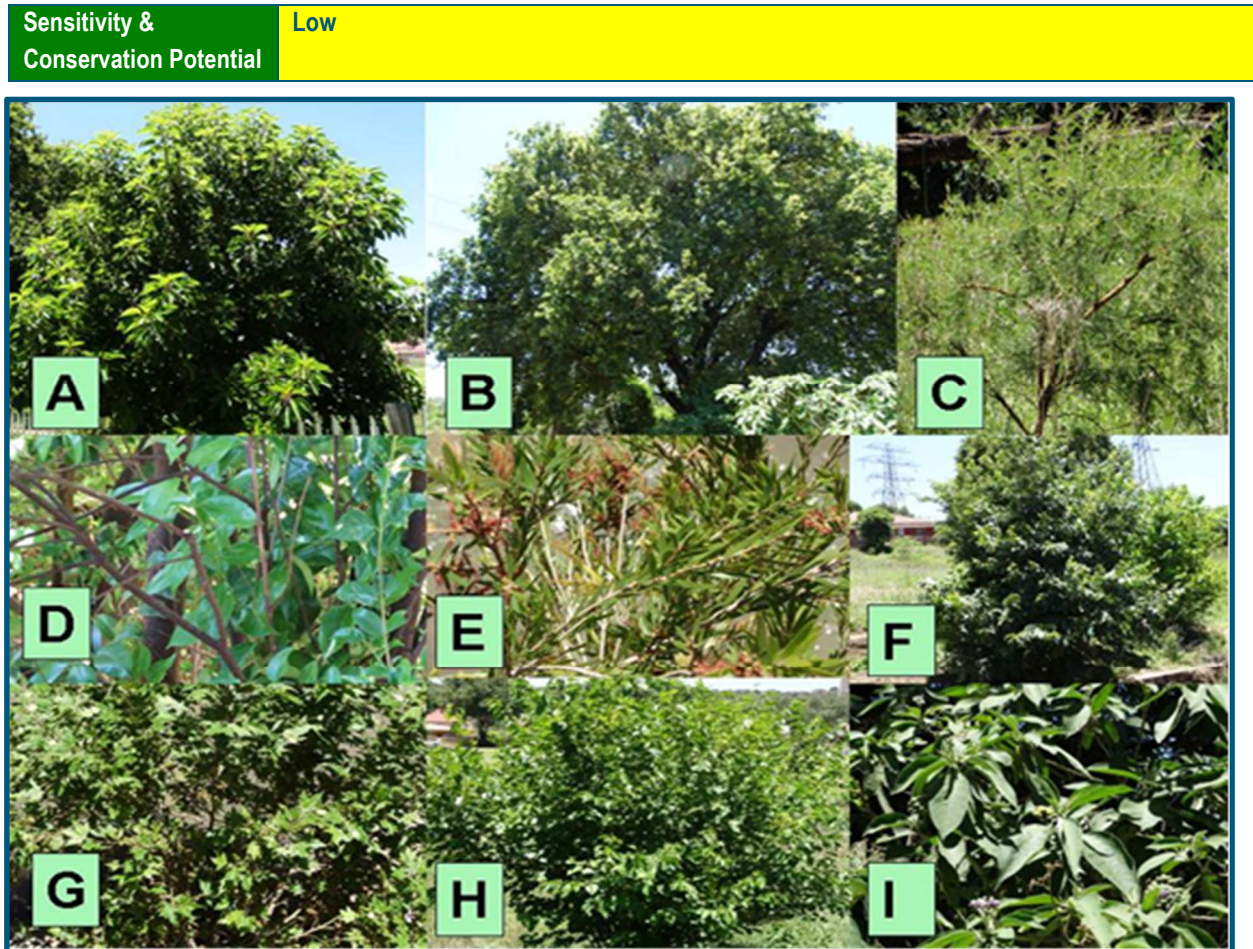


Figure 13: Dominant Tree Species Observed On the Sites

- **A:** Belhambra *Phytolacca dioica** (Category 3 Invader);
- **B:** English Oak *Quercus robur*;
- **C:** Sweet-thorn *Vachellia karroo*;
- **D:** Chinese Privet *Ligustrum japonicum** (Category 1b Invader);
- **E:** Australian Silky Oak *Grevillea robusta** (Category 1b Invader);
- **F:** Chinese Nettle Tree *Celtis sinensis** (Category 3 Invader);
- **G:** Chinese Maple *Acer buergerianum** (Category 3 Invader);
- **H:** White Mulberry *Morus alba* * (Category 1b Invader) and
- **I:** Bugweed *Solanum mauritianum** (Category 1b Weed).

7.1.1.2 Protected Species

In terms of the National Forests Act 1998 (Act No 84 of 1998) certain tree species can be identified and declared as protected. The Department of Agriculture (now Department of Agriculture, Forestry and Fisheries) developed a list of protected tree species. In terms of Section 15 (1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or

any forest product derived from a protected tree, except under a license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilization. **No protected tree species were observed on the proposed clinic expansion and parking sites.** The area is dominated by completely transformed kikuyu grasslands. The adjacent trees are exotic and mostly invasive species. A single small *Vachellia karroo* has seeded on the site. It should ideally be removed and relocated adjacent to the stormwater canal.

7.1.1.3 Red Data /Endemic Species

Several red listed plant species have been listed for the 2628 AA Quarter Degree area of the study site. No suitable habitat occurs within the transformed kikuyu dominated sites for any red listed plant species.

7.1.2 Results of the Initial Faunal Survey or Habitat Assessment

The preliminary site visit did not entail intensive surveying or utilisation of any sampling methods and can rather be viewed as being an opportunity to identify sensitive faunal habitats occurring along the proposed expansion of the existing Bezuidenhout Valley Clinic as well as a proposed new parking area. All animals (mammals (larger), avifauna (birds), reptiles and amphibians) seen or heard; were recorded. Use was also made of indirect evidence such as animal tracks (footprints, droppings and feathers) to identify animals. The majority of mammals were identified by visual observations as well as droppings and various burrow types. The majority of birds were identified by visual observations as well as calls. Reptiles and amphibians were actively searched for under suitable refuges such as logs, stumps, dumped building rubble, tyres and carpets and identified by actual specimens observed.

7.1.2.1 Mammals

No small mammal trappings were conducted due to time constraints and the limitations that the results from single night or brief field surveys would pose. The brief fieldwork was augmented with previous surveys in similar habitats as well as published data. Mammal species recorded within the study area as well as those that may occur within the study area, on the basis of available distribution records and known habitat requirements; are included in **Table 16** below. The majority of larger mammal species are likely to have been eradicated or have moved away from the area, as a result of on-going urban sprawl, hunting and poaching as well as severe habitat alteration and degradation within Bezuidenhout Valley. Common Duiker, Southern Reedbuck, Aardvark, Porcupine, Blacked-Back Jackal have however been recorded from surrounding grasslands and rocky ridges situated to the north.

The vegetation on the site is completely transformed and offers extremely limited suitable habitat for remaining mammals species. Mammal species most likely to occur on the site include urban exploiters such as the exotic House rat and House mouse as well as feral cats. The open kikuyu grasslands provide suitable habitat for African Molerats. Low mammal diversity is expected within the transformed and

impoverished habitats within the proposed Bez-Valley clinic's expansion site and parking areas. The site was also surveyed for the following wetland associated mammals:

7.1.2.1.1 Cape or African Clawless Otters (*Aonyx capensis*)

The African clawless otter (*Aonyx capensis*) is the larger of the two otter species and is predominantly aquatic (Skinner & Chimimba 2005). It is known to move up tributaries into small streams, provided these streams support an adequate supply of food. This species does not wander widely from water, thus is unlikely to occur in drier grassland areas.

Aonyx capensis is generally solitary, but occasionally occurs in pairs or family groups. They are active swimmers, but generally rest during the heat of the day in dry places, including holes in the ground, cavities under rocks, erosion gullies or dense reed beds adjacent to their habitat. The most important prey item in this environment would be crabs belonging to the genus *Potamonautes* (Skinner and Chimimba 2005). These crabs constitute the highest macro-invertebrate biomass in many rivers of the subregion. As fish are not an indispensable part of their diet, very small streams containing only crabs and frogs can supply these otters with sufficient food. Provided the aquatic conditions are suitable, and there is adequate cover in which to rest, this species bears no relation to the surrounding terrain, so may be found in a variety of habitat types, from pure grassland to mixed bushveld (Skinner & Chimimba 2005).

According to the Regional Red List of Threatened Mammal Species (2016), this species is listed as "Near-Threatened" C2a (i). *Aonyx capensis* is considered an indicator or flagship species. This means that its presence can be used as an accurate indicator of aquatic ecosystem health.

No latrines of Cape Clawless Otters were observed adjacent to the artificially channelled Jukskei River or stormwater channel. Poor water quality due to on-going sewerage contamination into the stormwater channel significantly reduces the likelihood of any Cape Clawless Otters occurring. The channel has limited vegetation and no dense reed beds for refuge and extremely limited suitable foraging and dispersal a habitat for Cape Clawless Otters. The stormwater channel extends into Johannesburg city centre which is a 'High-Risk' area for any remaining Otters.

7.1.2.1.2 Spotted-necked Otter (*Hydriectis maculicollis*)

This otter has a longer, slimmer body than *Aonyx capensis*, and is ideally adapted to an aquatic life (Skinner & Chimimba 2005). They are confined to large rivers, lakes and swamps associated with extensive areas of open water and are more closely confined to this habitat than *Aonyx capensis*. They are distinguished from *Aonyx capensis* by having distinctly webbed feet and they lack the characteristic white facial and chest markings of *Aonyx capensis*.

Hydriectis maculicollis is a group-living diurnal species, showing peaks of activity during the early morning and late afternoon. They vocalise frequently, especially during play. Their resting places and dens are found in close proximity to water and are most likely located in dense vegetation cover, excavations under the roots of trees, holes under rock ledges or in holes occasionally excavated by the otters themselves

where there is suitable alluvial soil. Their diet consists primarily of fish and the crab species belonging to the genus *Potamonautes* (Skinner and Chimimba 2005).

Spotted-necked otters are adapted ideally to an aquatic life and are confined to the larger river systems, dams, lakes and swamps which have extensive areas of open water. No suitable habitat occurs for this species on the actual site or surrounding degraded Jukskei River for Spotted-necked Otters.

7.1.2.1.3 Water or Marsh Mongoose (*Atilax paludinosus*)

This species is so named because of its close association with rivers, streams, marshes, swamps, wet vleis and dams. Although closely associated with an aquatic habitat, *Atilax paludinosus* is known to wander widely from this habitat type when foraging (Skinner & Chimimba 2005). This species will remain in an area even when the water dries up temporarily and show adjustments to environmental changes by converting to a diet consisting of terrestrial food resources. Although opportunistic feeders, their dominant prey item consists of crabs of the genus *Potamonautes*. A wide variety of terrestrial prey is taken, ranging from mammals to insects. Occasionally plant material is eaten to supplement the diet (Skinner & Chimimba 2005).

Atilax paludinosus is primarily solitary, however breeding pairs and females with offspring can occasionally be seen. Foraging typically occurs at night. While being an excellent swimmer, the marsh mongoose does not readily swim. They rest in piles of grass and other debris in thick reed beds, usually situated on raised ground. The faeces of *Atilax paludinosus* can be distinguished from the otter species by smell. The faeces of the otter species typically smell of fish, while *Atilax paludinosus* faeces characteristically smell like that of other carnivores.

No latrines of Marsh Mongooses were observed adjacent to the artificially channelled Jukskei River or stormwater channel. Poor water quality due to on-going sewerage contamination into the stormwater channel significantly reduces the likelihood of any Marsh Mongoose occurring. The channel has limited vegetation and no dense reed beds for refuge and extremely limited suitable foraging and dispersal a habitat for Marsh Mongoose. The stormwater channel extends into Johannesburg city centre which is a 'High-Risk' area for any remaining Marsh Mongooses.

7.1.2.1.4 Rough-haired Golden Mole (*Chrysopalax villosus*)

No suitable habitat occurs around the artificial stormwater channel and no seasonally inundated wetlands.

7.1.2.1.5 African Marsh Rat or Water Rat (*Dasymys incomtus*)

The African marsh rat (*Dasymys incomtus*) is associated with a wet habitat, occurring in the reed beds, semi-aquatic grasses and grassy areas close to water (Skinner & Chimimba 2005). It is a both terrestrial and semi-aquatic species, moving freely in surface runs, even when these are shallowly submerged by water. *Dasymys incomtus* is also a competent swimmer. The feeding area is characterised by scattered grass and reed cuttings (Skinner & Chimimba 2005).

This species is predominantly crepuscular and nocturnal, becoming active towards sunset. Nests are constructed in a depression on sloping ground bordering swampy edge of river, and this species favours grassy tussocks for nesting as this provides cover and protection from predators. This species is most likely solitary, with offspring dispersing soon after weaning. The habitat favoured by this species is also utilised by *Otomys* spp., hence the likelihood of coexistence between these species is high. No suitable habitat (dense reed beds, semi-aquatic grasses) occurs along the canalised section of the Jukskei River on the site. No runs, burrows or nests were noted on the site during the brief survey.

7.1.2.1.6 Angoni Vlei Rat (*Otomys angoniensis*)

The Angoni vlei rat (*Otomys angoniensis*) is a terrestrial and cursorial species, occurring primarily in grasslands and woodlands (Skinner & Chimimba 2005). Although closely associated with dense reed beds and semi-aquatic grasses of vlei and river bed areas, the species is known to occur on drier grasslands far from water. The nest is characteristically domed, constructed from shredded vegetation in clumps of tussock grass above water level. Well-defined runs extend outwards from the nests towards the feeding grounds (Skinner & Chimimba 2005).

Otomys angoniensis is predominantly diurnal, with some crepuscular and nocturnal activity. This habit of *Otomys angoniensis* makes it distinguishable from *Otomys irroratus*, as the species are easily confused when visually observed. *Otomys angoniensis* can be found singly, in pairs or in family parties, again distinguishing it from the closely related *Otomys irroratus*. The species is wholly herbivorous, and short lengths of discarded grass stems mark their feeding grounds (Skinner & Chimimba 2005).

7.1.2.1.7 South African Vlei Rat (*Otomys auratus*)

South African Vlei rats (*Otomys auratus*) are so named because of their association with damp vleis and wet grassland on the fringes of streams and swamps (Skinner & Chimimba 2005). They are not, however, strictly confined to this type of habitat. They are predominantly terrestrial and to some extent semi-aquatic, and they will seldom enter the water except when forced to do so. They are wholly herbivorous, eating nearly all plant species occurring in their habitat (Skinner & Chimimba 2005). While they are known to be more abundant in habitats associated with damp soil in vleis, or along streams and rivers, they do occur throughout a variety of grassland types (Skinner & Chimimba 2005). In addition, *Otomys auratus* is predominantly crepuscular; however the species does show some diurnal and nocturnal activity (Skinner & Chimimba 2005). They are primarily solitary, and are seldom found in groups or pairs. They commonly construct saucer-shaped nests in clumps of grass, which are clearly marked by runs leading to their feeding areas. Short lengths of grass stems characterise their feeding grounds. The angle of the cutting is characteristically at a 45° angle. Coprophagy (the eating of faeces) is common in this species.

No suitable habitat (dense reed beds, semi-aquatic grasses) occurs along the artificially channelled section of the Juskei River. No runs, burrows or nests were noted on the site during the brief survey. No evidence of runs or domed nests of shredded vegetation in clumps of tussock grasses were observed. No piles of short lengths of discarded grass stems were observed (foraging areas). No natural grassland areas occur on the site which is dominated by exotic lawns and trees as well as weedy plant species.

Table 16: Mammal Species Recorded in the Study Area

COMMON NAME	SCIENTIFIC NAME
Transvaal free-tailed Bat	<i>Tadarida ventralis</i>
Scrub Hare	<i>Lepus saxatilis</i>
House Mouse	<i>Mus musculus</i>
*African (Common) Mole-rat	<i>Cryptomys hottentotus</i>
Four-striped Grass Mouse	<i>Rhabdomys pumilio</i>
Pouched Mouse	<i>Saccostomus campestris</i>
Natal Multimammate Mouse	<i>Mastomys natalensis</i>
House Rat	<i>Rattus rattus</i>
Domestic Cat	<i>Felis catus</i>
Common Genet	<i>Genetta genetta</i>
Yellow Mongoose	<i>Cynictis penicillata</i>
Slender Mongoose	<i>Galerella sanguinea</i>

*observed during current survey

7.1.2.1.8 Threatened Species

According to the “South African Red Data Book of Terrestrial Mammals” (Smithers 1986) and Skinner and Smithers (1990) updated by the IUCN Council in December 1995, the study area falls within the distribution ranges of 12 species which are placed into one of known threatened species (Endangered, Vulnerable and Rare). Due to the high levels of habitat destruction as well as human activity within the study area it is however unlikely that the study area comprises significant habitat for any species of threatened mammal. Low mammal diversity is expected from the completely transformed and impoverished habitats on the site.

7.1.2.2 Avifauna /Birds

Due to time constraints no comprehensive bird lists could be compiled. During brief site visitations (total of 4 hrs), 14 bird species were recorded (see **Table 17**). According to the second South African Bird Atlas Project (SABAP2) 204 bird species have been recorded within the 2610_2805 pentad. The majority of bird species recorded during the brief field survey are common, widespread and typical of an urban residential habitat. Numbers of bird species in the Bezuidenhout Valley area have declined mainly due to increased levels of human disturbances (quad and off-road bikes); extensive habitat transformation due to increased urban sprawl; as well as severe habitat degradation of the wetlands due to massive amounts of raw or untreated sewerage entering into the river systems (Jukskei). Human activity has transformed grasslands in South Africa to a point where few pristine examples exist (Low & Rebelo 1996; Barnes 1998). Factors such as agricultural intensification, increased pasture management (overgrazing), decrease in grassland management due to frequent fires and land-use alteration (urbanisation). Continuing pressure on sensitive wetland and surrounding open moist grassland habitat are largely responsible for the decline of the

threatened avifaunal species. Low bird diversity was observed within the transformed areas of the site and included urban exploiters such as Common Mynah, Cape Sparrow, House Sparrow, Red-eyed Dove, Cattle Egret, Cape Turtle Dove, Rock Dove, Laughing Dove, Hadedda Ibis and Pied Crow.

Table 17: Threatened Bird Species Recorded in the Bezuidenhout Area.

Species	Conservation status (2014)	Habitat requirements (Barnes 2000; Hockey <i>et al</i> 2005; Harrison <i>et al</i> 1997; personal observations)	SABAP2 Reporting rate 2610_2805 (%)	Likelihood of interaction with proposed infrastructure
Verreauxs' Eagle <i>Aquila verreauxii</i>	Vulnerable	Mountainous and rocky areas with large cliffs for breeding. Breeding pair at Walter Sisulu Botanical Gardens.	0.98	Low
Half-collared Kingfisher <i>Alcedo semitorquata</i>	Near threatened	Fast-flowing clear, streams and rivers. Observed around artificially created dams	3.24	Low

It is highly unlikely that any Red Data bird species will be displaced by the habitat transformation that will take place as a result of the expansion of the clinic and parking area. The impact on smaller, non-Red Data ground-nesting species that are potentially breeding in the area (very limited) due to regular mowing of grasses will be local in extent, in that it will not affect regional or national populations in any significant way. The site offers no suitable habitat for any threatened bird species and impoverished habitats for remaining bird species.

7.1.2.3 Reptiles

Reptile lists require intensive surveys conducted for several years. Reptiles are extremely secretive and difficult to observe during field surveys. The majority reptile species are sensitive to severe habitat alteration and fragmentation. Due to human presence in the area coupled with increased habitat destruction and disturbances around the site are all causal factors in the alteration of reptile species occurring on the site and surrounding areas. No low-lying rock outcrops or extrusions occur throughout the site and hence the lack of rupicolous species.

No termite mounds *Trinervitermes haberlandii* were observed on or adjacent to the sites. Termite mounds offer important refuges for numerous frog, lizard and snake species. Large number of species of mammal, birds, reptiles and amphibians feed on the emerging alates (winged termites). These mass emergences coincide with the first heavy summer rains and the emergence of the majority of herpetofauna.

Termite mounds also provide nesting site for numerous snakes, lizards (varanids) and refuge habitats for several smaller mammals (shrews) and frogs. No large indigenous tree species were observed on the site. Trees including stumps, bark and holes are vital habitats for numerous arboreal reptiles (chameleons, snakes, agamas, geckos and monitors). The majority of tree species occurring within and adjacent to the proposed sit are exotics and alien invasive species.

The indiscriminate killing of all snake species as well as the illegal collecting of certain species for private and the commercial pet industry reduces reptile populations especially snake populations drastically. The frequent mowing of the kikuyu dominated lawns on the site will have a high impact on remaining reptiles.

The mowing of the grasses significantly reduces the vegetative cover and could possibly result in increased predation levels. Low reptile diversity within the transformed kikuyu dominated park as well as weed invaded vacant stand.

Reptile species recorded from the Bezuidenhout Valley during the current and previous surveys included Rinkhals (*Hemachatus haemachatus*), Mole Snake (*Pseudaspis cana*), Yellow-Throated Plated Lizard (*Gerrhosaurus flavigularis*), Montane Speckled Skink (*Trachylepis (Mabuya) punctatissima*), Cape Skink (*Trachylepis (Mabuya) capensis*) Ground Agama (*Agama aculeata*), Cape Thick-toed Gecko (*Pachydactylus capensis*). The wetlands including dams offer suitable habitat for South African Marsh terrapin (*Pelomedusa galeata*) and Water Monitor (*Varanus niloticus*). The poor water quality as well as high levels of anthropogenic disturbances along the Jukskei River significantly reduces the suitability.

Low reptile diversity is expected from the site and adjacent area due to extensive habitat transformation and degradation as well as high levels of anthropogenic disturbances. Two reptile species were recorded namely the urban exploiting Cape Dwarf gecko *Lygodactylus capensis* and Speckled Rock Skink *Trachylepis punctatissima*.

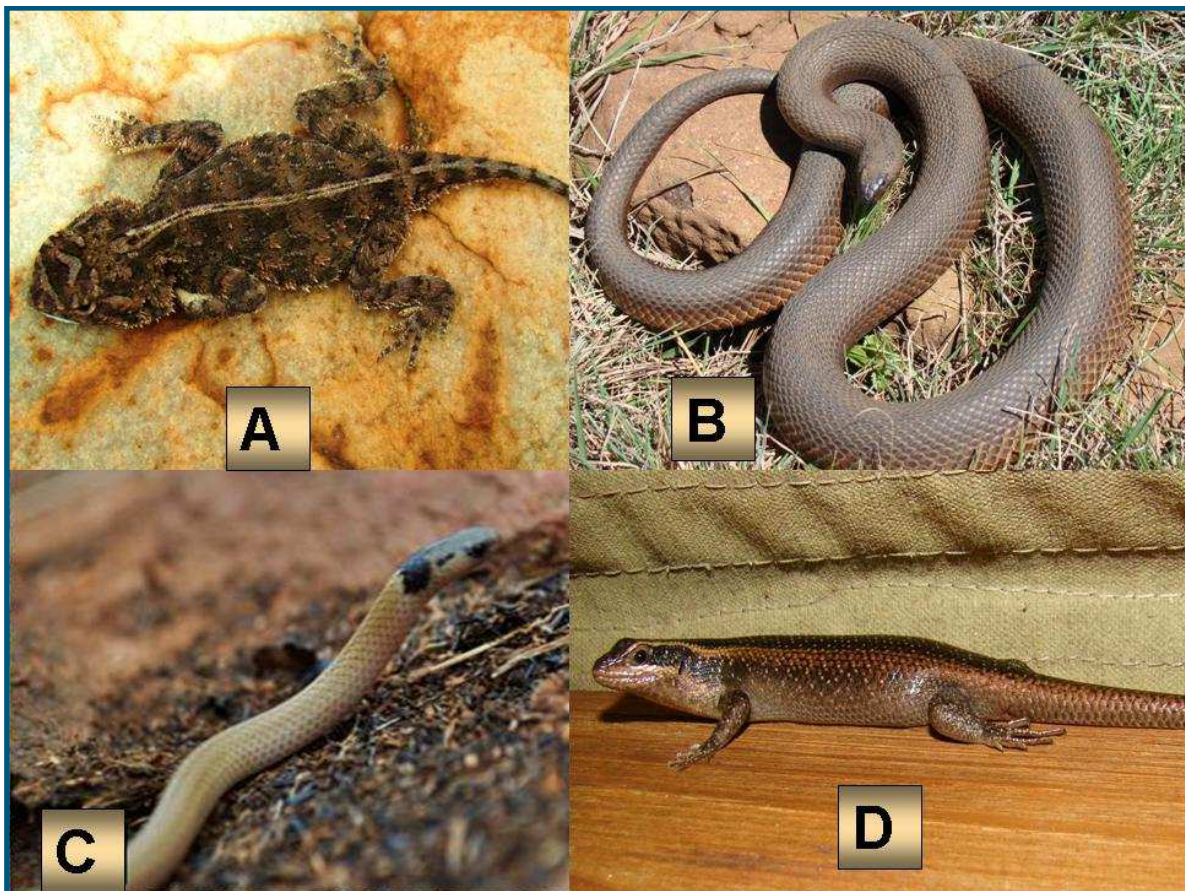


Figure 14: Reptile Species Likely to Occur on the Site and adjacent Areas

- **A: Ground Agama (*Agama aculeata distanti*);**
- **B: Mole Snake (*Pseudaspis cana*);**

- **C: Cape or Black-headed (*Aparallactus capensis*);**
- **D: *Speckled Rock Skink (*Trachylepis punctatissima*).**

Table 18: Reptile Species Recorded from the 2628 AA QDGC According to ReptileMAP (SARCA 2014).

Family	Common name	Genus	Species	Subspecies	Red list category	No. records	Atlas region endemic
Agamidae	Distant's Ground Agama	<i>Agama</i>	<i>aculeata</i>	<i>distanti</i>	Least Concern (SARCA 2014)	1	Yes
Agamidae	Southern Rock Agama	<i>Agama</i>	<i>atra</i>		Least Concern (SARCA 2014)	5	
Chamaeleonidae	Eastern Cape Dwarf Chameleon	<i>Bradypodion</i>	<i>ventrale</i>		Least Concern (SARCA 2014)	1	Yes
Colubridae	Red-lipped Snake	<i>Crotaphopeltis</i>	<i>hotamboeia</i>		Least Concern (SARCA 2014)	4	
Colubridae	Rhombic Egg-eater	<i>Dasypeltis</i>	<i>scabra</i>		Least Concern (SARCA 2014)	4	
Cordylidae	Common Girdled Lizard	<i>Cordylus</i>	<i>vittifer</i>		Least Concern (SARCA 2014)	1	
Elapidae	Rinkhals	<i>Hemachatus</i>	<i>haemachatus</i>		Least Concern (SARCA 2014)	4	
Gekkonidae	Common Tropical House Gecko	<i>Hemidactylus</i>	<i>mabouia</i>		Least Concern (SARCA 2014)	1	
Gekkonidae	Common Dwarf Gecko	<i>Lygodactylus</i>	<i>capensis</i>	<i>capensis</i>	Least Concern (SARCA 2014)	19	
Gekkonidae	Transvaal Gecko	<i>Pachydactylus</i>	<i>affinis</i>		Least Concern (SARCA 2014)	8	Yes
Gekkonidae	Cape Gecko	<i>Pachydactylus</i>	<i>capensis</i>		Least Concern (SARCA 2014)	1	
Gerrhosauridae	Yellow-throated Plated Lizard	<i>Gerrhosaurus</i>	<i>flavigularis</i>		Least Concern (SARCA 2014)	2	

Family	Common name	Genus	Species	Subspecies	Red list category	No. records	Atlas region endemic
Lamprophiidae	Black-headed Centipede-eater	<i>Aparallactus</i>	<i>capensis</i>		Least Concern (SARCA 2014)	3	
Lamprophiidae	Bibron's Stiletto Snake	<i>Atractaspis</i>	<i>bibronii</i>		Least Concern (SARCA 2014)	1	
Lamprophiidae	Brown House Snake	<i>Boaedon</i>	<i>capensis</i>		Least Concern (SARCA 2014)	1	
Lamprophiidae	Aurora House Snake	<i>Lamprophis</i>	<i>aurora</i>		Least Concern (SARCA 2014)	8	Yes
Lamprophiidae	Olive House Snake	<i>Lycodonomorphus</i>	<i>inornatus</i>		Least Concern (SARCA 2014)	6	Yes
Lamprophiidae	Brown Water Snake	<i>Lycodonomorphus</i>	<i>rufulus</i>		Least Concern (SARCA 2014)	4	
Lamprophiidae	Cape Wolf Snake	<i>Lycophidion</i>	<i>capense</i>	<i>capense</i>	Least Concern (SARCA 2014)	1	
Lamprophiidae	Western Yellow-bellied Sand Snake	<i>Psammophis</i>	<i>subtaeniatus</i>		Least Concern (SARCA 2014)	1	
Pelomedusidae	South African Marsh Terrapin	<i>Pelomedusa</i>	<i>galeata</i>		Not evaluated	1	
Scincidae	Wahlberg's Snake-eyed Skink	<i>Panaspis</i>	<i>wahlbergii</i>		Least Concern (SARCA 2014)	1	
Scincidae	Cape Skink	<i>Trachylepis</i>	<i>capensis</i>		Least Concern (SARCA 2014)	2	
Scincidae	Speckled Rock Skink	<i>Trachylepis</i>	<i>punctatissima</i>		Least Concern (SARCA 2014)	14	
Scincidae	Variable Skink	<i>Trachylepis</i>	<i>varia</i>		Least Concern (SARCA 2014)	3	
Testudinidae	Leopard Tortoise	<i>Stigmochelys</i>	<i>pardalis</i>		Least Concern (SARCA 2014)	1	

Family	Common name	Genus	Species	Subspecies	Red list category	No. records	Atlas region endemic
					2014)		
Typhlopidae	Bibron's Blind Snake	<i>Afrotrophops</i>	<i>bibronii</i>		Least Concern (SARCA 2014)	3	

7.1.2.3.1 Habitat Available for Sensitive or Endangered Species

No threatened reptile species have been recorded for the 2628 AA QDGC (SARCA 2014) or are likely to occur within the proposed study area. The proposed expansion of the clinic and parking area will most likely have a **low-negligible**, negative impact on any reptile species (albeit limited) which may occur in the area.

7.1.2.4 Amphibians

The amphibian populations in Gauteng Province are faced with several environmental threats. Habitat destruction and alien vegetation resulting in fragmentation of populations is probably the major threats facing all frog species. Extensive urban sprawl has already resulted in the rapid destruction and fragmentation of the habitat of populations of the species discussed here. Extensive illegal dumping, alien vegetation invasion, sewerage contaminations and severe fires in the grassland catchment areas result in extensive silting up of streams and wetlands, threatening the breeding habitat of these frogs. The biphasic life cycle of most frogs, as well as their semi-permeable skin makes them particularly vulnerable to pollutants and other environmental stresses. Consequently frogs can be used as environmental bio-monitors to indicate the quality of the environment. Chemical pollution and acidification constitute a major threat to frog populations. Heavy metals such as aluminium, cadmium, copper, zinc and iron are all toxic to amphibians. It can be inferred from studies on fish that nickel, lead and manganese will also have deleterious effects on frog populations (Bishop 1996).

Herbicides and pesticides often cause developmental abnormalities or mortalities. A recent report has shown that widely used and apparently safe herbicides containing the active ingredient glyphosphate are extremely toxic to tadpoles and frogs (Bishop 1996). These herbicides are widely used in agricultural lands, plantations, as well as in nature reserves for alien plant control and the making of firebreaks.

Another threat to the continued survival of these frog species, is the damming of rivers, streams and wetlands. In many cases this action is followed by the introduction of alien fish species, with their associated parasites, for angling purposes in these pans and dams. The preferred breeding habitat of five of the species discussed is natural, shallow, ephemeral pools and streams in palustrine wetlands. Deeper man-made dams and weirs alter and shrink the breeding habitat of these frogs considerably. Invasive predator fish species may also be a threat to the survival of the species. The on-going sewerage spills into the Jukskei River, pans and wetlands results in severe deterioration of water quality and has a high impact on remaining frog species. No actual survey was undertaken due to extreme time constraints for an adequate herpetological survey. The majority of species in Gauteng Province are classified as explosive breeders completing their short duration reproductive cycle in the early summer months between

(November-January). These frog species only emerge after the first heavy summer rainfalls and are dormant during the cold winter months. Explosive breeding frogs utilise ephemeral pans or inundated grasslands for their short duration reproductive cycles.

The brief amphibian survey was undertaken for 1 day (no nocturnal surveys) during the early summer months (November). It had rained within the previous 24 hours as well as during the site visit. One frog was recorded during the brief field survey on the site a single Guttural Toad (*Sclerophrys gutturalis*). No frog species were observed calling or breeding within the concrete stormwater channel. The majority of frog species recorded or likely to occur on the site are common and widespread and typical of degraded wetlands as well as artificially created stormwater channel environment.

Table 19: List of Frog Species Recorded from the 2628 AA QDGC According to FrogMAP.

Family	Common name	Genus	Species	Red list category	No. records	Atlas region endemic
Bufonidae	Red Toad	<i>Schismaderma</i>	<i>carens</i>	Least Concern	9	
Bufonidae	Raucous Toad	<i>Sclerophrys</i>	<i>capensis</i>	Least Concern	2	
Bufonidae	Guttural Toad	<i>Sclerophrys</i>	<i>gutturalis</i>	Least Concern	11	
Hyperoliidae	Bubbling Kassina	<i>Kassina</i>	<i>senegalensis</i>	Least Concern	2	
Pipidae	Common Platanna	<i>Xenopus</i>	<i>laevis</i>	Least Concern	8	
Pyxicephalidae	Delalande's River Frog	<i>Amietia</i>	<i>delalandii</i>	Least Concern	6	Yes
Pyxicephalidae	Cape River Frog	<i>Amietia</i>	<i>fuscigula</i>	Least Concern	1	
Pyxicephalidae	Common Caco	<i>Cacosternum</i>	<i>boettgeri</i>	Least Concern	6	
Pyxicephalidae	Giant Bull Frog	<i>Pyxicephalus</i>	<i>adspersus</i>	Near Threatened	4	
Pyxicephalidae	Tremelo Sand Frog	<i>Tomopterna</i>	<i>cryptotis</i>	Least Concern	2	
Pyxicephalidae	Natal Sand Frog	<i>Tomopterna</i>	<i>natalensis</i>	Least Concern	4	

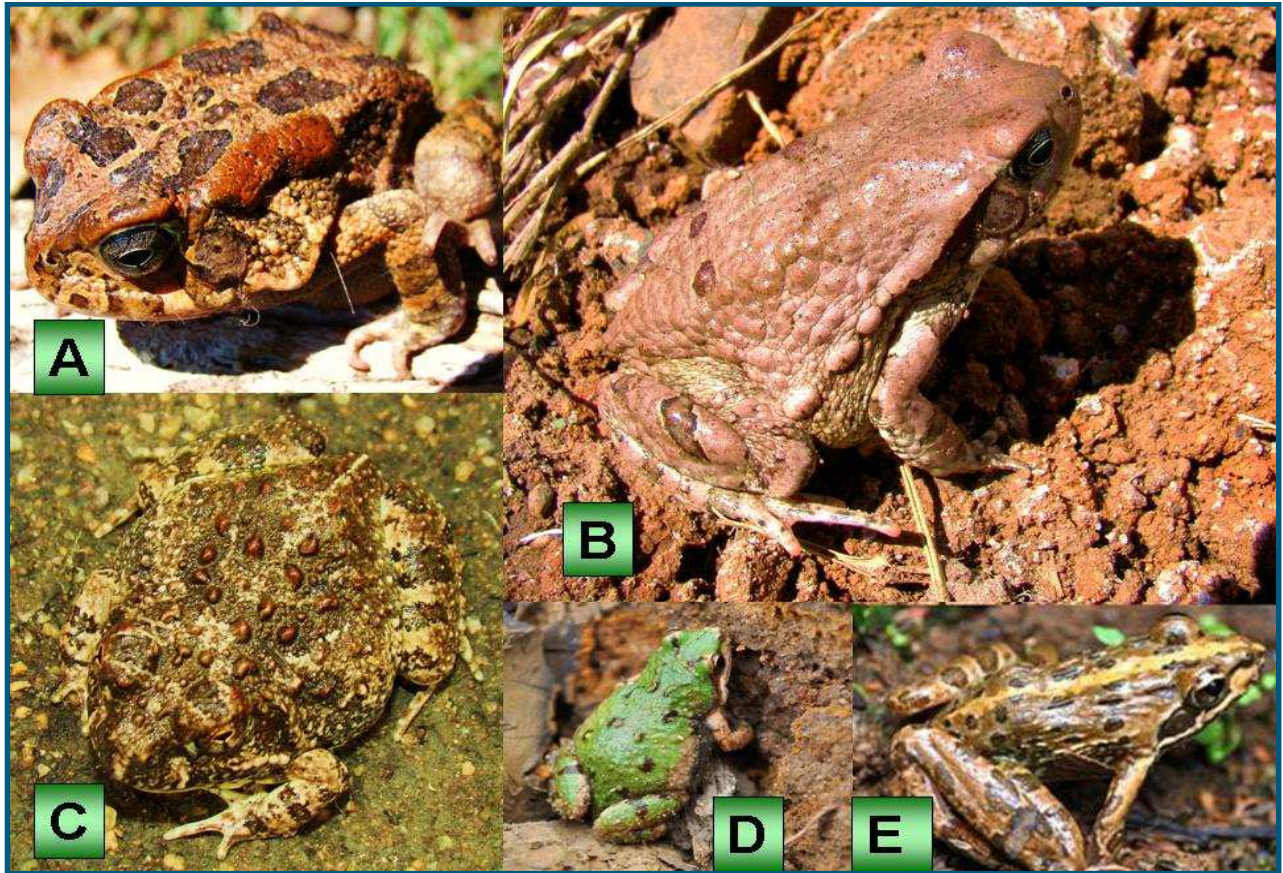


Figure 15: Frog Species Recorded on Site

- A: *Guttural Toad (Sclerophrys gutturalis)*.
- B: *Red Toad (Schismaderma carens)*.
- C: *Tremelo Sand Frog (Tomopterna cryptotis)*.
- D: *Common Caco (Cacosternum boettgeri)*.
- E: *Delalande's River Frog (Amietia delalandii)*.

7.1.2.4.1 Habitat Available for Sensitive or Endangered Species



Figure 16: Four Record of Giant Bullfrogs have been Recorded from the 2628 AA QDGC According to FrogMAP.

7.1.2.4.2 Giant Bullfrog (*Pyxicephalus adspersus*)

As the largest southern African frog, it spends most of the year underground encased in a transparent cocoon, emerging only after heavy thunderstorms in summer. The Bullfrog breeds in shallow, temporary rain-filled pans and small wetlands in grassland and savanna (Passmore and Carruthers 1995), as well as in the Great Karroo (SAFAP). Although the species occurs widespread in southern Africa (Lambiris 1988), the populations in Gauteng and Mpumalanga are threatened by habitat degradation and fragmentation.

The Giant Bullfrog is currently assigned as a near-threatened species (IUCN Red List category). Giant Bullfrogs have been recorded from the 2628 AA quarter degree grid squares during the South African Frog Atlas Project (SAFAP). Bullfrog density commonly varies within certain habitats (open grassland habitat). High densities are often associated with specific microhabitats or patches (hygrophytic or aquatic ephemerophytic grass and sedge dominated temporary pans) that can be identified and randomly sampled. Emphasis must be placed on remaining natural open grassland habitats (important migratory and foraging areas) as well as seasonal wetlands (drainage and marshland vegetation) surrounding the site. Due to the deterioration of water quality as well as lentic or flowing stormwater channel; it is highly unlikely that the artificially created stormwater channel constitutes suitable breeding habitat for Giant Bullfrogs. The adjacent transformed grasslands offer no suitable foraging and extremely limited dispersal

habitat due to existing houses, wall and primary access roads. The expansion of the clinic and parking areas will pose a limited threat to the amphibians occurring in the area, largely due to extensive habitat transformation and destruction as well as increased anthropogenic impacts already evident at the sites. The on-going burst and leaking sewer lines have resulted in deterioration of water quality within the stormwater channel and would have had a negative impact on the remaining frog species which breed in this degraded and impoverished habitats. Low amphibian diversity is expected from the Bezuidenhout Valley area and the adjacent degraded Jukskei River.

7.1.3 Sensitive Habitats on the Site and Adjacent Areas

From a desktop study using *inter alia* aerial photographs and Google Earth™ imagery as well as preliminary site investigation the following four sensitivity categories of areas were identified:

- **High:** Areas with high species richness and habitat diversity comprising natural indigenous plant species. These areas are ecologically valuable and important for ecosystem functioning.
- **Medium-High:** An area with a relatively natural species composition; a threatened or unique ecosystem; moderate species and habitat diversity. These areas are ecologically valuable and important for buffering adjacent ecosystem functioning (valley bottom wetlands).
- **Medium:** An area with a relatively natural species composition; not a threatened or unique ecosystem; moderate species and habitat diversity but is currently degraded. Could be developed with mitigation and expected low impact on adjacent ecosystems.
- **Low:** A totally degraded and transformed area with a low habitat diversity and ecosystem functioning; no viable populations of natural plants. Development could be supported with little to no impact on the adjacent natural vegetation / ecosystem. The entire site and stormwater channel are considered low sensitivity.



Figure 17: Preliminary Sensitivity Map for the Expansion of the Bez valley Clinic and Parking Area

7.1.4 Impact Ranking of Potential Impacts Associated Fauna

The activities associated with a given development project may have impacts during the construction and/or operational phases. In this report, the assessment of impacts was divided into two phases associated with a project. These are i) the construction phase including surveying and other activities associated with the planning of the project, construction and all the activities associated with construction until the contractor leaves the site and iii) the operational phase which includes all activities associated with the operation and maintenance of the proposed development. The criteria against which the activities were assessed are presented in the tables below.

Table 20: Potential Impacts of the Construction Phase on Vegetation and Associated Fauna.

POTENTIAL IMPACT	EXTENT	DURATION	INTENSITY	PROBABILITY OF OCCURRENCE	SIGNIFICANCE (WITHOUT MITIGATION)	SIGNIFICANCE (WITH MITIGATION)
Loss of Protected or rare plant species	Site (1)	Long-term (3)	Low (1)	Improbable (1)	Medium impact (6-10 points)	Low impact (1-5 points)
Loss of Faunal Habitat	Site (1)	Long-term (3)	Low (1)	Improbable (1)	Medium impact (6-10 points)	Low impact (1-5 points)
Threatened Fauna	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Deterioration of Water Quality within stormwater channel	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Increased Human Presence	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Vegetation Clearance	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Alien Vegetation	Site (1)	Medium-term (2)	Moderate (2)	Site (1)	Medium impact (6-10 points)	Low impact (5 points)

Table 21: Potential Impacts of the Operational Phase on Vegetation and Associated Fauna.

POTENTIAL IMPACT	EXTENT	DURATION	INTENSITY	PROBABILITY OF OCCURRENCE	SIGNIFICANCE (WITHOUT MITIGATION)	SIGNIFICANCE (WITH MITIGATION)
Loss of Protected or rare plant species	Site (1)	Long-term (3).	Low (1)	Improbable (1)	Medium impact (6-10 points)	Low impact (1-5 points)
Loss of Faunal Habitat	Site (1)	Long-term (3)	Low (1)	Improbable (1)	Medium impact (6-10 points)	Low impact (1-5 points)
Threatened Fauna	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Deterioration of Water Quality within stormwater channel	Site (1)	Medium-term (2).	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Increased Human Presence	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Vegetation Clearance	Site (1)	Medium-term (2)	Low (1)	Improbable (1)	Low impact (5 points)	Low impact (5 points)
Alien Vegetation	Site (1)	Medium-term (2)	Moderate (2)	Site (1)	Medium impact (6-10 points)	Low impact (5 points)

7.2 Heritage

This study was undertaken by an independent specialist: Dr Johan van Schalkwyk

7.2.1 Overview of the Region

The cultural landscape qualities of the region essentially consist of two components. The first is a limited pre-colonial (Stone Age and Iron Age) occupation of the region. Because colonial farmers, settlers and miners have continuously and intensively used the development area for the past 150 years, very few signs of Stone Age or Iron Age occupation in the form of surface deposits and finds of artefacts have survived. The second component is the urban development that existed for the last approximately 120 years, giving form to current character of the study region.

7.2.1.1 Stone Age

Habitation of the larger geographical area took place since Early Stone Age times. This is confirmed by the occurrence of stone tools dating to the Early, Middle and Late Stone Age found in a number of places, e.g. Langermankop and the Observatory Golf Club. Unfortunately, very little information regarding these finds has remained or are accessible.

7.2.1.2 Iron Age

The excavations at The Boulders indicate that between 350 AD and 600 AD early Tswana communities lived in the Midrand area, building semi-permanent settlements of stone, wood and clay, growing crops, farming with livestock and manufacturing pots and iron implements. They moved out after 600 AD and returned about 1200 AD. Evidence of Iron Age habitation in Johannesburg can be found at various places, including the stone-walled sites on the Klipriviersberg Nature Reserve (more than 100 individual sites), Melville Koppies, Lonehill, Bruma Lake and Hearn Drive. However, the Iron Age heritage of the Johannesburg area is the most visible in the Klipriviersberg Nature Reserve.

7.2.1.3 Historic Period

In the 1820s the first white people appeared on the scene, hunters, traders, missionaries and other travellers. Permanent occupation by whites began in the early 1840s, when Voortrekker farmers established the farms that today form Johannesburg. These farms were subdivided many times over in more recent years and more farmsteads were established. Gradually the entire area was divided into farms. However, it was only since the 1880s that these farms were formally surveyed and mapped, and when not only their names but also the names of rivers and other features became permanent fixtures on maps. A number of farmsteads and cemeteries (white farmers and African farm workers) are preserved that were established during this era.

The suburb Bezuidenhout Valley, colloquially known as Bez Valley, was laid out in 1902 on a portion of the farm Doornfontein 92-IR. The grid pattern used for the street was the same as for earlier suburbs such as Judith's Paarl, Lorentzville and Bertrams. However, it was only by about 1909 that people started to buy up the stands (see **Figure 18**). The adjacent suburb to the west, De Wetshof, was only laid out in 1946.

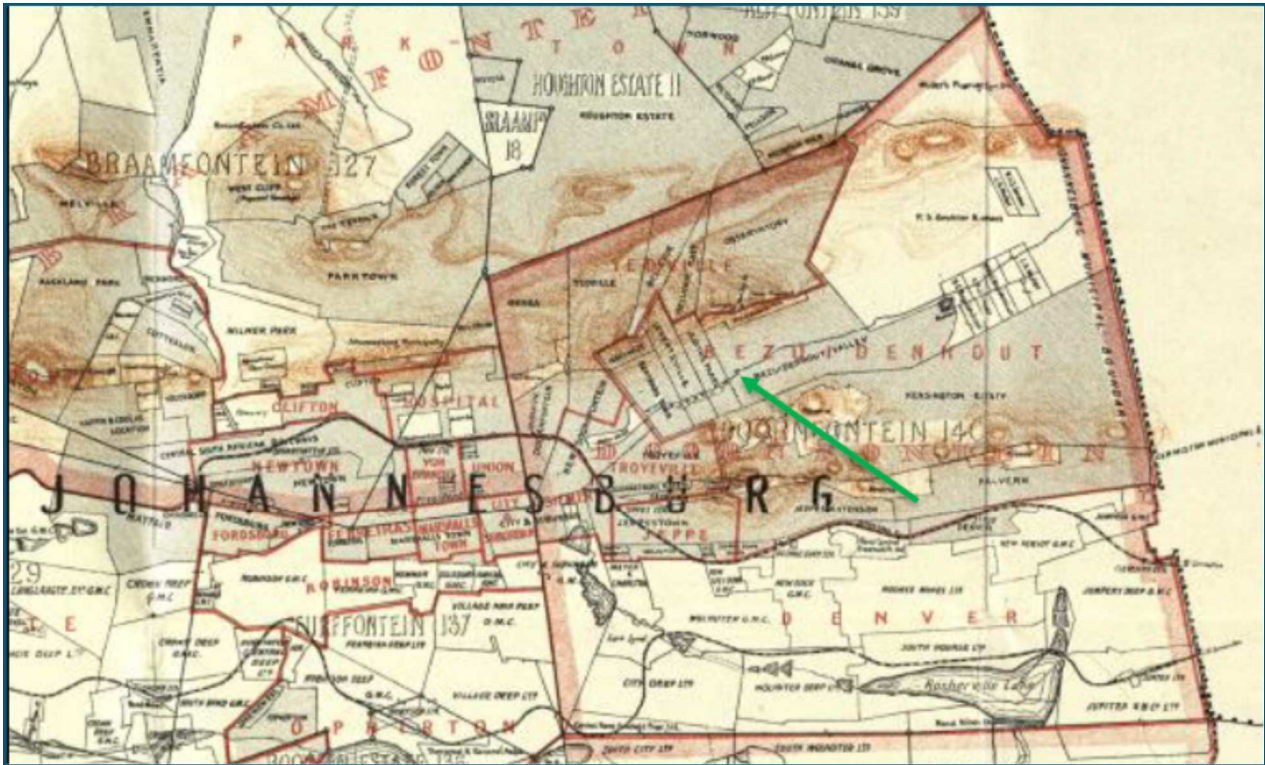


Figure 18: Bezuidenhout Valley on the 1908 Map of Johannesburg Electoral Divisions

The suburb is named after the Bezuidenhout Family who has been farming here since September 1861. Their original farmstead and burial grounds today forms part of the Bezuidenhout Park which has been a gift by the family to the citizens of the region.

The larger region contains a number of houses and business premises that enjoy Provincial Heritage protection, e.g. Yukon, Scott House and Gandhi House. Apart from that a few monuments commemorating the local men who died during the two World Wars, the Indian Memorial and other events also dot the landscape. The famous Observatory is located on the hill to the west of the study area. From the official 1:50 000 topocadastral map (**Figure 19**) dating to the 1939, it can be seen that although the suburbs were very well developed by that time, significantly the area where the Clinic is now located was still vacant.

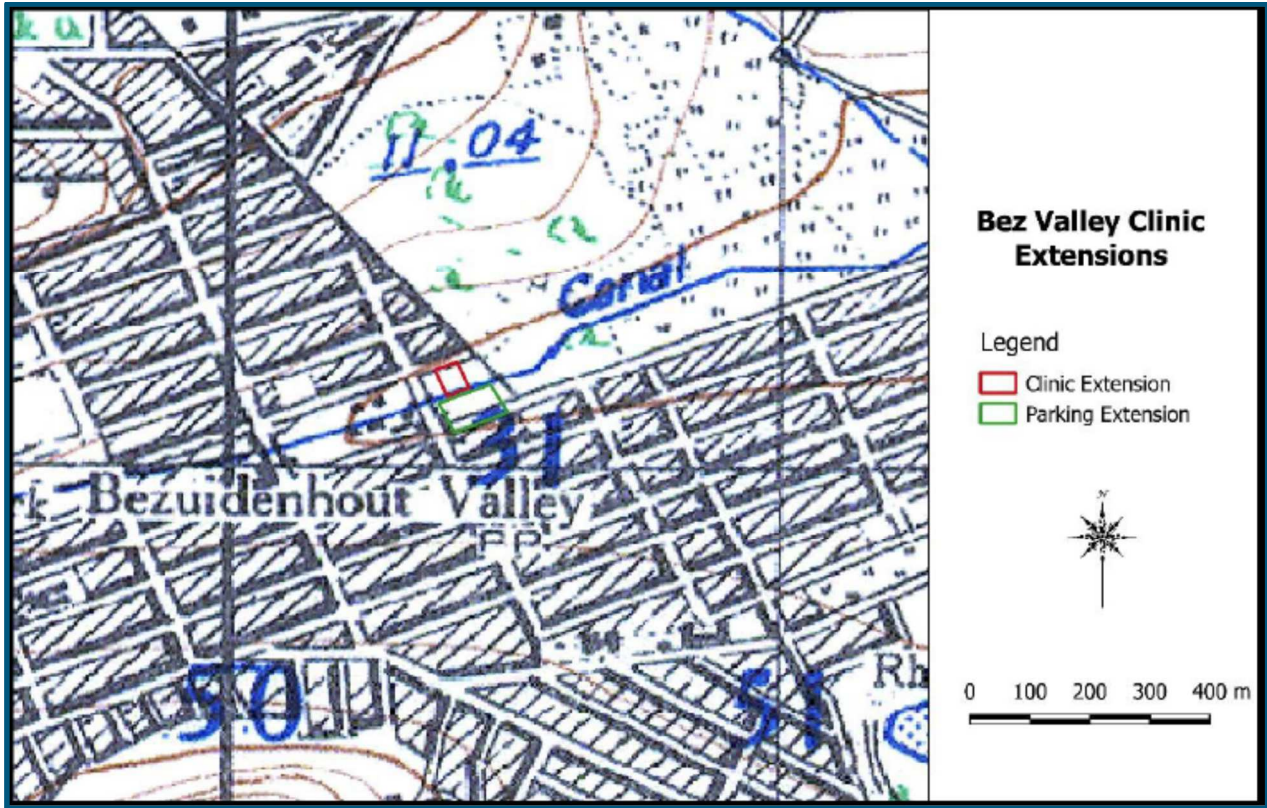


Figure 19: The Study Area on the 1939 Version of the 1:50 000 Topocadastral Map

7.2.2 Identified Sites

7.2.2.1 Stone Age

No sites, features or objects dating to the Stone Age were identified in the study area.

7.2.2.2 Iron Age

No sites, features or objects dating to the Iron Age were identified in the study area.

7.2.2.3 Historic Period

Road bridge (6th Street) across the Jukskei River, constructed from dressed sandstone blocks and concrete. The river is contained in a canal also constructed of dressed sandstone and concrete. This feature has a High local significance- Grade IV-A.

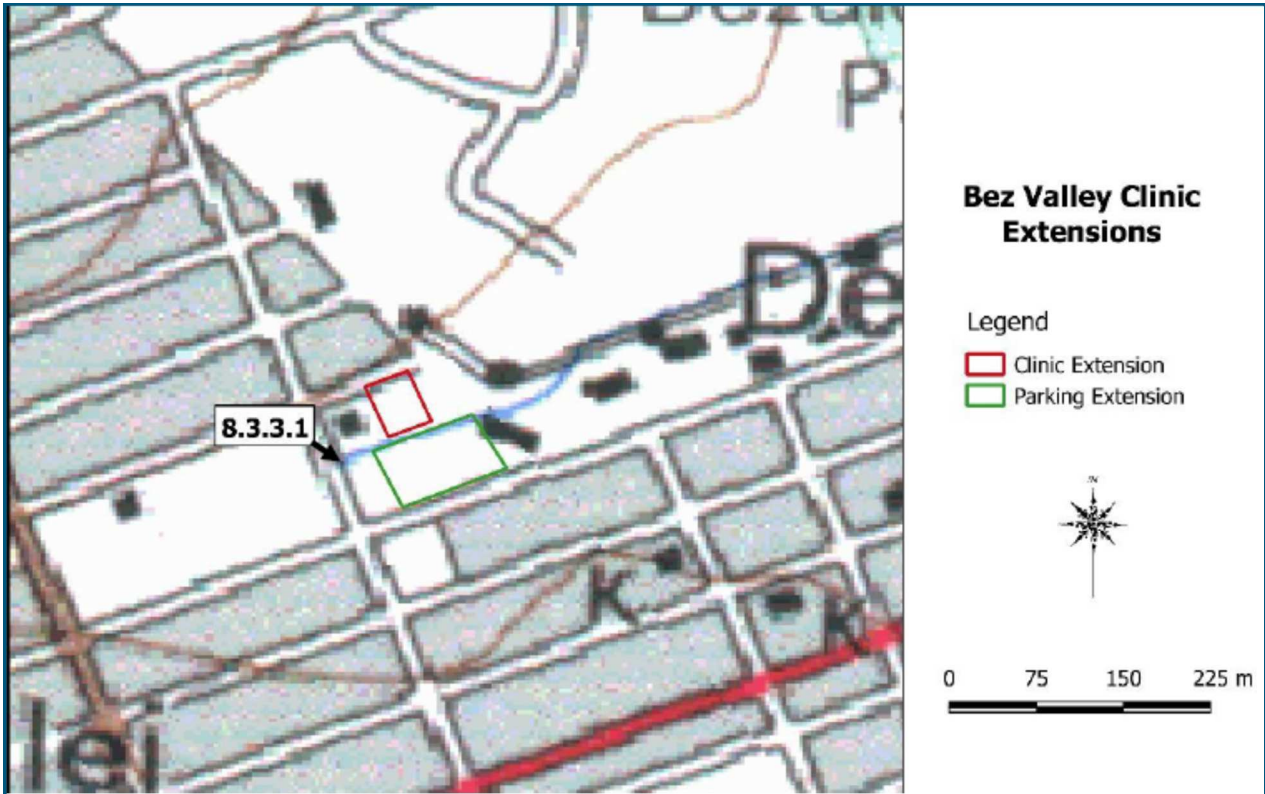


Figure 20: Location of Identified Sites

7.2.3 Impact Assessment

Table 22: Summary of Identified Heritage Resources in the Study Area

IDENTIFIED HERITAGE RESOURCES						
Site Type	NHRA category	Field Rating	Impact Before/After	Rating	Proposed Measure	Mitigation
Built structure	Section 34	High significance-Grade IV-A	9		Design and construction	inputs.
			6			

Table 23: Potential Risk Sources

Activity	Description	Risk
Removal of Vegetation	Vegetation removal for site preparation and the installation of required infrastructure, e.g. access roads and water pipelines.	The identified risks is damage or changes to resources that are generally protected in terms of section 27, 28, 31,32,34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.
Construction of Required infrastructure (access roads, water pipelines)	Construction machinery and vehicles will be utilised to construct the e.g access roads and water pipelines.	The identified risks is damage or changes to resources that are generally protected in terms of section 27, 28, 31,32,34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.

7.3 Surface Water Assessment

The Surface Water Study was undertaken by an Independent Specialist: Scientific Aquatic Services

7.3.1 Background

The key objective of the assessment was to determine whether the formalised canal located to the south of the clinic property within an open space area, could be considered to be a watercourse in terms of the definition contained in Section 1 of the National Water Act (Act 36 of 1998). Prior to the site investigation, a background study was undertaken, during which the relevant national and provincial spatial databases were consulted.

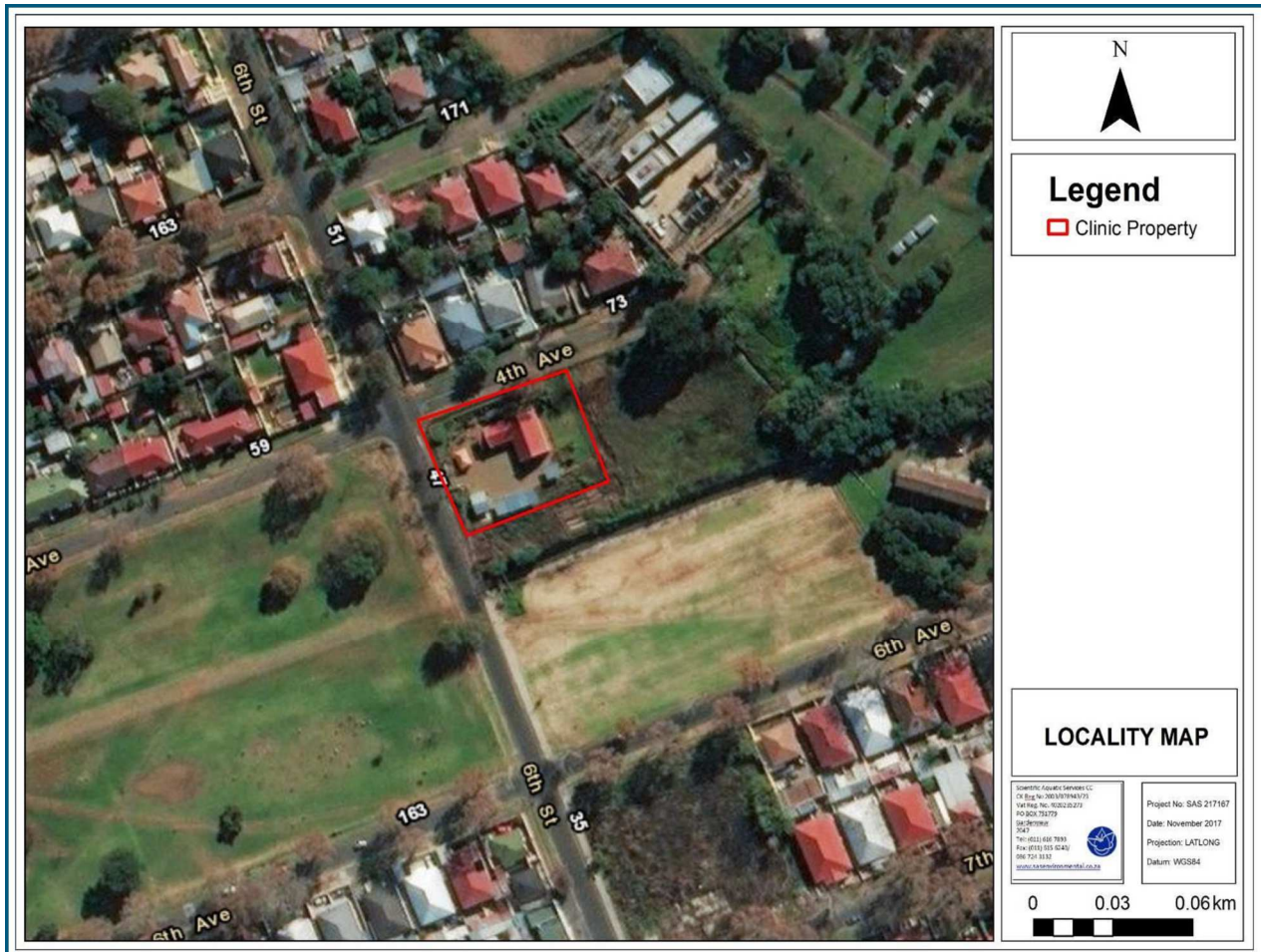


Figure 21: Digital Satellite Image Depicting the Clinic in Relation to the Study Area.

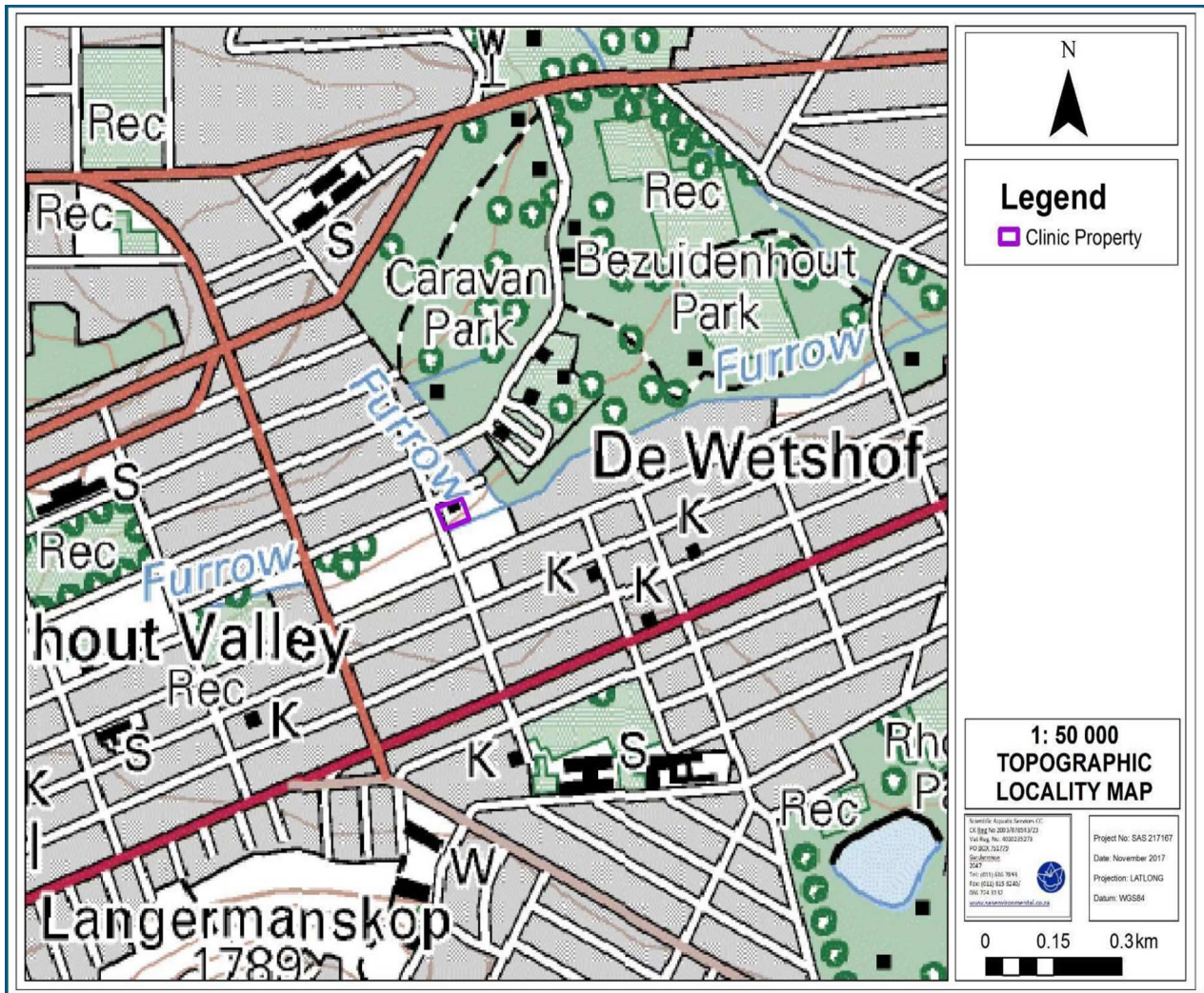


Figure 22: Location of the Clinic on a 1:50 000 Topographical Map in Relation to the Surrounding Area

7.3.2 Findings of the Study

Figure 23 presents the drainage of the large area conceptually overlaid on a digital satellite image. The area surrounding the existing clinic saw widespread development which is already evident in aerial photography taken in the early 1960's (Figure 24). This indicates that even at this point in history the drainage of this area was formally canalised as part of the stormwater management of the area. The canal forms part of the Jukskei River, which has for the largest upstream portion been constructed as a straight linear structure, where it joins the natural watercourse approximately 1km east of the existing clinic (Appendix B). The width of the canal is on average 7m wide and the depth is in the order of 3 to 4m. Downgradient to the south-west of the clinic property, the system daylight into the open canal (Figure 25) which is located to the south of the clinic property within an open space area (Figure 26). There were no vegetation associated with wetlands or riparian zones of watercourses present alongside the concrete canal. The open space area (south of the canal) has been shaped and is dominated by Kikuyu grass (*Pennisetum clandestinum*), and alien grass species. On the western side of the canal (east of the clinic



property) a vegetable garden has been established, whilst the remaining area is dominated by alien invasive species and terrestrial vegetation. It can be summarised that a natural watercourse has been historically (prior to the 1960s) formally canalised in order to accommodate stormwater generated from the upgradient (Johannesburg) and surrounding urban setting of the Bezuidenhout Valley Clinic. Even though this canal joins into a natural watercourse, the canal is for the larger part considered a stormwater canal, receiving runoff from the surrounding and upgradient impermeable surfaces and hence cannot be defined as a natural watercourse.



Figure 23: Upstream Canalised Portion of the Jukskei River Joining the Natural Watercourse



Figure 24: Extensive Development, Canalised Portion of the Jukskei River (Orange) Natural Watercourse (blue line) and Underground Portion of the Canal (Green)

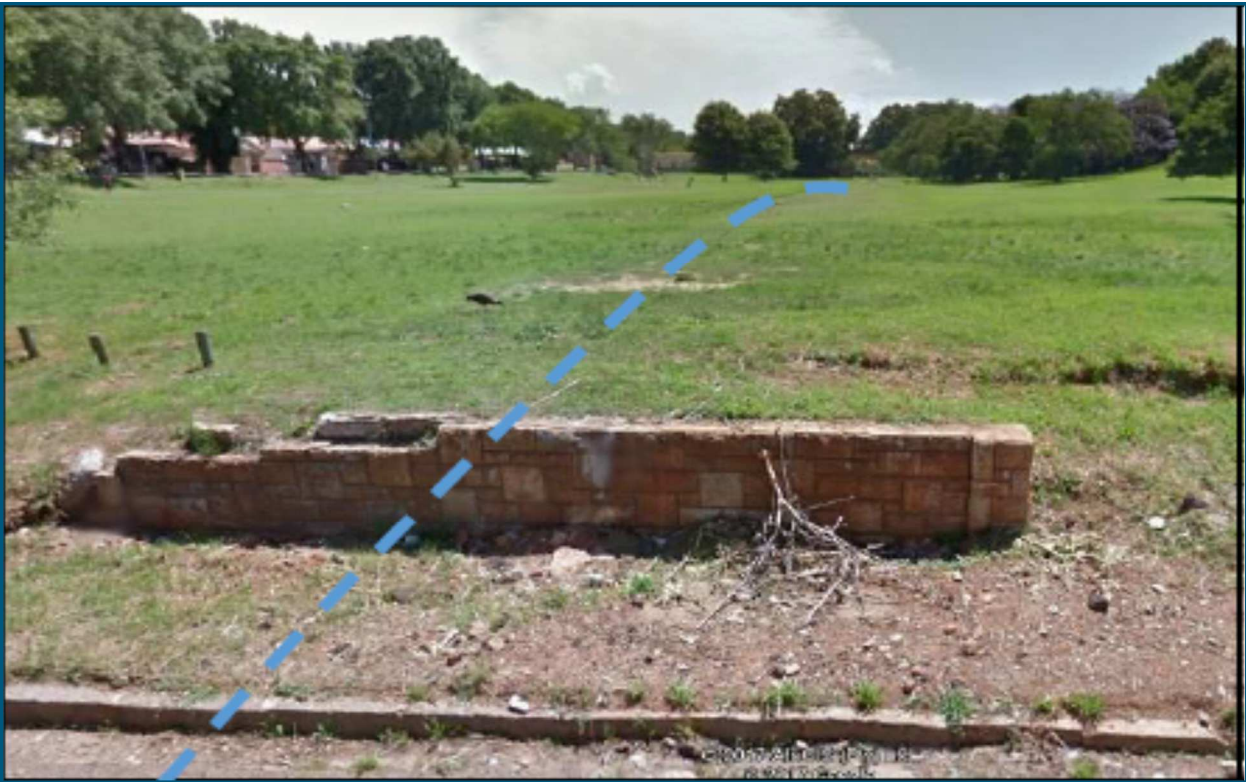


Figure 25: Area west of 6th Street where the Canal is Underground (Blue Line)



Figure 26: The Canal Daylights East of the 6th Street South to the Clinic Property



Figure 27: The Formalised Canal, Located within the Open Space Area , South of the Clinic Property (red arrow)

As contained in the definition in Section 1 of the National Water Act (NWA) (No 36 of 1998) a watercourse can be defined as:

- A river or a spring;
- A natural depression;
- A wetland, lake or dam into which or from which a water flows; and
- Any collection of water which the Minister may by notice in the Gazette declare to be a watercourse and a reference to watercourse includes where relevant, its bed bank.

Riparian is the physical structure and associated vegetation of the areas associated with the watercourse which are commonly characterised by alluvial soils and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent areas (NWA, 1998). Wetland is a land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or land is periodically covered with shallow water and which land in normally circumstances supports or would support vegetation typically adapted to life in saturated soils (NWA, 1998).

It can be concluded that the open canal south of the clinic property receives stormwater from the underground network directly to the west of the clinic and overland runoff surrounding areas and conveys water to the downstream natural watercourse in the low lying areas in the landscape. The system was developed to convey urban stormwater to the nearest natural watercourse and does not conform to the definition of a watercourse and wetland. The proposed development thus poses no quantum of risk to any watercourse, due care must be taken in the release of the stormwater from the canal to protect the concrete canal and downstream natural resource function and Eco service provision and limit the degradation of the water quality thereof.

8 Impact Assessment

8.1 Introduction

Impact assessment must take account of the nature, scale and duration of effects on the environment, whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase. Where necessary, the proposal for mitigation or optimisation of an impact is noted. A brief discussion of the impact and the rationale behind the assessment of its significance is provided in this Section.

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

- Planning Phase;
- Construction Phase; and
- Operational Phase.

As the project entails rehabilitation of existing infrastructure which will be permanent, decommissioning is not applicable to this project, however, impacts associated with post construction clean-up are considered.

8.2 Impact Assessment Methodology

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

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

The criteria to be used for the rating of impacts are provided in **Table 24**.

Table 24: Criteria to be used for the Rating of Impacts

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

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact (Refer **Table 25**).

Table 25: Criteria for the Rating of Classified Impacts

Class	Description
Any positive value	Any positive / beneficial 'impact', i.e. where no harm will occur due to the activity being undertaken.
Low impact (1-5 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (6-10 points)	Mitigation is possible with additional design and construction inputs.
Medium-High impact (11 -15 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment
High impact (16 -20 points)	The design of the site may be affected. Mitigation and possible remediation are essential during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (21 - 25 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore, not all negative impacts are equally significant.	

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

8.3 Potential Impacts and Significance

The following sections will provide a description of the potential impacts as identified by the specialist assessment, EAP and through the PPP as well as the assessment according to the criteria described in **Table 24** and **Table 25**. All potential impacts associated by the proposed development through the construction and operation of the development life-cycle have been considered and assessed in the following sections. As the infrastructure is expected to be permanent, the decommissioning phase impacts have not been considered.

8.3.1 Planning Phase Impacts

Table 26: Project Alternatives 1 and 2

PHASE: PLANNING AND DESIGN									
No.	POTENTIAL ASPECT/ IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
1	ASPECT Incorrect design of the clinic.	Alternative 1	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	IMPACT Exorbitant costs that will have to be spent in the implementation of the project.	Alternative 2	Without Mitigation	-4	-4	-4	-4	-16	Negative High
			With Mitigation	-2	-3	-3	-3	-11	Negative Medium High
	MITIGATION MEASURE	The best design option which will be cost effective must be implemented for the project.							
2	ASPECT Incorrect location of construction site camp and associated infrastructure.	Alternative 1	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	IMPACTS Occurrence significant environmental impacts (water quality, disturbance of flora and fauna, visual and air quality).	Alternative 2	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	MITIGATION MEASURE	The location of the site camp must be carefully planned and affected landowners be notified well in advanced in writing. An Environmental Control Officer must be appointed to guide and advise the project on environmental matters prior construction activities. Care must be taken that such construction camp does not trigger additional EIA Regulations 2014 (as amended in 2017) listed activities							
3	ASPECT Contractor employing people which are not from the area.	Alternative 1	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium

PHASE: PLANNING AND DESIGN									
No.	POTENTIAL ASPECT/ IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
	IMPACT Riots by the local communities.	Alternative 2	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	MITIGATION MEASURE	The Client and the Contractor must abide by the Labour Law and also liaise with appropriate structures of the local community such as Tribal Authorities and Councillors in affording opportunities of employment to unskilled community members.							
4	ASPECT Contractor not having the necessary tools and employees.	Alternative 1	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	IMPACT Delays of the construction activities.	Alternative 2	Without Mitigation	-4	-3	-4	-4	-15	Negative Medium High
			With Mitigation	-2	-2	-2	-2	-8	Negative Medium
	MITIGATION MEASURE	The Client must include all the necessary documentation in the Tendering Process. This will allow the appointed Contractor to cost appropriately for all the components required during the construction process as well as personnel.							
Average for Alternative 1 without mitigation								-15	Negative Medium High
Average for Alternative 1 with mitigation								-8	Negative Medium
Average for Alternative 2 without mitigation								-15.25	Negative Medium High
Average for Alternative 2 with mitigation								-8.75	Negative Medium

8.3.2 Construction Phase Impacts

Table 27: Project Alternatives 1 and 2

PHASE: CONSTRUCTION									
No.	POTENTIAL IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
1	ASPECT Construction traffic: movements of trucks delivering construction material.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	IMPACT Dust emissions from debris handling and debris piles; mobile plant/machinery and general construction activities.	Alternative 2	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	MITIGATION MEASURE	<ul style="list-style-type: none"> Dust suppression measures and the coordination of delivery trucks must be implemented by the appointed Contractor to minimise dust nuisance in the surrounding communities. 							
2	ASPECT Vegetation clearance in areas not affected by the construction activities.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	IMPACT Exposed soil which further causes erosion and runoff.	Alternative 2	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	MITIGATION MEASURE	<ul style="list-style-type: none"> Vegetation must be cleared in a phased manner and avoid clearance in areas not affected by construction activities to minimise erosion. Any erosion channels developed during the construction period should be backfilled and compacted, and the areas restored to a proper condition. The Contractor should ensure that cleared areas are effectively stabilised to prevent and control erosion. 							
3	ASPECT Mismanagement of chemicals by construction workers.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	IMPACT	Alternative	Without	-2	-3	-2	-3	-10	Negative Medium

PHASE: CONSTRUCTION									
No.	POTENTIAL IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
	Uncontrolled oil and chemical spillages.	2	Mitigation						
	With Mitigation		-2	-1	-1	-1	-5	Negative Low	
	MITIGATION MEASURE	<ul style="list-style-type: none"> Oil and other spillages and leakages must be minimized and controlled accordingly by cleaning the spill as soon as possible. Chemicals must be stored appropriately on site and a Materials Safety Data Sheet be provided by the contractor. Workers handling these chemicals must be trained about their potential hazard. 							
4	ASPECT Mismanagement of construction waste.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
	With Mitigation		-2	-1	-1	-1	-5	Negative Low	
	IMPACT Scattered litter, construction debris and contaminated rags all over the construction site.	Alternative 2	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
	With Mitigation		-2	-1	-1	-1	-5	Negative Low	
	MITIGATION MEASURE	<ul style="list-style-type: none"> Construction related (solid hazardous and general) waste must be collected regularly from the site and disposed of at an appropriate registered landfill site. Construction waste must not be stored more than 30 days on site. 							
	5	ASPECT Lack of provision of ablutions.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10
With Mitigation		-2		-1	-1	-1	-5	Negative Low	
IMPACT Creation of informal ablutions.		Alternative 2	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
With Mitigation			-2	-1	-1	-1	-5	Negative Low	
MITIGATION MEASURE		<ul style="list-style-type: none"> The Contractor must ensure good health and safety of workers by providing the necessary equipment's (PPE, ablution facilities that must be serviced weekly). 							
6	ASPECT Complains from neighbouring landowners	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium

PHASE: CONSTRUCTION									
No.	POTENTIAL IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
	about the construction noise.		With Mitigation	-2	-1	-1	-1	-5	Negative Low
	IMPACT Increase in noise pollution from construction activities and workers.	Alternative 2	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
	MITIGATION MEASURE	<ul style="list-style-type: none"> Normal working hours (07H00 to 17H00) must be adhered to all the time. Should there be activities that will need to be undertaken at night; the nearby landowners must be notified well in advanced. Construction vehicles must be fitted with silencers to limit the noise emission. 							
7	ASPECT Lack of health and safety plans implementation.	Alternative 1	Without Mitigation	-2	-3	-2	-3	-10	Negative Medium
	With Mitigation		-2	-1	-1	-1	-5	Negative Low	
	IMPACT Injuries and accidents of construction workers and public by construction activities.	Alternative 2	Without Mitigation	-2	-3	-3	-4	-10	Negative Medium
			With Mitigation	-2	-1	-1	-1	-5	Negative Low
MITIGATION MEASURE	<ul style="list-style-type: none"> The Contractor must ensure good health and safety of workers by providing the necessary equipment's (PPE, ablution facilities that must be serviced weekly). Clearly visible construction signs must be erected by the Contractor to ensure safety of the public. 								
8	ECOLOGY ASPECT Vegetation clearance not affecting the construction activities.	Alternative 1	Without Mitigation	-2	-3	-3	-4	-12	Negative Medium High
			With Mitigation	-1	-3	-1	-1	-6	Negative Medium
	IMPACT <ul style="list-style-type: none"> Habitat destruction and associated disturbances to remaining faunal species. 	Alternative 2	Without Mitigation	-2	-4	-2	-5	-13	Negative Medium High
			With Mitigation	-2	-2	-2	-3	-9	Negative Medium

PHASE: CONSTRUCTION									
No.	POTENTIAL IMPACT	Alternative	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
	<ul style="list-style-type: none"> Increased growth of alien vegetation. Deterioration of water quality within stormwater channel. Increased Human Presence. 								
	MITIGATION MEASURE	<ul style="list-style-type: none"> The Contractor needs to maintain close site supervision. The construction workers must be limited to the construction site in order to avoid destruction and disturbance of vegetation that is not affected by construction activities. 							
9	HERITAGE ASPECT Demolition of the road bridge wall along the 6 th street.	Alternative 1	Without Mitigation	-1	-1	-1	-1	-4	Negative Low
			With Mitigation	-1	-1	-1	-1	-4	Negative Low
	IMPACT Disturbance of the road bridge dating to the historic period (which pose high local significance) across the Jukskei river by construction workers.	Alternative 2	Without Mitigation	-1	-1	-1	-1	-4	Negative Low
			With Mitigation	-1	-1	-1	-1	-4	Negative Low
	MITIGATION MEASURE	<ul style="list-style-type: none"> It is recommended workers need to remain within the confinement of the construction sites and the construction activities be executed at the approved site. It is recommended that should there be other heritage features and artefacts which were not identified during the survey, be uncovered during the construction phase, the construction activities must be halted by the Contractor and a heritage specialist be notified to conduct further investigation. Construction work must be suspended in the areas affected until further instructions from the heritage specialist. 							
	Average for Alternative 1 without mitigation								-9.55
Average for Alternative 1 with mitigation								-5	Negative Low
Average for Alternative 2 without mitigation								-9.66	Negative Medium High
Average for Alternative 2 with mitigation								-5.3	Negative Medium

8.3.3 Operational Phase Impacts

Table 28: Project Alternatives 1 and 2

PHASE: OPERATIONAL								
No.	POTENTIAL IMPACT	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
1	<p>There are no significant impacts anticipated during the operational phase of the project. However, the below should be considered.</p> <ul style="list-style-type: none"> After the completion of the excavations, the newly excavated softer soils could potentially offer favourable habitat for certain burrowing animal species. Residual impacts that arose during the construction phase and incorrect rehabilitation of construction-related access. Alien invasive plant species encroachment. 	Without Mitigation	-2	-1	-2	-3	-8	Negative Medium
		With Mitigation	-2	-1	-1	-1	-5	Negative Low
	MITIGATION MEASURE	<ul style="list-style-type: none"> Care should be taken at all times to prevent any potential impacts that might result from operational activities. The developer must monitor the rehabilitation activities to prevent residual impacts and operational status of the project at least annually. Should there be any damages to the bridge and associated infrastructure, they should be fixed immediately. The surrounding communities should be encouraged to report any incidents that occur by using the emergency number provided and/or by reporting to the municipality. All invasive alien plants that have colonised the construction site must be removed, preferably by uprooting. Environmental friendly and safe Herbicides should be utilised where hand pulling/uprooting is not possible. 						

8.3.4 No Go Alternative

Table 29: No Go Alternative

NO GO ALTERNATIVES FOR THE PROJECT								
No.	POTENTIAL IMPACT	Mitigation	Extent	Duration	Intensity	Probability	Significance = E+D+I+P	Status Classification
	<ul style="list-style-type: none"> The inadequate healthcare services from the Bez Valley clinic will prevail due the lack of adequate infrastructure to service the local communities. Environmental health and safety risks will persists. Increased vehicles and pedestrians accidents on the road where the bridges are located. Increased costs should the project be implemented 10 years post the proposed time. 	Without Mitigation	-3	-4	-4	-4	-14	Negative High
		With Mitigation	+3	+4	+4	+4	+14	Positive High
1	MITIGATION MEASURE	<ul style="list-style-type: none"> It is recommended that the project be implemented as planned and also the Developer must consider the mitigation measures that have been included in this report and the Environmental Management Programme. 						

9 CONCLUSION AND RECOMMENDATIONS

The Basic Assessment Process for the proposed project has been undertaken in accordance with EIA Regulations published in Government Notice 982 to 985 of 4 December 2014 (as amended in 2017), in terms of the National Environmental Management Act (NEMA; No 107 of 1998)(as amended). The Basic Assessment Process is aimed at ensuring informed decision-making and environmental accountability, and to assist in achieving environmentally sound and sustainable development. In terms of NEMA (Act No 107 of 1998)(as amended), the commitment to sustainable development is evident in the provision that *“development must be socially, environmentally and economically sustainable and requires the consideration of all relevant factors”*. NEMA also imposes a duty of care, which places a positive obligation on any person who has caused, is causing, or is likely to cause damage to the environment to take reasonable steps to prevent such damage. In terms of NEMA’s preventative principle, potentially negative impacts on the environment and on people’s environmental rights (in terms of the Constitution of the Republic of South Africa, Act 108 of 1996) should be anticipated and prevented, and where they cannot be altogether prevented, they must be minimised and remedied in terms of “reasonable measures”.

In assessing the environmental feasibility of the proposed project, the requirements of all relevant legislation has been considered, including inter alia:

- The Constitution of South Africa (No. 108 of 1996);
- National Environmental Management Act (Act No. 107 of 1998) (as amended) and EIA Regulations 2014 (as amended in 2017);
- National Environmental Management: Waste Act (Act No. 59 of 2008) (as amended);
- National Environmental Management Biodiversity Act (Act No. 10 of 2004);
- National Environmental Management: Protected Areas Act (Act No. 57 of 2003);
- National Environmental Management: Air Quality Act (Act No. 39 of 2004)(as amended);
- National Water Act (Act No. 36 of 1998) (as amended);
- National Heritage Resources Act (Act No. 25 of 1999); and
- Occupational Health and Safety Act (Act No. 85 of 1993).

This relevant legislation has informed the identification and development of appropriate management and mitigation measures that should be implemented in order to minimise potentially significant impacts associated with the project. The conclusions of this Basic Assessment process are the result of comprehensive studies and specialist assessments. These studies were based on issues identified through the Basic Assessment Process and the parallel process of public participation. The public consultation process has been rigorous and extensive, and every effort has been made to include representatives of all stakeholders within the process.

9.1 Assumptions, Uncertainties or Gaps in Knowledge

When undertaking scientific studies, challenges and limitations are encountered. For this specific BA, the following challenge was encountered:

- All information provided by the Engineering team to the EAP was correct and valid at the time it was provided.

- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process.
- All data from unpublished research is valid and accurate.
- The scope of this investigation is limited to assessing the potential environmental impacts associated with the project.

9.1.1 Ecology

- Limitation to a base-line ecological survey for only 1 day (4 hours) during the early summer months (November). Rain had fallen prior as well as during the site visit in November. Although restricted to a single site visit the entire sites proposed for the expansion and parking areas are completely transformed and the concrete embanked channel or canalised section of the Jukskei is of low sensitivity and ecological functioning.
- The majority of threatened species are extremely seasonal only emerging after sufficient heavy early summer rainfall (November-March).
- The majority of threatened species are extremely secretive and difficult to observe even during intensive field surveys conducted over several seasons/ years.
- Limitation of historic data and available databases for the areas.
- The presence of threatened species on site is assessed mainly on habitat availability and suitability as well as desk research (literature, personal records) and previous surveys conducted in similar habitats between 1991-2017).
- The majority of the red data atlases are outdated especially pertaining to frogs as well as inadequate coverage of some areas by the atlases.
- Little long-term, verified data of faunal species distribution on micro-habitat level along the proposed alignments.
- Little long-term, verified data on impacts of the on-going sewerage spillages, current formal residential activities and vagrants on the fauna.
- The riverine habitats of the Jukskei River have been completely transformed and the rivers and artificially channelled in a concrete embanked channel with no natural “in-stream’ habitats. The section of the Jukskei River has been transformed into a sterile stormwater drain with high levels of alien invasive vegetation above the concrete/rock embankments. A few alien invasive and weedy plants have colonised the cracks in the concrete embankments (*Grevillea robusta**, *Acer buergerianum**).

9.1.2 Heritage

- It is assumed that the description of the proposed project, provided by the client, is accurate.
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities.
- It is assumed that the public consultation process undertaken as part of the BA process is sufficient and that it does not have to be repeated as part of the heritage impact assessment.
- The unpredictability of buried archaeological remains.
- This report does not consider the palaeontological potential of the site.

9.1.3 Surface Water

The determination of the freshwater resource boundaries and the assessment thereof is confined to the perceived zone of influence (i.e. 100m) around the proposed development. However, all freshwater resources identified within 500m of the proposed development were delineated in fulfilment of Regulation GN509 of the NWA using various desktop methods including use of topographic maps, historical and current digital satellite imagery and aerial photographs. The general surroundings were, however, considered in the desktop assessment of the study area.

9.2 Key Findings

The preceding chapters of this report provide a detailed assessment of the predicted environmental impacts on specific components of the social and biophysical environment as a result of the proposed project. This chapter concludes the report by providing a holistic evaluation of the most important environmental impacts identified through the process. In so doing, it draws on the information gathered as part of the Basic Assessment Process and presents an informed opinion about the proposed project. The Basic Assessment Study investigated two alternatives for the proposed project and they are outlined below:

- Alternative 1 – this entails demolishing the existing clinic, and to build a new parking area and new clinic on the current site (including extended site to the east). No parking area and pedestrian bridge envisaged on the open space across the channel.
- Alternative 2 – this entails retaining the existing clinic, and only extending it to the new site on the east. It also entails a new parking area and bridge across the channel.

The major environmental impacts associated with the proposed project as discussed in the BA include:

- Potential Impacts on Ecology
- Potential impacts on Heritage
- Potential impacts on Surface Water

No fatal flaws were identified since the impacts can be mitigated to acceptable levels. The project is envisaged to have an insignificant impact rating post application of mitigation measures proposed.

9.3 Conclusion of Specialist Studies

From the findings of the specialists' studies undertaken, the following conclusions were made with regards to the impacts:

9.3.1 Ecology

There were no significant ecological impacts identified that will result from the proposed project. It is recommended that the mitigation measures provided be implemented to keep the impacts minimal. The site is severely transformed and does not comprise of indigenous vegetation

9.3.2 Heritage

There are no heritage sites and features which are going to be affected by the proposed project. The impacts are minimal.

9.3.3 Surface Water

The proposed development poses no quantum of risk to any watercourse. Due care should be taken in the release of stormwater to the canal to protect the concrete canal and downstream natural resources from erosion, sedimentation and incision. In addition, to protect downstream water resource function and Eco service provision, and limit the degradation of the water quality thereof. Thus, from a surface water viewpoint, the proposed expansion activities, whether Alternative A or B is considered, would not pose any constraints in terms of environmental authorisation.

A summary of the impacts and associated ratings are provided in **Table 30**.

Table 30: Summary of Impacts

Planning Phase		
Average for Alternative 1 without mitigation	-15	Negative Medium High
Average for Alternative 1 with mitigation	-8	Negative Medium
Average for Alternative 2 without mitigation	-15.25	Negative Medium High
Average for Alternative 2 with mitigation	-8.75	Negative Medium
Construction Phase		
Average for Alternative 1 without mitigation	-9.55	Negative Medium
Average for Alternative 1 with mitigation	-5	Negative Low
Average for Alternative 2 without mitigation	-9.66	Negative Medium High
Average for Alternative 2 with mitigation	-5.3	Negative Medium

From the above summary Impact **Table 30**, it can be seen that **Alternative 1** is preferred from the environmental perspective.

9.4 Recommendations

9.4.1 Recommendations to the Competent Authority (CA)

The project, in the EAP's opinion, does not pose a detrimental impact on the receiving environment and its inhabitants and can be mitigated significantly. Therefore, the EAP recommends the proposed clinic proceed as planned. The Applicant should be bound to stringent conditions to maintain compliance and a responsible execution of the project. In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this BA study are included within an EMP.

The EMPr must be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for the construction phase of the project is considered to be vital in achieving the appropriate environmental management standards as detailed for this project. In addition, the following key conditions should be included as part of the authorisation:

- The Developer is not negated from complying with any other statutory requirements that is applicable to the undertaking of the activity.
- The Developer must appoint a suitably experienced (independent) Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation / rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the EMPr.

9.4.2 Recommendations to the Applicant

The Applicant must adhere to the recommendations provided by the specialists and the EAP. The EMPr summarises these recommendations. The Applicant must take full responsibility for the execution of the project in a manner which does not negatively impact on the environment by ensuring that responsible decisions are made.

9.5 Declaration by the EAP

The following is hereby affirmed by the EAP to be included in this report:

- the correctness of the information provided in the reports;
- the inclusion of all comments and inputs from stakeholders and I&APs;
- the inclusion of all inputs and recommendations from the specialist reports where relevant; and
- any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by interested and affected parties.



Signed: Sibongile Gumbi *Pr.Sci.Nat.*

Appendix A Locality Maps



Appendix A1
Locality Basemap

Appendix A2
Sensitivity Map

Appendix B Photographs



Appendix C
Facility Illustration



Appendix D

Specialists Reports



Appendix D1
Ecology Report

Appendix D2
Heritage Report

Appendix D3
Surface Water Report

Appendix E

Public Participation Documents



Appendix E1
Background Information Document

Appendix F
Environmental Management
Programme

