



BASIC ASSESSMENT PROCESS

for

THE PROPOSED JUKSKEI PARK PUMP STATION REFURBISHMENT IN THE CITY OF JOHANNESBURG, GAUTENG PROVINCE

GAUT 002/21-22/E2954

DRAFT BASIC ASSESSMENT REPORT

Public Review Period:

07 July 2021 to 06 August 2021

COMPILED BY:

Envirovolution Consulting (Pty) Ltd
PO Box 1898
Sunninghill
Tel: (0861)44 44 99
Fax: (0861) 62 62 22
E-mail: info@envirovolution.co.za
Website: www.envirovolution.co.za

PREPARED FOR:

Johannesburg Water SOC Ltd
7th Floor Swiss House
Marshalltown
2107
Tel: 011 688 6699
Fax: 011 688-1529

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Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
 2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
 3. A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.
 4. A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.
 5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
 6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
 7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
 8. An incomplete report may lead to an application for environmental authorisation being refused.
 9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
 10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
 11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
 12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
 13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.
-

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Not Applicable

Is a closure plan applicable for this application and has it been included in this report?

No

if not, state reasons for not including the closure plan.

There are currently no plans to decommission

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

No

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

Yes

Refer to Appendix E9 – IAP Register

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

N/A

If no, why?

This information will be available after DBAR has been reviewed

PROJECT DETAILS

Reference #:	GAUT 002/21-22/E2954
Title:	Basic Assessment Process for: The Proposed Jukskei Park Pump Station Refurbishment in the City of Johannesburg, Gauteng Province
Report compiled by:	Company Name: Envirolution Consulting Contact person: Ms Sheila Bolingo Postal Address: P.O. Box 1898, Sunninghill, 2157 Telephone Number: 0861 44 44 99 Fax Number: 0861 62 62 22 Email: sheila@envirolution.co.za
Client	: Johannesburg Water SOC Ltd
Report Status	: Draft Basic Assessment Report for Public Review
Review period	The 30-day period for review is from 07 July 2021 to 06 August 2021

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PUBLIC REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT

The Draft Basic Assessment Report (BAR) has been prepared by Envirolution Consulting (Pty) Ltd in order to assess the potential environmental impacts associated with the proposed **Jukskei Park Pump Station Refurbishment** in the City of Johannesburg. The report is made available for public review for 30-day review period from **07 July 2021 to 06 August 2021** and can be accessed at:

Drobox Link: <https://www.dropbox.com/sh/5c2844tff0qhevr/AABUIldO3vMT8cDEr0KdpN7U1a?dl=0>

In order to obtain further information, register on the project database or submit your written comment to:

Environmental Assessment Practitioner

Name: Sheila Bolingo
Physical Address: Vista Place, Suite 1a & 2, No 52,
Cnr Vorster Avenue & Glen Avenue,
Glenanda
Postal Address: PO Box 1898, Sunninghill, 2157
Telephone Number: (0861) 44 44 99
Fax Number: (0861) 62 62 22
E-mail: sheila@envirolution.co.za

The due date for comments on the Draft Basic Assessment Report is **Friday, 06 August 2021**

EXECUTIVE SUMMARY

Johannesburg Water SOC LTD (Joburg Water) has identified a need for to refurbish the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station. The existing Jukskei Park sewer pumping station is located next to Witkoppen Road and Inyanga Close within Jukskei Park suburban areas of Johannesburg, adjacent to the Klein-Jukskei River. The site location coordinates are 26°1'43.92"S 27°58'45.37"E.

It was recommended that activities be structured in accordance with the two phases below:

- Phase 1 – Temporary increase capacity of existing pump station to avoid/minimise spillages whilst a new pump station is being planned and constructed.
- Phase 2 – Upgrade to existing station comprising new pumps, sump, guardhouse and associated infrastructure

Infrastructural improvement programme within the City of Johannesburg is one of the key strategies aimed at improving the level of service to the residents of the City. Johannesburg Water Infrastructure Planning Section commissioned a desktop study to identify areas requiring urgent interventions. From the investigations and assessments, ageing is the main contributing factor to the city's infrastructure. Joburg Water has identified a need for to refurbish the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station. There the proposed refurbishment of the sewer pump is expected to decrease with the reduction of sewage leaks into the river system- which is a positive impact. Any development that aims to improve the functionality of important sewage management infrastructure must be supported.

Based on the environmental assessment presented, the proposed project will have relatively low impacts on the environment as poor availability of expected flora and the introduction of terrestrial vegetation on the stream riparian zones has reduced the sensitivity of this landscape to., this implies that the significance of most impacts on site from an environmental perspective is considered to be of low significance.

The mitigation measures proposed in section E (2) of this report are intended to prevent further degradation to watercourses as a result of the proposed refurbishment should be read in conjunction with the accompanying General Rehabilitation and Monitoring report included in Appendix H. The details of the mitigation measures that are finally put in place should ideally be based on these issues, but must necessarily take into consideration the physical and economic feasibility of mitigation. It is important that any mitigation be implemented in the context of an Environmental Management Plan in order to ensure accountability and ultimately the success of the mitigation.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

1.1 Project Title

THE PROPOSED JUKSKEI PARK PUMP STATION REFURBISHMENT IN THE CITY OF JOHANNESBURG, GAUTENG PROVINCE

1.2 Project Background

Johannesburg Water SOC Ltd (here after Joburg Water) which is an entity of the City of Johannesburg (CoJ) has appointed Royal HaskoningDHV (RHDHV) as a service provider to perform an engineering and environmental advisory role for the proposed refurbishment of the Jukskei Pump Station. The Western Klein Jukskei Pumped (WKJP) system consists of four sub-basins which drain to either the Zandspruit- or the Jukskei Park pump stations. From the respective pump stations sewage is pumped to the Western Klein Jukskei outfall (WKJ) which drains to the Northern waste water treatment works (WWTW). Refer to Figure 1 below for details of the WKJP sub-basins. The Jukskei Park Sub-basin gravitates to the Jukskei Park pump station: This sub-basin serves part of the Johannesburg North, Jukskei Park, Noordhang and North Riding comprising mainly residential properties. The extent of the Jukskei Park basin is indicated by the green pipework shown in **Figure 1**.

Joburg Water has identified a need for to refurbish the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station.

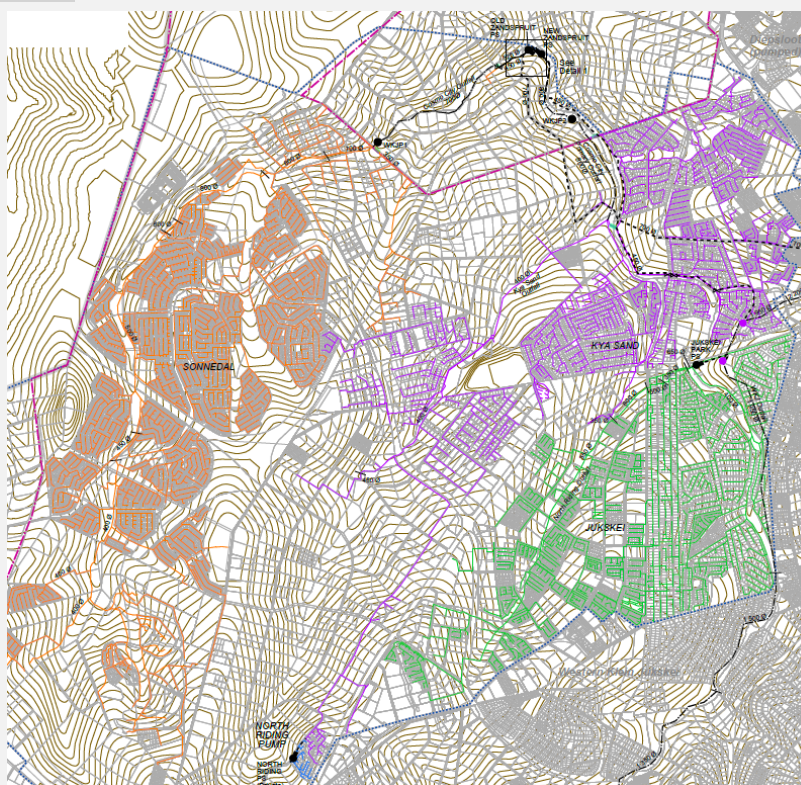


Figure 1: Western Klein Jukskei Pumped Sub-basins

1.3 Project Locality

The existing Jukskei Park sewer pumping station is located next to Witkoppen Road and Inyanga Close within Jukskei Park suburban areas of Johannesburg, adjacent to the Klein-Jukskei River. The site location coordinates are 26°1'43.92"S 27°58'45.37"E. Refer to **Figure 2** for a locality image of the pump station.

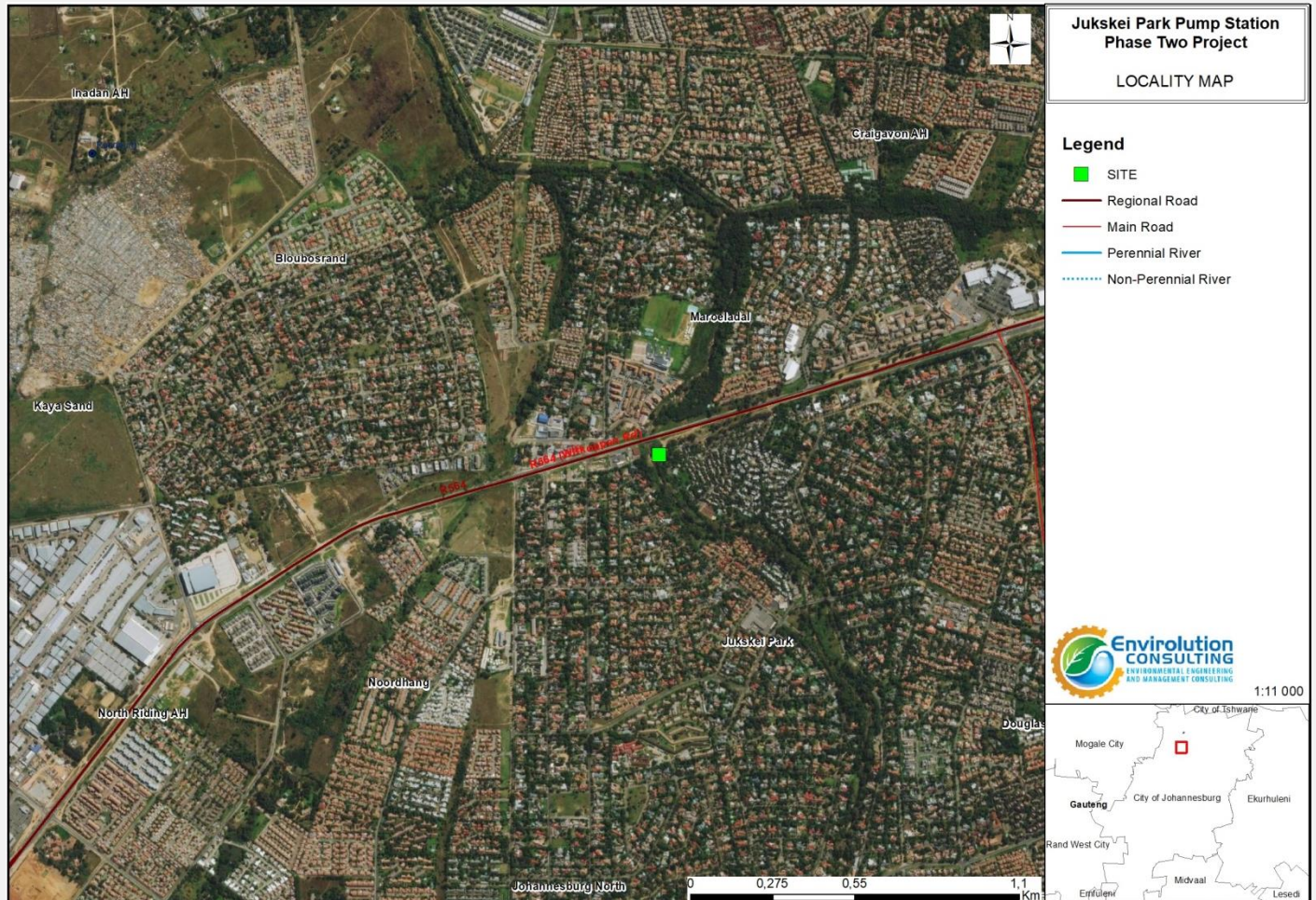


Figure 2: Locality Map (Refer to **Appendix A** for A3 maps).

1.4 Project Description

An assessment of the existing station was undertaken by the RHDHV team in order to determine the present condition. The results of the assessment are presented below in **Figure 3** and **Table 1**.



Figure 3: Status Quo of the Jukskei Pump Station Site

Table 1: Existing Infrastructure and Proposed Refurbishment

Infrastructure	Characteristics	Condition	Operational Request
Inlet Pipelines	400mm and 650mm diameter gravity lines	Pipework too old to repair Absence of a bypass sewer system	Pipe replacement or bypass line laying Bypass line
Two Rising Mains	Two 350 mm diameter, 450 m long with static differential height of 22m	Pipework too old to repair. Possible leaks perceived	Pipe replacement/ bypass line laying
Pump Sump	Approximately 70 m ³ sump volume	Retention too short. Sump clogged with large solids	Construction of larger sump
Security Hut	Mobile hut	No ablution or latrine facilities for the security on site	Ablution for security on site
Fencing	Palisade fencing	No reported operational condition	New clear view fencing
Inlet Channel	Sewer channel with non-operational muncher	Flooding inlet channel Clogged with large solids	Installation of a muncher
Valve Chambers	5m ² footprint chamber	Frequently flooded	Reduce flooding
Two Submersible Pumps	Flyght model C3201HT, 30 kW	Poor condition; frequently repairs and difficulty in maintenance	Replacement of Pumps
Valves	Isolation and NRV for each pump line	Non-return valves are not working causing the rising main to discharge into the sump. Isolation valves exposed to weathering damage	Replacement of all valves. Installation above ground
Overflow Pipe	Pipe discharging into Klein-Jukskei River	Frequent use	Increase capacity of station
Overhead Power Line	315Amps/207 kVA Power line	Sufficient power supply	Supply standby generator
MCCs	Star delta starters used to start motors	Excellent consumption reporting	New MCC with VSD drives

Civil infrastructure
Mechanical equipment
Electrical works

Based on site observations it was deduced that the maximum peak flow to the station was significantly higher than 135 l/s. From the Jukskei Capacity Review – Planning Report the Peak Design Flows are 182.01 l/s, 208.52 l/s and 231.36 l/s for the current (2017), future (2023) and the ultimate development scenarios respectively. Since the Pump Station is incapable of handling the current peak flows which is resulting in daily spillages into the Jukskei river, it is necessary to find a quick implementation solution to increasing the pumping capacity, thereafter a more thorough solution which addresses other deficiencies of the existing Pump Station can be implemented.

Therefore, it was recommended that activities be structured in accordance with the **two phases** below:

Phase 1 – *Temporary increase capacity of existing pump station to avoid/minimise spillages whilst a new pump station is being planned and constructed.*

As described in the design report by Royal HaskoningDHV dated August 2020 in **Appendix I2**, the capacity of the existing Pump Station can be increased to 220 and 270 l/s if three or four pumps are brought into operation respectively, which would then meet the current, future and ultimate peak flow requirements. However, the condition of the existing mechanical infrastructure is very poor making it impossible to achieve the required flow. Furthermore, repair/refurbishment/replacement of the mechanical equipment (pumps, guiderails, pipework, duck foot connections and valves) would require considerable downtime of the Pump Station, which would result in all flow having to be diverted into the Klein Jukskei river. It therefore proposed that the temporary solution comprise of new pumps, suction pipes, valves and connections to the existing mains, as this would result in the shortest downtime of the station.

The pumps could be sized such that it could later be used in the permanent Pump Station upgrade. The pumps will be of the self-priming solids handling centrifugal type and shall be sized such that 2 duty, 1 standby pump shall meet the ultimate development scenarios (i.e. greater than 232 l/s). A temporary structure for weather, vandalism and noise protection will be required to enclose the pumps. In addition, it is recommended that a grinder be installed within the inlet channel to breakup solids thereby reducing pump blockages.

Albeit, this mode of operation would meet the planned flows, the small volume of the sump (70m³), lack of isolation at the sump, and temporary structures are not ideal for long term operation, and therefore it is further recommended that a more robust solution be implemented after Phase 1, if the Pump Station is to continue operating beyond 5 years.

Phase 2 – *Upgrade to existing station comprising new pumps, sump, guardhouse and associated infrastructure*

The Pump Station is to be reconfigured to include a larger suitably sized sump with above ground self-priming centrifugal solids handling pumps, together with pipework and valves, and sized to deliver the ultimate peak design flow of 231.36 l/s whilst 2 pumps are in operation with 1 standby pump. The pumpsets installed in Phase 1 could be re-used to save costs.

The entire installation would be above ground making it much more readily and easily accessibility for maintenance. The benefit of this option is the added standby capacity and improved robust pumping solution. This solution may require a new building to house the pumps and electrical infrastructure for weather protection and sound attenuation. Since this option requires infrastructure adjustment, opportunity should be taken to also increase the capacity of the existing 70m³ sump to provide increased buffering capacity and to reduce the stop-start cycles of the new pumps.

The activities under phase 2 will be designed and planned so as to minimise downtime of the Pump Station when switching over from the old to the new infrastructure.

1.5 The scope of the works entails the following:

The mechanical scope of work is as follows:

Phase 1:

- Procure 2 duty, 1 standby self-priming, solids handling, centrifugal pumpset, complete with valves, delivery manifold and fittings. Pumps to be rated at 127,5 l/s at 26,5 m head each. Pump motor to be sized to deliver 147 l/s per pump (estimated at 45kW, depending on pump efficiency).
- Procure 1 Grinder/Macerator capable of handling the peak flow through the Pump Station inlet channel, i.e. greater than 850 m³/hr.
- Procure back-up generator and MCC's.
- Construct plinths, or platforms for new pumps.
- Expose all tie-in points.
- Empty sump and valve chamber.
- Possibly break dividing wall between valve chamber and sump.
- Remove existing pumps pipework and valves.
- Install new pumpsets, valves and pipework.
- Finalise tie-in to existing rising mains
- Install back-up generator and new/reconfigured MCC
- Return Pump Station to operation.
- Install temporary pump enclosure

Phase 2:

- Construct new civil infrastructure (sump, Pump Station building, mcc room, guard house, fencing, etc.).
- Install 3 off (2 duty 1 standby) new self-priming solids handling pumps. Moved from Phase 1.
- Install pipework, valves and tie into existing rising mains.
- Connect existing civil infrastructure to new infrastructure (sump).
- Commission new pumps and decommission existing pumps, pipework and valves.

1.6 Requirement for a Basic Assessment Process

In terms of sections 24(2) and 24D of the National Environmental Management Act (Act No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of [GNR 326 EIA Regulations \(7 April 2017\)](#) a Basic Assessment Process is required in order for Joburg Water to obtain environmental authorisation for the implementation of the **refurbishment of the Jukskei Park Pump Station Refurbishment near sensitive environmental features**. **Table 2** contains the listed activities in terms of the EIA Regulations and includes a description of those project activities which relate to the applicable listed activities.

Table 2: Listed Activities Applicable applied for to be authorise

Listed activities	Description of project activity that triggers listed activity
Activity 19 of Listing Notice (LN) 1 of GNR 327 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells,	The proposed project will result in infilling and depositing of more than 10m ³ into a watercourse. In addition, the excavation and removal of soil materials of more than 10 m ³ from a

shell grit, pebbles or rock of more than 10 cubic metres from a watercourse	watercourse will take place during the construction.
<p>Activity 12 of Listing Notice (LN) 3 of GNR 324: The clearance of an area of 300 square metres or more of indigenous vegetation</p> <p>(c) In Gauteng:</p> <p>ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;</p> <p>iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p>	The clearance of an area of 300 square metres or more of indigenous vegetation is required for the project within endangered ecosystem listed in terms of section 52 of the NEMBA and Critical Biodiversity Areas /Ecological Support Areas identified in the Gauteng Conservation Plan.
<p>Activity 14 of Listing Notice (LN) 3 of GNR 324</p> <p>The development of: –</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs –</p> <p>a) within a watercourse;</p> <p>(c) In Gauteng:</p> <p>iv. sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) Gauteng Conservation Plan or in bioregional plans;</p> <p>x. Sites zoned for conservation use or Public open space or equivalent zoning</p>	The proposed project will be constructed over an area of 10 square meters or more within a watercourse on sites identified within the Gauteng Conservation Plan and on an area zoned as Public open space
<p>Activity 23 of Listing Notice (LN) 3 of GNR 324</p> <p>The expansion of: –</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such expansion occurs –</p> <p>a) within a watercourse;</p> <p>(c) In Gauteng:</p> <p>iv. sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) Gauteng Conservation Plan or in bioregional plans;</p> <p>x. Sites zoned for conservation use or Public open space or equivalent zoning</p>	The proposed bridge expansion will be constructed over an area of 10 square meters or more within a watercourse on areas identified as Important and Ecological Support Area by the Gauteng Conservation Plan. and on an area zoned as Public open space.

The above listed activities have triggered a Basic Assessment Process, these activities may not commence without an environmental authorization from the competent Authority. The aim of the Environmental Impact Assessment is to ensure that:

- The potential environmental impacts and risks associated with the proposed project are taken into consideration
- Public Participation Process is conducted i.e. to afford any Interested and or Affected parties (I&AP) sufficient opportunity: to provide comments
- Sufficient information is provided to decision markers in order to ensure an informed decision making.

The nature and extent of the proposed project are explored in more detail in this Basic Assessment Report. This report has been compiled in accordance with the requirements of the EIA Regulations and includes details of the activity description; the site, area

and property description; the public participation process; the impact assessment; and the recommendations of the Environmental Assessment Practitioner.

1.7 Details of Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment

Envirolution Consulting was appointed by **Royal HaskoningDHV** on behalf of **Joburg Water** to undertake a Basic Assessment process and Water Use License for the proposed project. Furthermore, Envirolution Consulting does not have any interests in secondary developments that may arise out of the authorisation of the proposed project. Envirolution Consulting is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance with environmental legislation and evaluate the risk of development; and the development and implementation of environmental management tools. Envirolution Consulting benefits from the pooled resources, diverse skills and experience in environmental field held by its team. We offer solutions to environmental issues that are key during our clients' planning and decision-making processes. The Envirolution Consulting team have considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects in South Africa, including those associated with linear developments.

The EAPs from Envirolution Consulting who are responsible for this project are (refer to **Appendix I1** for CV's):

- Cheda Sheila Bolingo, the author of this Basic Assessment holds an Msc degree in Environmental Management with 10 years of experience in the consulting field. Her key focus areas are on strategic environmental assessment and advice on environmental impact assessments; public participation; environmental management programmes, and mapping through ArcGIS for variety of environmental projects. She is currently involved in several diverse projects across the country.
- Gesan Govender, the project manager and Environmental Assessment Practitioner (EAP) responsible for this project, is a registered Professional Natural Scientist and holds an Honours degree in Botany. He has over 15 years of experience within the field of environmental management. His key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. He is currently responsible for the project management of EIA's for several diverse projects across the country.

Select the appropriate box

The application is for an upgrade
of an existing development

The application is for a new
development

Other,
specify

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES

If yes, describe the legislation and the Competent Authority administering such legislation

The project entails the refurbishment of the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station. This implies trenching parallel and within the delineated wetland and its buffer zone. It is for such reasons that a Water Use License application process has to be undertaken for the development. According to the National Water Act (NWA), 1998 (Act No.36 of 1998), the proposed development requires a Water Use License as per the following regulations:

- Section 21(c): impeding or diverting the flow of water in a watercourse and;
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse

If yes, have you applied for the authorisation(s)?

YES	
-----	--

If yes, have you received approval(s)? (attach in appropriate appendix)

	NO
--	----

The water use license application has been initiated, a pre-application is submitted to the competent authority i.e. Department of Water and Sanitation (refer to correspondence in **Appendix F**)

2. APPLICABLE LEGISLATION, POLICIES AND / OR GUIDELINES

Table 3: List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

<u>Title of legislation, policy or guideline (Promulgation Date)</u>	<u>Applicable Requirements</u>	<u>Administering Authority</u>	<u>Description of compliance</u>
National Environmental Management Act (Act No. 107 of 1998)	<ul style="list-style-type: none"> NEMA requires, inter alia, that: <ul style="list-style-type: none"> * Development must be socially, environmentally, and economically sustainable.” * Disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.” * A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions.” EIA Regulations have been promulgated in terms of Chapter 5. Activities which may not commence without an environmental authorisation are identified within these Regulations. In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation. 	<p>Department of Forestry, Fisheries and Agriculture (DFFE)</p> <p>Gauteng Department of Agriculture and Resource Development</p>	<ul style="list-style-type: none"> In terms of sections 24(2) and 24D of the National Environmental Management Act (No 107 of 1998), as read with the EIA Regulations 2014 of GN R983 and R985; a Basic Assessment process is required to be undertaken for the proposed project.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> Section 52(1)(a) of the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, 9 December 2011 provides for listing threatened or protected ecosystems in one of four categories: critically endangered (CR), endangered (EN), Vulnerable (VU) or Protected. These species are commonly referred to as TOPS listed 	<p>Department of Forestry, Fisheries and Agriculture (DFFE)</p> <p>Gauteng Department of Agriculture and Resource Development</p>	<ul style="list-style-type: none"> No TOPS species are expected to occur on the site as no suitable habitat for these species are present.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<ul style="list-style-type: none"> The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. In terms of the regulations published in terms of this Act (GN 921 of December 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. 	<p>Department of Forestry, Fisheries and Agriculture (DFFE) (hazardous waste)</p> <p>Gauteng Department of</p>	<ul style="list-style-type: none"> In terms of GNR921, no waste license is required for the project Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of this Act, as detailed in the

<u>Title of legislation, policy or guideline (Promulgation Date)</u>	<u>Applicable Requirements</u>	<u>Administering Authority</u>	<u>Description of compliance</u>
	<ul style="list-style-type: none"> Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that <ul style="list-style-type: none"> (a) The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste; (b) Adequate measures are taken to prevent accidental spillage or leaking; (c) The waste cannot be blown away; (d) Nuisances such as odour, visual impacts and breeding of vectors do not arise; and (e) Pollution of the environment and harm to health are prevented. 	Agriculture and Resource Development (general waste)	applicable EMP, as well as in accordance with the relevant Norms and Standards.
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	<ul style="list-style-type: none"> S18, S19 and S20 of the Act allow certain areas to be declared and managed as "priority areas". Dust control regulations promulgated in December 2013 may require the implementation of a dust management plan. 	Department of Forestry, Fisheries and Agriculture (DFFE) Local Municipality	<ul style="list-style-type: none"> Reporting in terms of compliance to GNR831 will be required. While no permitting or licensing requirements arise from this legislation, this Act will find application during the construction phase of the project. The Air Emissions Authority (AEL) may require the compilation of a dust management plan.
National Water Act (Act No. 36 of 1998)	<ul style="list-style-type: none"> Under S21 of the Act, water uses must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation. In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring. 	Department of Forestry, Fisheries and Agriculture (DFFE) Gauteng Department of Agriculture and Resource Development	The proposed development requires a Water Use License as per the following regulations: <ul style="list-style-type: none"> Section 21(c): impeding or diverting the flow of water in a watercourse and; Section 21 (i): altering the bed, banks, course or characteristics of a watercourse. Requirements set by S19 will apply throughout the life-cycle of the project.
Environment Conservation Act (Act No. 73 of 1989)	<ul style="list-style-type: none"> National Noise Control Regulations (GN R154 dated 10 January 1992) 	Department of Forestry, Fisheries and Agriculture (DFFE) Gauteng Department of Agriculture and Resource Development	There is no requirement for a noise permit in terms of the legislation.

<u>Title of legislation, policy or guideline (Promulgation Date)</u>	<u>Applicable Requirements</u>	<u>Administering Authority</u>	<u>Description of compliance</u>
National Heritage Resources Act (Act No. 25 of 1999)	<ul style="list-style-type: none"> S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including: <ul style="list-style-type: none"> * The construction of a road, powerline, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; * Any development or other activity which will change the character of a site exceeding 5 000 m² in extent. 	Local Authorities South African Heritage Resources Agency	<ul style="list-style-type: none"> The proposed project footprint exceeds 5 000 m². A Heritage Assessment has been undertaken as part of this Basic Assessment Due to the density of the urban development in the region, it is very unlikely that any sites or features dating to the pre-colonial history of the region would still exist in the study area. However, isolated objects such as Stone Age artefacts might be exposed in areas close to stream beds.
National Environment Management Protected Areas Act, 2003 (Act No. 57 of 2003).	<ul style="list-style-type: none"> Wetlands and other critical Biodiversity areas are regulated under the NEM:BA. Activities that fall within the parameters of these areas require specialist assessment to determine the impacts and the residual effects of mitigation measures 	Department of Forestry, Fisheries and Agriculture (DFFE)	<ul style="list-style-type: none"> No permitting requirements were triggered by the activities.
Conservation of Agricultural Resources Act (Act No 43 of 1983).	<p>Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Declared Weeds and Invaders in South Africa are categorised according to one of the following categories:</p> <ul style="list-style-type: none"> <u>Category 1 plants</u>: are prohibited and must be controlled. <u>Category 2 plants</u>: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread. <u>Category 3 plants</u>: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the floodline of watercourses and wetlands. 	Department of Forestry, Fisheries and Agriculture (DFFE)	<ul style="list-style-type: none"> An alien species management plan to be included in the requirements of the EMPr.
Occupational Health and Safety Act (No 85 of 1993)	The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of machinery; the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work.	Department of Labour	<ul style="list-style-type: none"> The EMPr provides for measures to ensure that objectives of the Act are met on this site

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not include the no go option into the alternative table below.**

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

Provide a description of the alternatives considered

Table 3: Description of the alternatives considered

Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	Description
Site Alternatives	<p>No site alternatives have been investigated for the proposed development for the following reasons:</p> <p>The Johannesburg Water has identified a need for to refurbish the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station.</p> <p>Thus, the identified site is the <u>only one site is deemed feasible</u> and practicable for the proposed development.</p>
Pumps Design Alternative	<p>PROPOSAL: above ground pump</p> <p>The existing pumps are submersible pumps, the new pump station designed for above ground pumps. The reason for this is that maintenance of the pumps will be eased considerably. Pump blockages and other problems can be easily diagnosed and attended to with above ground pumps when compared to submersible pumps. This will significantly reduce downtime of the pump station.</p> <p>ALTERNATIVE 1: Retain the status quo and maintain (i.e. underground pump) –</p> <p>Only two pumps were installed. The other two pumps where removed presumably for repairs. At the time of the last site visit (17 August 2017) one of the two pumps had failed which necessitated all the inflow to be spilled into the adjacent Jukskei river whilst a repaired pump was being installed. Johannesburg Water maintenance personnel reported that the pumps required frequent maintenance due to blockages or pump failures. Maintenance was made more difficult by the poor/broken guiderails, damaged valves, flooded valve chamber and lack of isolation gates for the sump.</p> <p>PREFERRED OPTION: Generally, above ground self-priming centrifugal pumps are preferred over submersible pumps for sewage pumping where blocking of the pumps is expected during normal operation of the pump station. Being above ground self-priming pumps and their associated valves are much more readily and easily accessible for maintenance. Also, there is no need to empty the sump and divert flow because all mechanical components are located above ground level. Therefore, the proposal is the preferred option for implementation.</p>

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

N/A

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity (above ground pump)	$\pm 400m^2$
Alternatives:	
Alternative 1 (underground pump)	$\pm 400m^2$
Alternative 2 (if any)	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	<input style="width: 100%; height: 20px;" type="text"/>
Alternatives:	
Alternative 1	<input style="width: 100%; height: 20px;" type="text"/>
Alternative 2 (if any)	<input style="width: 100%; height: 20px;" type="text"/>
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity (above ground pump)	$\pm 400m^2$
Alternatives:	
Alternative 1 (underground pump)	$\pm 400m^2$
Alternative 2 (if any)	Ha/m^2

5. SITE ACCESS

Proposed activity

Does ready access to the site exist, or is access directly from an existing road?

YES	
-----	--

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

The site is easily accessible Witkoppen Road as shown in **Figure 4**.



Figure 4: Overview of existing access roads to the site

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?

YES	
-----	--

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Same as for the Proposed Activity.

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2 (Not Applicable)

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated Number of times (only complete when applicable)

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
 - A0 = 1: 500
 - A1 = 1: 1000
 - A2 = 1: 2000
 - A3 = 1: 4000
 - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
 - sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

The **layout plan** for the proposed development are enclosed within **Appendix A**

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

The **Locality Map** for the proposed development are enclosed within **Appendix A**

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Reference is made to **Appendix B – Site Photographs** included as part of this application

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Reference is made to **Appendix C – Facility Illustration** included as part of this application

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.

1. Indicate on a plan(s) the different environments identified
2. Complete Section B for each of the above areas identified
3. Attach to this form in a chronological order
4. Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route times

Instructions for completion of Section B for location/route alternatives

1. For each location/route alternative identified the entire Section B needs to be completed
2. Each alternative location/route needs to be clearly indicated at the top of the next page
3. Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives times (complete only when appropriate)

It is worth noting that both design alternatives of pump Installation as discussed in Section A (3) are proposed in the same receiving environment and therefore will be assessed together as impacts will be similar. It is for this reason that the section will not be duplicated.

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route (complete only when appropriate for above)

Section B – Location/route Alternative No. (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description:
(Including Physical Address
and Farm name, portion etc.)

Portion 159 of ERF529; Jukskei Park.

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Proposed Activity:
Centre point of the activity

Latitude (S):	Longitude (E):
26°1'43.92"S	27°58'45.37"E

In the case of linear activities:

Proposed Activity:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):	Longitude (E):

Alternative 1

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):	Longitude (E):

For route alternatives that are **longer than 500m**, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix.

Addendum of route alternatives attached **NO**

The 21 digit Surveyor General code of each cadastral land parcel:

T0IQ01850000052900159

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Proposed Activity

Flat	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Proposed Activity

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Proposed Activity:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	YES ✓	YES NO	YES NO
Dolomite, sinkhole or doline areas	NO ✓	YES NO	YES NO
Seasonally wet soils (often close to water bodies)	YES ✓	YES NO	YES NO
Unstable rocky slopes or steep slopes with loose soil	NO ✓	YES NO	YES NO
Dispersive soils (soils that dissolve in water)	YES ✓	YES NO	YES NO
Soils with high clay content (clay fraction more than 40%)	NO ✓	YES NO	YES NO
Any other unstable soil or geological feature	NO ✓	YES NO	YES NO
An area sensitive to erosion	NO ✓	YES NO	YES NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s) NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): Longitude (E):

c) are any caves located within a 300m radius of the site(s) NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):

Longitude (E):

°	°
---	---

If any of the answers to the above are “YES” or “unsure”, specialist input may be requested by the Department

Hydrological Settings

The Pump Station is located on the banks of the Klein Jukskei River which drains into the Jukskei River (Figure 5). It is located in Quaternary Catchment A21C and the 1st Water Management Area, Limpopo which includes the following major rivers: the Limpopo River, Crocodile East River, Matlabas River, Mokolo River, Lephhalala River, Mogalakwena River, Sand River.

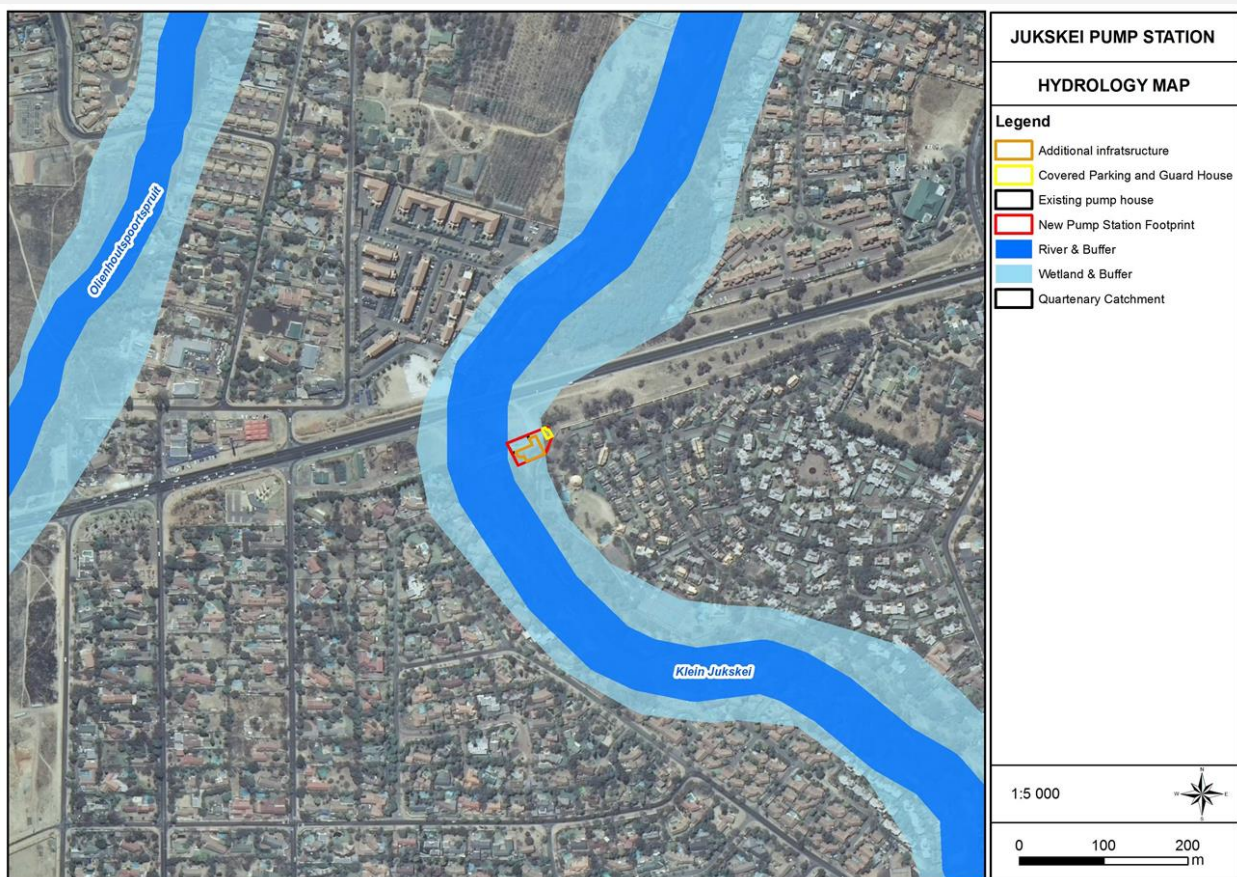


Figure 5: Regional hydrology

Topography/ Geology

Moderately undulating plains and low hills supporting tall, usually *Hyparrhenia hirta* dominated grassland, with some woody species on rocky outcrops or rock sheets. The rocky habitats show a high diversity of woody species, which occur in the form of scattered shrub groups or solitary small trees. Halfway House Granite.

Soils

The area was highly disturbed. The soil profile was predominantly alluvial sand deposits in the river bed, alluvial sand banks and prominent bedrock features as well as cobbles and pebbles. The side banks of the marginal zone were eroded in some areas.

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?



According to the Gauteng Agricultural Potential Atlas (GAPA) the site falls within an area of A “Moderate-High” Agricultural Potential “as depicted in Figure 6.

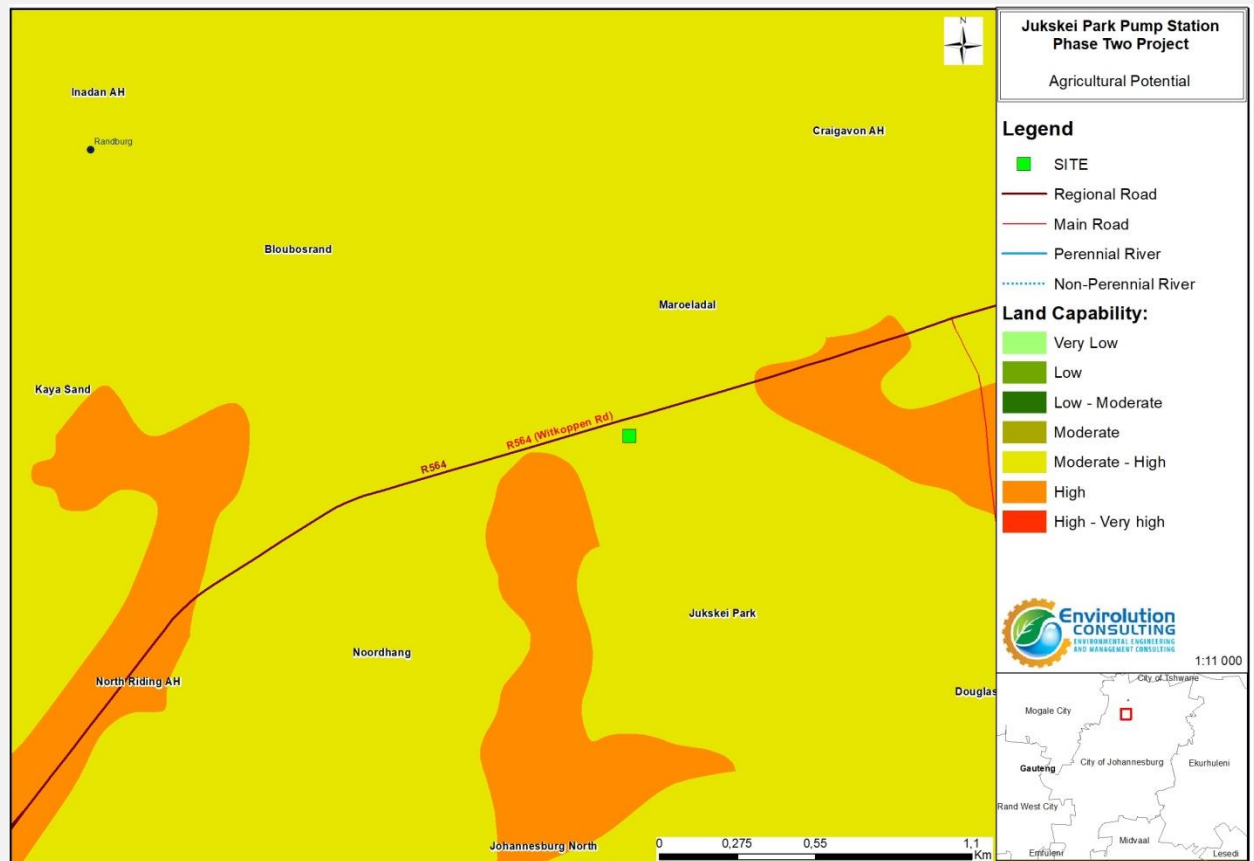


Figure 6: Agriculture potential Map for the study area

Please note: The Department request specialist input/studies in respect of the above.

7. GROUND COVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition	Natural veld with scattered aliens	Natural veld with heavy alien	Veld dominated by	Landscaped (vegetation)
-------------------------------	------------------------------------	-------------------------------	-------------------	-------------------------

% = 0	% = 0	infestation % =80	alien species % =10	% =0
Sport field % =0	Cultivated land %=0	Paved surface (hard landscaping) % =0	Building or other structure % =0	Bare soil % =10

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site

YES✓

If YES, specify and explain:

A list of plants of conservation concern was compiled using information from the South African National Biodiversity Institute's (SANBI) checklist (SANBI, 2009b), Raimondo *et al.*, (2009), and information received from the Gauteng Department of Agriculture and Rural Development (GDARD) for the quarter degree square (qds) 2627BB (Appendix G2). A list of nine (9) species that are associated with riparian areas or moist conditions were shortlisted in Appendix G2. None of these species were recorded at the time of the site verification and due to the historical impacts on the riparian area, none are expected to be present. The tree *Ilex mites* may however be present further up or downstream of the site.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES✓

If YES, specify and explain:

The project falls within the original extent of the Egoli Granite Grassland ecosystem that is listed as an Endangered ecosystem. This ecosystem is listed under criterion: A1 indicating that there has been irreversible loss of this ecosystem with only about 15% of its original extent remaining. However, the riparian areas that will be impacted on has been modified by channelisation and infestation by alien and invasive plant species.

Are there any special or sensitive habitats or other natural features present on the site?

YES✓

If YES, specify and explain:

Land use and disturbances

Historical Google Earth Satellite imagery show that the vegetation around the existing pump station, and thus within the proposed footprint, was cleared and disturbed several times over the last ten years (**Figure 7**).



Figure 7: Google Earth satellite imagery dated 20011, 2014, 2016 and 2019 showing disturbance to vegetation around the existing pump station (white arrows).

At the time of the site verification, the land east of the existing pump station was fenced in for construction related activities, including temporary buildings (Photograph 2). Sewerage overflowing from a manhole south of the existing pump station has created an unnatural vegetation, dominated by alien and invasive species, while north of the site, the soil was compacted along the entrance to the site (Photograph 2).



Photograph 1: Site cleared and used for construction related activities, east of existing pump station and within the proposed development footprint



Photograph 2: a) Compacted soils at the entrance to the site and b) overflowing manhole south of the existing pump station and within the new proposed footprint



Photograph 3: The site as seen from Witkoppen Road

Gauteng Conservation Plan

The site falls within a Critical Biodiversity Area (CBA): Important. The CBA is based on the potential presence of primary vegetation and habitat to Near-threatened plant species. However, Google Earth Satellite imagery, and the results of the site visit, indicated that much of the CBA around the site has been degraded by flooding, invasive tree species as well as litter and sewerage (**Figure 8**)

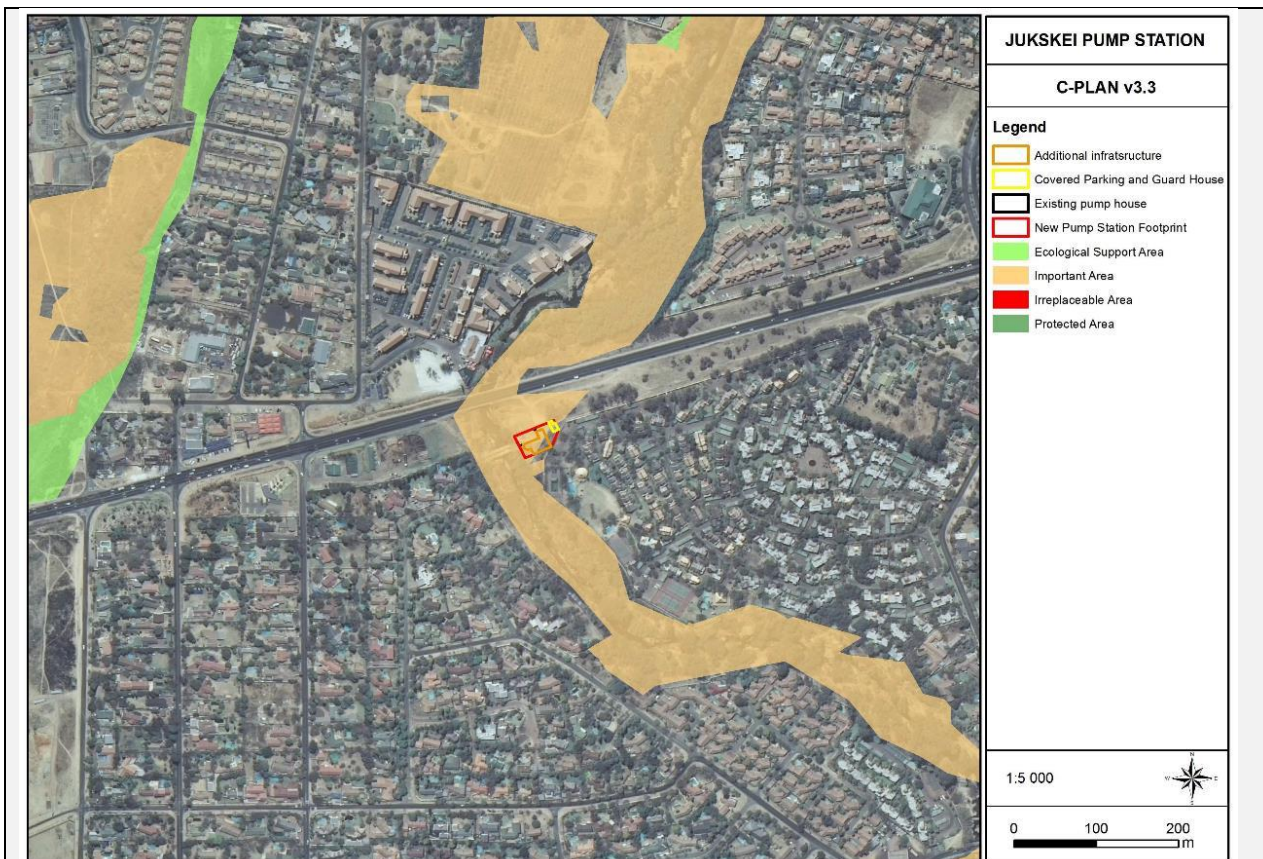


Figure 8: The project area in relation to the Gauteng Conservation Plan

Wetland

The watercourse is classified as a perennial riparian area. Due to the high density urban area it is likely that watercourse receives significant volumes of stormwater due to increased hardened surfaces from the catchment.

Figure 9 reflects the delineated hydrological features together with their associated buffer zones, relative to the study site and the DWS regulated area (500m for wetlands and 100m for rivers). A calculated 15m buffer zone following Macfarlane *et al* (2015) was calculated for the riparian area. A generic 32 m buffer zone as specified in GDARD (2014) is further shown

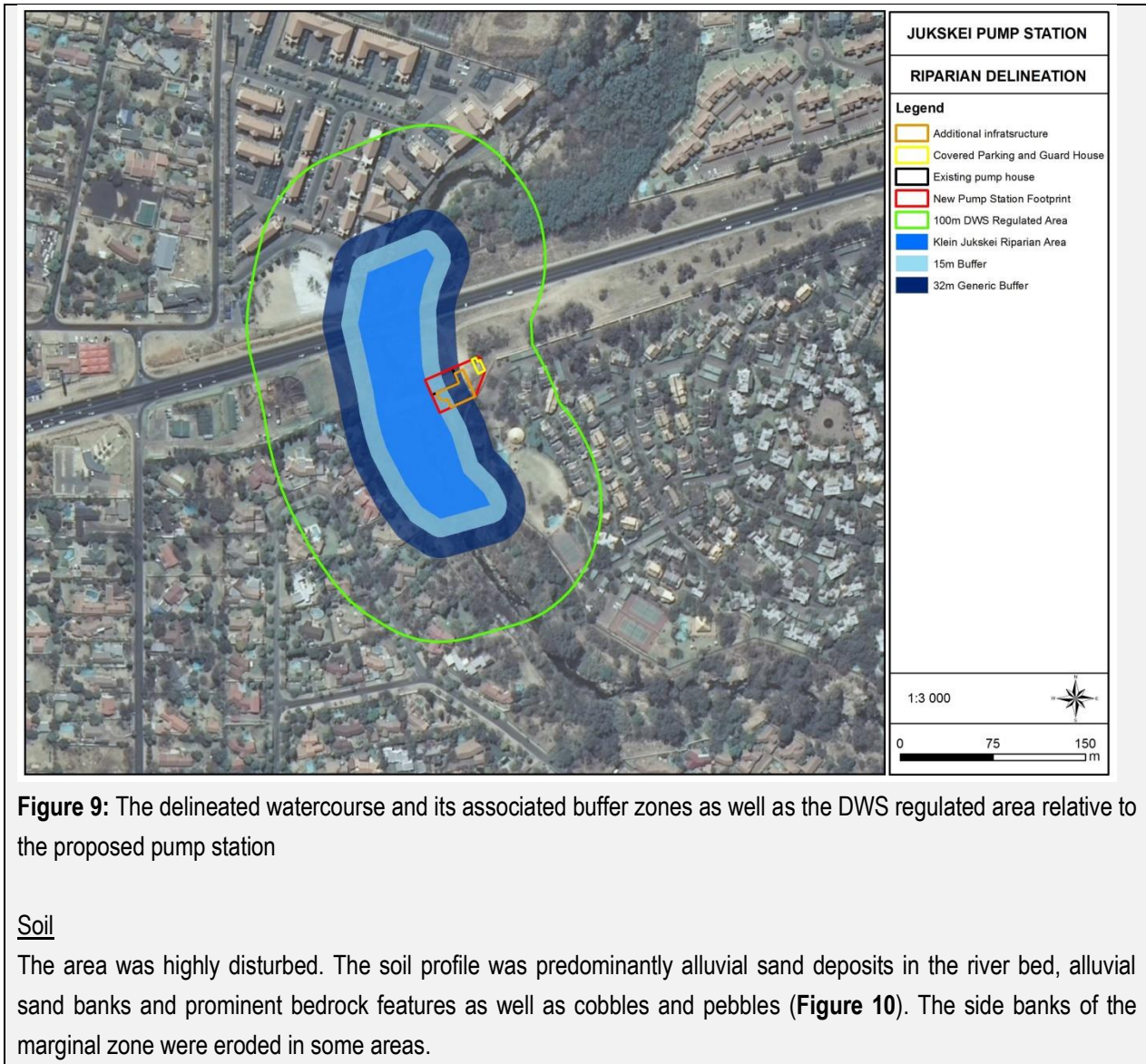




Figure 10: Alluvial deposits and large boulders visible in the marginal zone of the river.

Vegetation Indicators

Although some indigenous vegetation was observed the majority of the riparian vegetation was dominated by Alien Invasive Species (AIS) (**Figure 11**). The main woody AIS recorded include: *Robinia pseudoacacia*, *Melia aadarach*, *Eucalyptus sp*, *Morus alba*, *Lantana camara* and *Solanuma mauritianum*. The indigenous woody species recorded include *Celtis Africana* and *Vachellia karroo*. The area was also dense covered in alien invasive creeper *Cardiospermum grandiflorum*. The non-perennial AIS include: *Datura stramonium*, *Ricinus communis*, *Ipomoea purpurea*, *Bidens pilosa* and *Amaranthus hybridis*, *Verbena bonariensis*, *Canna indica*.



Figure 11: Dominant alien invasive species of the riparian area recorded on the study site.

Klein Jukskei River function and integrity

VEGRAI: 34.9% EC = E: Seriously modified. The loss of natural habitat, biota and basic ecosystem functions is extensive.

EIS: Low. Watercourses in this category are not ecologically important and sensitive at any scale. The biodiversity of these watercourses is ubiquitous and not sensitive to flow and habitat modifications. They play an insignificant role in moderating the quantity and quality of water in major rivers.

ES: Very Low In this category the importance of services supplied is very low relative to that supplied by other watercourses. However, the services Cultural and Spiritual services scored Very High since the banks of the river are used for many recreational activities.

Recommended Ecological Management Category: D

In situ drivers: The water of the sample site was clear- an indication of stability in flows in the system as well as other non-natural water sources including refrigeration and leaking water supply systems. Flotsam was mainly litter with organic material. The benthic substrate was covered in fine white material- associated with recent sewage leak into the river system

Habitat assessment using the IHAS system: The habitat of the sample site is excellent with good water flow. Vegetation was limited but present. Water column was mixed with varying speeds and depths. The system was not in flood or recently in flood. Habitats consisted of Gravel sand and mud (GSM), Standing vegetation with no aquatic vegetation and stones with bedrock. The IHAS score was calculated to 85.1%. This indicates the habitat is

acceptable for supporting a diverse macroinvertebrate community.

Aquatic macroinvertebrates using the SASS 5 methodology: The sample site had a SASS score of 9 with 6 species. The ASPT was calculated to 1.5, Class E/F. The taxa observed are all hardy and able to survive in difficult conditions

Vegetation Overview

The vegetation on and around the site was modified and included a high frequency of alien and invasive plant species. **Figure 12** gives an overview of the vegetation within the Project area of influence (PAOI).



Figure 12: Overview of vegetation in the Project area of influence (PAOI)

Protected plants

Certain activities, known as 'Restricted Activities', are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing and exporting, and selling. The first list of threatened and protected species published under NEMBA was published in the government gazette on the 23rd of February 2007 along with the Regulations on Threatened or Protected Species.

No TOP species are expected to be present within the PAOI and is unlikely to occur in the larger surrounding areas.

Provincially Protected Plants

Several provincially protected plants are listed in the Transvaal Nature Conservation Ordinance Act No. 12 of 1983. These plants are not to be removed, damaged, or destroyed without permit authorisation from Gauteng Department of Agriculture and Rural Development (GDARD).

The protected *Scadoxus puniceus* (paintbrush) grows east of the site, on a small remnant rocky area at coordinates 26° 1'43.35"S; 27°58'46.26"E (**Figure 13**). Only one individual was found. This species usually grows in groups and it is assumed that it is the only one that persists in the degraded habitat. The site is already fenced from this species and it is unlikely that it will be impacted on. If so, it can be removed prior to construction and with permission of the GDARD, stored under suitable conditions, and replanted as part of rehabilitation.



Figure 1: Locality of *Scadoxus puniceus*

Habitat Sensitivity in Terms of Fauna

From the desktop assessment, the only on-site desktop features of ecological relevance were the TOP Ecosystem and the CBA. The following is relevant:

- The TOP Ecosystem is not present on site as the site does not support any pristine grasslands.
- The site provides little in terms of habitat for significant or sensitive terrestrial fauna and the CBA serves

negligible function as habitat provision for SCCs or TOP species and populations.

- The CBA still serves some function as an ecological corridor, and TOP terrestrial fauna may move through the area but are unlikely to remain within the development area for any length of time to be impacted by the proposed activities on site.
- The ecological connectivity and of the CBA will not be significantly impaired due to the proposed activities on site.

Was a specialist consulted to assist with completing this section
If yes complete specialist details

YES ✓

1.) Aquatic Biodiversity & Wetland Specialist

Name of the specialist:

Antoinette Bootsma

Qualification(s) of the specialist:

- MSc Ecology, University of South Africa (2017) Awarded with distinction. Project Title: Natural mechanisms of erosion prevention and stabilization in a Marakele peatland; implications for conservation management
- Short course in wetland soils, Terrasoil Science (2009)
- Short course in wetland delineation, legislation and rehabilitation, University of Pretoria (2007)
- B. Sc (Hons) Botany, University of Pretoria (2003-2005). Project Title: A phytosociological Assessment of the Wetland Pans of Lake Chrissie
- B. Sc (Botany & Zoology), University of South Africa (1997 - 2001)

Postal address:

Postal code:

Telephone:

Cell: +27 83 4545 454

E-mail:

antoinette@limosella.co.za

Fax:

NO ✓

Are any further specialist studies recommended by the specialist?

If YES,

Yes

specify:

If YES, is such a report(s) attached?

If YES list the specialist reports attached below

Signature of specialist:



Date:

May 2021

2.) Flora Specialist

Name of the specialist:

Antoinette Eyssell-Knox

Qualification(s) of the specialist:

- M.Sc Environmental Science, University of Pretoria (2010)
Dissertation: Land cover change and its effect on future land uses
- B. Sc (Hons) Horticulture, University of Pretoria (1999-2000)
Dissertation: Horticultural uses of the indigenous Barleria species
- B. Sc (Agriculture) Horticulture, University of Pretoria (1993-1996)

Postal address:

Postal code:

Telephone:

082 642 6295

Cell:

082 642 6295

E-mail:

Antoinette@dimela-eco.co.za

Fax:

NO ✓

Are any further specialist studies recommended by the specialist?

If YES, specify:

N/A

If YES, is such a report(s) attached?

If YES list the specialist reports attached below

N/A

Signature of specialist:



Date:

May 2021

3.) Fauna Specialist

Name of the specialist:

Barbara Kasl,

Qualification(s) of the specialist:

- Hold a PhD in Animal, Plant and Environmental Sciences from the University of the Witwatersrand.
- Am a registered SACNASP Professional Ecological and Environmental Scientist (Pr.Sci.Nat. Registration No.: 400257/09), with expertise in fauna ecology.

Postal address:

Postal code:

Telephone:

Cell:

E-mail:

bk.zoology@gmail.com

Fax:

NO ✓

Are any further specialist studies recommended by the specialist?

If YES, specify:

N/A

If YES, is such a report(s) attached?

If YES list the specialist reports attached below

N/A

Signature of specialist:



Date:

May 2021

Please note; if more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

4.) Heritage Specialist

Name of the specialist:	J van Schalkwyk		
Qualification(s) of the specialist:	J A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 30 years. Based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape, Northern Cape, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 60 papers, many in scientifically accredited journals.		
Postal address:	62 Coetzer Avenue, Monument Park, 0181		
Postal code:	2194		
Telephone:	[REDACTED]	Cell:	076 790 6777
E-mail:	jvschalkwyk@mweb.co.za	Fax:	[REDACTED]
Are any further specialist studies recommended by the specialist?	[REDACTED]		NO ✓
If YES, specify:	N/A		
If YES, is such a report(s) attached?	[REDACTED]		
If YES list the specialist reports attached below	N/A		

Signature of specialist:



Date:

May 2021

8. LAND USE CHARACTER OF SURROUNDING AREA


Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which **represent a 500m radius around the site**

Proposed Activity:

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial ^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport ^N	23. Train station or shunting yard ^N	24. Railway line ^N	25. Major road (4 lanes or more)^N
26. Sewage treatment plant ^A	27. Landfill or waste treatment site ^A	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	35 Other land uses (describe):

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

Site 

NORTH				
9	9;21	9,20	9,20	9
25	25	25	25	9
9	2, 4	2, 4	2, 4	9; 12,13
9	2, 4		2, 4	9; 12,13
9	2, 4	9	9	9
9	9	9	9	9
SOUTH				

WEST EAST

More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and

noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively

Have specialist reports been attached

YES ✓

If yes indicate the type of reports below

- Appendix G1: Aquatic Biodiversity & Wetland Assessment
- Appendix G2: Vegetation Report
- Appendix G3: Fauna Report
- Appendix G4: Heritage Report

The above specialists' reports are attached within **Appendix G** of this report

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The project is located in **Region E** of the City of Johannesburg (CoJ) within **Wards 115**, the following socio-economics characteristics are pertinent to the site:

Region E is home to many of Johannesburg's older established suburbs that lie along Louis Botha Avenue, the old main road between Johannesburg and Pretoria. But it includes many of the city's newer suburbs that sprung up around developments in and near central Sandton. It is also home to Alexandra, an old township with a significant place in South Africa's history. Its long-standing poverty was exacerbated by the violence of the political struggle that led to a democratic South Africa, and by a continuing influx of informal settlers.

Population: Understanding both the age as well as anticipated population growth of the city assists in planning for the anticipated demand for services and job opportunities. The CoJ has a population of approximately 4 million made up primarily of a young population aged between 30 and 39 years. This total population translates into roughly 1.3 million households. The city's population is projected to increase to about 4.1 million in 2015 implying an annual rate of growth of the population of about 1.3% per annum by 2015. Household projections further indicate that the number of households in the City is likely to increase from about 1.3 million in 2010 to about 1.5 million in 2015 with an average household size of about 3 persons. The region is home to more than 250 000 residents, most of whom are concentrated in Midrand. The western part of the region is scarcely populated, though some 56 000 people reside in the township of Diepsloot alone (CoJ, 2018), ward is made up of 35 205 inhabitants.

The estimated population of the region E is 394 000, representing 14 percent of the population of Greater Johannesburg. It is composed of 87 percent black, 11 percent white, 1 percent Indian and 1 percent coloured people, mostly between 17 and 35 years old. The extremely low percentage (less than 5 percent) of children and the elderly highlights the transient nature of the inhabitants of Alex.

Economic Profile of local Municipality: The City of Johannesburg's economy is driven primarily by four economic sectors which are: (a) finance and business services, (b) community services, (c) manufacturing, and (d) trade. These four economic sectors collectively account for more than 82% of economic activity within the City.

Level of Unemployment: The CoJ had high unemployment levels of 23.1% in 2010/2011. Regions E, B have one of the lowest rates of unemployment at 2.3% and 9.2% respectively. Youth unemployment remains a major challenge both nationally and for the city. Low education levels and slow formal sector growth are two of the major causes of youth unemployment. The vast majority of the youthful population in Johannesburg has only a matric certificate preventing access to the labour market (CoJ IDP 2012/2016).

The vast region is home to a mix of highly paid professionals, middle income workers and lower paid labourers. There is also a high level of unemployment, especially around Alex.

Provision of Basic Service: The provision of (and access to) basic services such as electricity, water, adequate sanitation, etc. is critical for the pathway to poverty reduction, and to some extent, inequality – as these have an impact on the quality of life. Access to basic services is relatively high in Johannesburg (with over 95% of households enjoying access to piped water, flush toilets, and electricity); however, there is still a significant proportion of the population without the capacity / means to access or optimally benefit from these services. This could be attributed to increasing inward migration, rapid urbanisation, and the associated growth in the number of households which require services. It is also important to bear in mind that chronically poor households find it difficult, and often cannot pay for basic services.

Key issues in Region E, there are a number of challenges facing the region, including:

- An uncontrolled influx of people into Alexandra;
- Informal settlers along the banks of the Jukskei River;
- Perceived high-risk areas;
- A housing backlog in Alexandra;
- A rise in illegal occupation of land in Marlboro South;
- Decay in the Orange Grove area; and
- Traffic congestion in the Sandton area.

(https://www.joburg.org.za/about_/regions/Pages/Region%20E%20-%20Sandton,%20Alexandra/region-e.aspx)

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as-

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m² in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?

YES ✓	
-------	--

If YES, explain:

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

During the physical survey, the following sites, features and objects of cultural significance were identified in the project area (Figure 14)

- Stone Age: No sites, features or objects of cultural significance dating to the Stone Age were identified in the project area.
- Iron Age: No sites, features or objects of cultural significance dating to the Iron Age were identified in the project area.
- Historic period: A single lane concrete road bridge. It is an eight-span bridge resting on seven columns and bridgeheads at both ends. At some point in time some additional structure was added to the downstream side of the bridge, possibly to turn it into a dam wall. From historic aerial photographs it can be seen that this bridge was on the original alignment of the current Witkoppen Road. It presents a type of feature / technology which, because it is not in use anymore, has become redundant and as a result is falling in disrepair (see Figure 15)

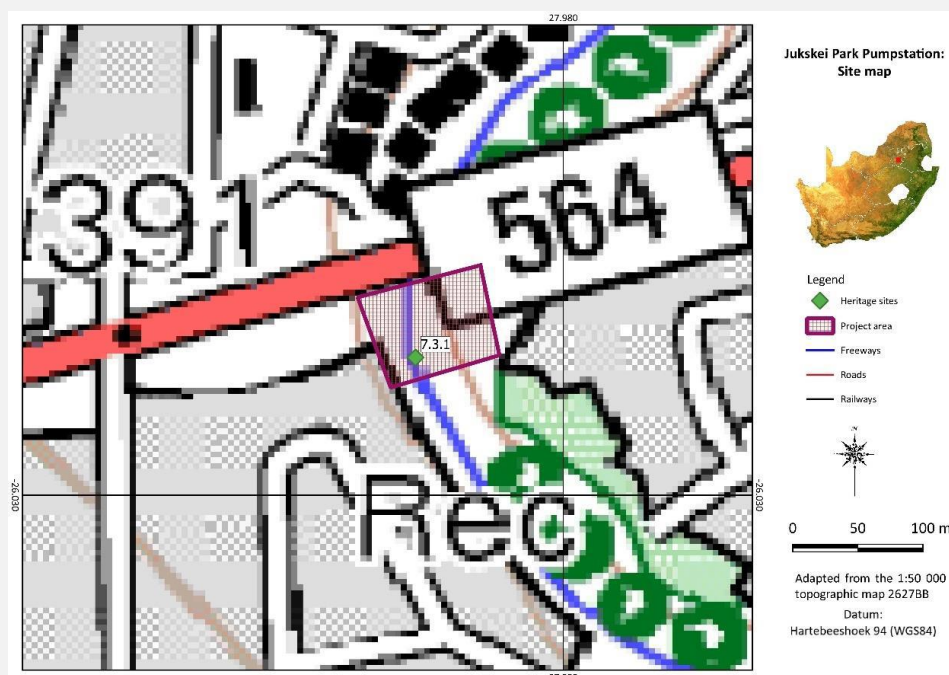


Figure 14: Location of heritage sites in the project area



Figure 15. View of the old concrete road bridge

Will any building or structure older than 60 years be affected in any way?

NO ✓

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?
If yes, please attached the comments from SAHRA in the appropriate Appendix

	NO ✓
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SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. THE ENVIRONMENTAL ASSESSMENT PRACTITIONER MUST CONDUCT PUBLIC PARTICIPATION PROCESS IN ACCORDANCE WITH THE REQUIREMENT OF THE EIA REGULATIONS, 2014.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?

YES ✓

If yes, has any comments been received from the local authority?

NO ✓

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

The Draft Report has been submitted to the City of Johannesburg (CoJ) for comment. If any issues and comments are received, these will be collated and responded to. These responses will be incorporated into the Final BAR. The Public Participation Process is currently underway. Once concluded, the issues and comments raised by I&AP will be collated and responded to. These responses will be incorporated into the Final BAR.

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

NO ✓

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

If "NO" briefly explain why no comments have been received

The Draft Report has been submitted to the stakeholders for comment. If any issues and comments are received, these will be collated and responded to. These responses will be incorporated into the Final BAR. The Public Participation Process is currently underway. Once concluded, the issues and comments raised by I&AP will be collated and responded to. These responses will be incorporated into the Final BAR.

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that

should have been addressed may cause the competent authority to withdraw any authorization it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices to I&APs

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Correspondences with I&APs

Appendix 5 – Minutes of any public and/or stakeholder meetings – **this is anticipated during the Draft BAR review period**

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report - **Comments are anticipated during the Draft BAR review period**

Appendix 8 –Comments from I&APs on amendments to the BA Report **N/A**

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
- 4) Each alternative needs to be clearly indicated in the box below
- 5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives times

(Complete only when appropriate)

Section D Alternative No. (complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

If yes, what estimated quantity will be produced per month?

YES ✓	<input type="checkbox"/>
Could not be determined at this stage	

How will the construction solid waste be disposed of (describe)?

Some construction rubble/ solid waste will arise from demolition of existing building. This solid waste will be temporarily stored on site in designated waste skips or stockpiles and then reused where possible for backfill. Surplus material will be removed by an appropriate waste contractor appointed by the main construction contractor to an approved landfill site. This will be managed through the EMPr.

Where will the construction solid waste be disposed of (describe)?

General waste removed from site will be disposed of at a suitably licensed disposal facility. Safe disposal certificates must be obtained and kept on site for the duration of the construction phase.

Will the activity produce solid waste during its operational phase?

If yes, what estimated quantity will be produced per month?

YES ✓	<input type="checkbox"/>
<input type="text" value=""/> m ³	

How will the solid waste be disposed of (describe)?

Some construction rubble/ solid waste will arise from demolition of existing building. This solid waste will be temporarily stored on site in designated waste skips or stockpiles and then reused where possible for backfill. Surplus material will be removed by an appropriate waste contractor appointed by the main construction contractor to an approved landfill site. This will be managed through the EMPr.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

NO ✓

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

During both construction and operation phase a registered landfill sites within the study area can be used as they still have capacity.

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? YES NO ✓
If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? YES NO ✓
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

During Construction, wastes must be separated at source into recyclable and non-recyclable materials and distributed for recycling where applicable. During the construction phase, construction waste rubble should be re-used as fill material, erosion protection and gabion construction where possible. The re-use of construction waste materials will minimize the amount of waste that will need to be disposed of at registered municipal waste facilities. In addition, there will be extensive earthworks, but import and export of material will be minimised by balancing cut and fill requirements as far as possible.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? YES NO ✓

If yes, what estimated quantity will be produced per month?

N/A m3

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?

YES	NO
-----	----

Will the activity produce any effluent that will be treated and/or disposed of onsite?

YES NO ✓

If yes, what estimated quantity will be produced per month?

N/A m3

If yes describe the nature of the effluent and how it will be disposed.

N/A

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility? YES NO ✓

If yes, provide the particulars of the facility:

Facility name:	N/A		
Contact person:	N/A		
Postal address:	N/A		
Postal code:	N/A		
Telephone:	N/A	Cell:	
E-mail:	N/A	Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system? YES NO ✓

If yes, what estimated quantity will be produced per month?

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?

YES	NO
-----	----

Will the activity produce any effluent that will be treated and/or disposed of onsite?

YES✓	
------	--

If yes describe how it will be treated and disposed of.

Chemical toilets are going to be used and the sewage waste will be collected by the Contractor on for treatment at a treatment facility.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES✓	
	NO✓

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

During construction, there will be localized liberation of dust due to excavations and the hauling of materials around the site. Localised exhaust emissions will also occur, however a significant increase in concentrations of hydrocarbons, nitrogen oxides and carbon monoxide is not anticipated. During the operation phase there is likely to be localised petrol fumes in the immediate vicinity of the fuel pumps as is characteristic of a typical filling station. Increased emissions may occur due to increased traffic in the vicinity of the filling station

2. WATER USE

Indicate the source(s) of water that will be used for the activity

Municipal ✓	Directly from water board	groundwater	river, stream, dam or lake	other	the activity process itself will not use water
-----------------------	---------------------------	-------------	----------------------------	-------	--

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

	litters
--	---------

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?

YES✓	
------	--

If yes, list the permits required

The pipeline will be crossing a watercourse. It is for such reasons that a Water Use License application process has been initiated for the development. According to the National Water Act (NWA), 1998 (Act No.36 of 1998), the proposed development requires a Water Use License as per the following regulations:

- Section 21(c): impeding or diverting the flow of water in a watercourse and;
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse.

If yes, have you applied for the water use permit(s)?

YES✓	
------	--

If yes, have you received approval(s)? (attached in appropriate appendix)

	NO✓
--	-----

No, a pre application Water Use Query has been submitted to the relevant authority. A pre-consultation meeting with the authorities will be held in the course of the WUL Application (here with attached). The DBAR was also submitted to Department of Water affairs and Sanitation for comment.

3. POWER SUPPLY

Please indicate the source of power supply e.g. Municipality / Eskom / Renewable energy source

The development will not require power supply during its operation phase. However generators will be used as a source of power if needed during the construction phase.

If power supply is not available, where will power be sourced from?

Please see above.

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

In other activities (construction and operation) the scope of work will be structured in a way that, where possible, the use of labour-intensive methods will be employed. Not only will it serve the local community but it also saves the use of Pneumatic Equipment that requires a lot of energy input.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The proposed development is not an energy-intensive development that will require energy/electricity input for its continued operations and will therefore not consume energy during its operation phase.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4) (b) (i)).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summaries the issues raised by interested and affected parties.

The Draft Report has been submitted to the stakeholders for comment. If any issues and comments are received, these will be collated and responded to. These responses will be incorporated into the Final BAR. The Public Participation Process is currently underway. Once concluded, the issues and comments raised by I&AP will be collated and responded to. These responses will be incorporated into the Final BAR.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)

(A full response must be provided in the Comments and Response Report that must be attached to this report):

The Draft Report has been submitted to the stakeholders for comment. If any issues and comments are received, these will be collated and responded to. These responses will be incorporated into the Final BAR. The Public Participation Process is currently underway. Once concluded, the issues and comments raised by I&AP will be collated and responded to. These responses will be incorporated into the Final BAR.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilized in the rating of significance of impacts

The purpose of impact assessment is to assign relative significance to predicted impacts associated with the project, and to determine the manner in which impacts are to be avoided, mitigated or managed. The potential environmental impacts were identified based on the nature of the receiving environment, a review of the proposed activities, and the issues raised in the public participation process.

The potential impacts of the proposed development were identified through a site visit, the Environmental Assessment Practitioners experience and expertise in the field and specialist study reports. In the Basic Assessment Report, the potential impacts are broadly identified and outlined. An assessment of the potential impacts is provided, identifying the impacts that are potentially significant and recommending management and mitigation measures to reduce the impacts. In general, it is recognized that every development has the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. Therefore, it is important that these possible risks are taken into account during the pre-construction phase of the development.

In accordance with the requirements from the EIA Regulations 2014 GN 982, Regulation 19 (3) and as set out in Appendix 1, the following impacts of the issues identified through the basic assessment phase were assessed in terms of the following methodology. All impacts are assessed according to the following criteria.

- The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
 - * The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of

development), regional, national or international. A score of between 1 and 5 is assigned as appropriate with

- * a score of 1 being site specific,
- * 2 = local (site + immediate surrounds),
- * 3 = regional (the impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns) ,
- * 4 = national and
- * a score of 5 being international (where the impact has international ramifications that extend beyond the boundaries of South Africa).

- The **duration**, wherein it is indicated whether:
 - * The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * Medium-term (5–15 years) – assigned a score of 3;
 - * Long term (> 15 years) - assigned a score of 4; or;
 - * Permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment;
 - * 2 is minor and will not result in an impact on processes;
 - * 4 is low and will cause a slight impact on processes;
 - * 6 is moderate and will result in processes continuing but in a modified way;
 - * 8 is high (processes are altered to the extent that they temporarily cease); and
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
 - * Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - * Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - * Assigned a score of 3 is probable (distinct possibility);
 - * Assigned a score of 4 is highly probable (most likely); and
 - * Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which is described as positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance** weightings for each potential impact are as follows:

- **< 30 points: Low** (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- **30-60 points: Medium** (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **>60 points: High** (i.e. Impact is significant, mitigation is critical to reduce impact or risk. Resulting impact could influence the decision depending on the possible mitigation. An impact which could influence the decision about whether or not to proceed with the project.).

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the **CONSTRUCTION and OPERATION PHASE** for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Table 4: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that is likely to occur as a result of the CONSTRUCTION and OPERATION PHASE **The potential impacts discussed below are relevant for the both pump design alternatives as discussed in Section A (3) of this report.**

2.1 IMPACTS ON THE AQUATIC BIODIVERSITY

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
CONSTRUCTION PHASE IMPACTS					
<p>The sources of this impact include the compaction of soil, the removal of vegetation, surface water redirection, changes to watercourse morphology or input of high energy surface water</p>	<p>Direct Impacts Changes in water flow regime</p> <p>Impacts on hydrological functioning at a landscape level and across the site which can arise from changes to flood regimes (e.g. suppression of floods, loss of flood attenuation capacity, unseasonal flooding or destruction of floodplain processes) as well as the extent of the modification in relation to the overall aquatic ecosystem (i.e. at the source, upstream or downstream portion, in the temporary, seasonal, permanent zone of a wetland, in the riparian zone or within the channel of a watercourse, etc.). Changes to base flow and hydroperiod.</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> Some changes in the hydrology of the rivers could occur due to ineffective sediment control during the construction phase. <p>Cumulative Impacts:</p> <p>Some changes in the hydrology of the rivers could occur due to ineffective sediment control during the construction phase.</p>	MODERATE	<ul style="list-style-type: none"> Design of watercourse crossings should ensure no net negative effect on local or regional hydrology Construction methods should be carefully reviewed to ensure the least impact to the watercourse is ensured. Effective stormwater management should be a priority during the construction phase. This should be monitored as part of the EMP. High energy stormwater input into the watercourses should be prevented at all cost. Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a weekly basis to demonstrate compliance with upstream conditions. Where necessary, corrective action should be determined by a team of specialists including engineers, hydrologists and ecologists 	LOW	Considered to be low given that optimal design is followed

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
<p>Possible sources of the impacts include:</p> <ul style="list-style-type: none"> o Earthwork activities during construction o Clearing of surface vegetation o Disturbance of soil surface o Disturbance of slopes through creation of roads and tracks adjacent to the watercourse o Erosion (e.g. gully formation, bank collapse) 	<p>Direct Impacts: Changes in sediment entering and exiting the system</p> <p>Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount). Construction and maintenance activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> • Disturbance of soil surface • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse • Erosion (e.g. gully formation, bank collapse) <p>Cumulative Impacts: Expected to be moderate to low. Should mitigation measure not be implemented effectively, sediment deposition may affect the capacity of downstream watercourses and may cause flooding. Reversing this process is unlikely and should be prevented in the first place.</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> • Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Runoff from the construction area must be managed to avoid erosion and pollution problems. 	<p>LOW</p>	<p>moderate to low since the footprint is relatively small</p>
<p>The moving of soil and vegetation resulting in opportunistic invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions</p>	<p>Direct Impacts: Introduction and spread of alien vegetation</p> <p>Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, and outcompete natural vegetation, decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Indirect Impacts: Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Cumulative Impacts: Cumulative impacts include further infestation of alien plants. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> • Implement an Alien Plant Control Plan • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards. 	<p>LOW</p>	<p>Expected to be high due to high density of alien plants on the study site</p>

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
Earthworks within the watercourse areas	<p>Direct Impacts: Loss and disturbance of watercourse habitat and fringe vegetation</p> <p>Loss and disturbance of watercourse habitat and fringe vegetation including impact on fixed and dynamic ecological processes and impact on key ecosystem regulating and supporting services</p> <p>Indirect Impacts: Assuming that earthworks will remain confined to road reserves vegetation clearing will likely not destroy wetland habitat.</p> <p>Cumulative Impacts: Expected to be moderate since the development footprint lies within the delineated watercourse</p>	MODERATE	<ul style="list-style-type: none"> Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas 	MODERATE	<p>Expected to be moderate provided that the mitigation measures are implemented correctly and effective rehabilitation and control of alien species on the site is undertaken where necessary</p>
Construction and operational activities may result in the discharge of solvents and other industrial chemicals	<p>Direct Impacts: Changes in water quality</p> <p>Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function</p> <p>Indirect Impacts: resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function</p> <p>Cumulative Impacts: Expected to be low given that standard best practice is followed during construction</p>	MODERATE	<ul style="list-style-type: none"> Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone. Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse. The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. 	LOW	<p>Expected to be moderate since the development footprint is located within the delineated watercourse or buffer zone</p>
OPERATIONAL PHASE IMPACTS					
	<p>Direct Impacts Changes in water flow regime</p> <ul style="list-style-type: none"> Impacts on hydrological functioning at a landscape level and across the site which can arise from changes to flood regimes (e.g. 	MODERATE	<ul style="list-style-type: none"> Effective stormwater management should be a priority during the construction phase. This should be monitored as part of the EMP. High energy stormwater input into the watercourses should be prevented at all cost. 	LOW	

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>suppression of floods, loss of flood attenuation capacity, unseasonal flooding or destruction of floodplain processes) as well as the extent of the modification in relation to the overall aquatic ecosystem (i.e. at the source, upstream or downstream portion, in the temporary, seasonal, permanent zone of a wetland, in the riparian zone or within the channel of a watercourse, etc.). Changes to base flow and hydroperiod.</p> <p>Indirect Impacts: During the operational phase, the trench and new pipe may create a barrier to natural flow leading to damming up of water behind the new structures, or release of water into preferential flowpaths that lead to erosion downstream.</p> <p>Cumulative Impacts: Some changes in the hydrology of the rivers could occur due to ineffective sediment control during the construction phase.</p>		<ul style="list-style-type: none"> Sediment control should be effective and not allow any release of sediment pollution downstream. This should be audited on a weekly basis to demonstrate compliance with upstream conditions. Where necessary, corrective action should be determined by a team of specialists including engineers, hydrologists and ecologists 		<p>since the footprint is relatively small</p>
<p>Possible sources of the impacts include:</p> <ul style="list-style-type: none"> Earthwork activities during construction Clearing of surface vegetation Disturbance of soil surface Disturbance of slopes through creation of roads and tracks adjacent to the watercourse Erosion (e.g. gully formation, bank collapse) 	<p>Direct Impacts: Changes in sediment entering and exiting the system</p> <p>Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount). Construction and maintenance activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation</p> <p>Indirect Impacts:</p> <ul style="list-style-type: none"> Disturbance of soil surface Disturbance of slopes through creation of roads and tracks adjacent to the watercourse <p>Erosion (e.g. gully formation, bank collapse)</p> <p>Cumulative Impacts: Expected to be moderate to low. Should mitigation measure not be implemented effectively, sediment deposition may affect the capacity of downstream watercourses and may cause flooding. Reversing this process is unlikely and should be prevented in the first place.</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> Implementation of best management practices Maintain buffer zones to trap sediments Monitoring should be done to ensure that sediment pollution is timeously dressed 	<p>LOW</p>	<p>Expected to be high due to high density of alien plants on the study site</p>
<p>The moving of soil and vegetation resulting in opportunistic</p>	<p>Direct Impacts: Introduction and spread of alien vegetation.</p> <p>Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, and outcompete natural</p>		<ul style="list-style-type: none"> Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. 		

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions	<p>vegetation, decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Indirect Impacts: Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.</p> <p>Cumulative Impacts: Cumulative impacts include further infestation of alien plants. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.</p>		<ul style="list-style-type: none"> Rehabilitate or revegetate disturbed areas 		<p>moderate provided that the mitigation measures are implemented correctly and effective rehabilitation and control of alien species on the site is undertaken where necessary</p>
Earthworks within the watercourse areas	<p>Direct Impacts: Loss and disturbance of watercourse habitat and fringe vegetation</p> <p>Indirect Impacts: Assuming that earthworks will remain confined to road reserves vegetation clearing will likely not destroy wetland habitat.</p> <p>Cumulative Impacts: Expected to be moderate since the development footprint lies within the delineated watercourse</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas Operational activities should not impact on rehabilitated or naturally vegetated areas 	<p>LOW</p>	<p>Expected to be moderate since the development footprint is located within the delineated watercourse or buffer zone</p>
Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage	<p>Direct Impacts: Changes in water quality due to foreign materials and increased nutrients</p> <p>Operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/ rivers and a reduction in watercourse function</p> <p>Indirect Impacts: Expected to be low given that standard best practice is followed during</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use. Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects. Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse 	<p>LOW</p>	<p>Expected to be moderate since the development footprint is located within the</p>

ACTIVITY/SOURCES	NATURE OF POTENTIAL IMPACT/RISK	SIGNIFICANCE (WITHOUT MITIGATION)	PROPOSED MITIGATION	SIGNIFICANCE (WITH MITIGATION)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>construction</p> <p>Cumulative Impacts: Expected to be moderate since the development footprint is located within the delineated watercourse or buffer zones</p>		<ul style="list-style-type: none"> Treatment of pollution identified should be prioritized accordingly. 		delineated watercourse or buffer zones

2.2 IMPACTS ON VEGETATION

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
CONSTRUCTION PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts: Destruction of Modified grassland</p> <p>These open spaces supported irreversibly modified vegetation in which the ecosystem has been modified completely, with a complete loss of composition and structure. Most of the ecosystem function has been destroyed and the changes are irreversible</p> <p>Indirect Impacts:</p> <p>Alien plants are likely to invade the site as a result of the disturbance created during construction</p> <p>Cumulative Impacts:</p> <p>Loss of grassland and open space within Gauteng, loss of suitable habitat to plant species of conservation concern and an increase in invasive plant species.</p>	LOW	<ul style="list-style-type: none"> No activities may proceed within or in proximity to watercourses without a Water Use License permitting the activity. Prevent spillage of construction material, oils, or other chemicals, strictly prohibit other pollution. Ensure there is a method statement in place to remedy any accidental spillages immediately. Erosion from the development footprint could increase sedimentation in already degraded watercourses. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). Stabilise the riverbank and ensure that no debris, soil or plant material end up in the river west of the site. Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. Construction camps must be placed outside of the riparian area. No vehicles may be washed on site. No vehicles may be serviced or repaired on the property, unless it is an emergency situation in which case adequate spillage containment must be implemented 	LOW	None
Vegetation clearing	Direct Impacts: Destruction or degradation of watercourse vegetation		Protected plant species:		

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>The watercourse vegetation was degraded from the natural state and although the vegetation composition and structure has been compromised, the exotic vegetation does play a role in stabilising the soils and limiting flooding. No plant species of conservation concern was recorded, and none were expected to persist in the modified vegetation.</p> <p>Indirect Impacts:</p> <p>This will impact on the health and functioning of the vegetation within the watercourse. Construction could also result in pollution of the watercourse.</p> <p>Cumulative Impacts:</p> <p>Loss of functionality of the vegetation within the watercourse, as well as erosion due to edge effects.</p>		<ul style="list-style-type: none"> One individual of <i>Scadoxus puniceus</i> were recorded east of the site. The site is already fenced here and therefore it is unlikely that the activities will impact on this species. This species is not rare, but protected provincially. This species usually grows in groups and it is assumed that it is the only one that persists in the degraded habitat. If any activity needs to extend east of the site, the species can be removed prior to construction and with permission of the GDARD, stored under suitable conditions, and replanted as part of rehabilitation 		
OPERATIONAL PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts Destruction of Modified grassland vegetation</p> <p>These open spaces supported irreversibly modified vegetation in which the ecosystem has been modified completely, with a complete loss of composition and structure. Most of the ecosystem function has been destroyed and the changes are irreversible</p> <p>Indirect Impacts:</p> <p>Reduction of indigenous species. Alien plants are likely to invade the site as a result of the disturbance created during construction</p> <p>Cumulative Impacts:</p> <p>Loss of open space within Gauteng</p>	LOW	<p>Rehabilitation:</p> <ul style="list-style-type: none"> A vegetation rehabilitation plan should already be implemented during construction and include the following: <ul style="list-style-type: none"> Grasses that naturally occur in the area should be planted in the disturbed footprint. Due to the dominance of the <i>Pennisetum clandestinum</i> (kikuyu) sowing of indigenous species are not feasible as it will be outcompeted by the <i>Pennisetum clandestinum</i>. Instead, indigenous grass 'plugs' should be planted (including fast growing species such as <i>Cynodon dactylon</i>, <i>Urochloa</i> and <i>Chloris</i> species). Therefore, a larger area needs to be cleared to ensure that planted grass 'plugs' have time to establish. The following indigenous trees can be planted to replace the invasive tree species removed: <ul style="list-style-type: none"> <i>Salix mucronata</i> (saf-saf willow) <i>Combretum erythrophyllum</i> (river bush willow) <i>Searsia pyroides</i> (common wild currant) 	VERY LOW	None

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
			<ul style="list-style-type: none"> ▪ <i>Celtis africana</i> (white stinkwood) ▪ <i>Ilex mites</i> (African holly) ▪ <i>Rhamnus prionoides</i> (dogwood) • After planting and reseeding, no soil compaction (vehicles, pedestrians and animals) should be allowed until such time that re-vegetation as successful • Establishment of the vegetation should be monitored for at least two years and after flooding event, for at least another two years. If die back is noted, a specialist should be consulted and corrective action taken as soon as possible. • Ensure that the vegetation disturbed during construction is rehabilitated by indigenous grass and tree species and prevent the spread of <i>Pennisetum clandestinum</i> (kikuyu) into the rehabilitated area. 		

2.3 IMPACTS ON FAUNA

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
CONSTRUCTION PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts Destruction of fauna habitat and ecological connectivity</p> <hr/> <p>Indirect Impacts: The limited on-site ESA provides the most significant natural habitat and very limited ecological corridor to fauna in the area but will only be partially affected by the project</p> <hr/> <p>Cumulative Impacts: Indiscriminate and uncontrolled activities within the CBAs could cause sedimentation of the downstream rivers and dams, alter the aquatic environment and impact on downstream environments.</p>	LOW	<p>The only recommendations / conditions that are relevant going forward with the development are:</p> <ul style="list-style-type: none"> The recommendations of the surface water and flora specialists must be included in the environmental management plan and implemented on site. All potentially contaminating material (fuel, chemicals, waste, oils and lubricants, sewage, paints, etc.) will be stored and handled according to best practice and will never be needlessly exposed to the environment. Spills will be actively monitored and cleared immediately to prevent contamination of surrounding and downstream faunal habitats. 	LOW	None
Vegetation clearing	<p>Direct Impacts Disturbance to fauna through noise, vibration and dust</p> <hr/> <p>Indirect Impacts: The existing developed nature of the site means that these impacts are taking place on a daily basis and the additional contribution by the proposed development will be minimal. Working within the wetland may flush out species within the area, but there are ample similar habitats for such species to retreat to and the impacts are not considered significant.</p> <hr/> <p>Cumulative Impacts: None</p>	LOW	<ul style="list-style-type: none"> Select and utilise quieter equipment where feasible. Ensure dust suppression, through water sprinkling, is applied at time of high dust generation. Any noisy point-sources utilised on site should be enclosed, and all equipment / machinery fitted with silencers where applicable. All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise. 	LOW	None
OPERATIONAL PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts Destruction of fauna habitat and ecological connectivity</p>		<ul style="list-style-type: none"> If maintenance activities are conducted in the area the above management measures are applicable 		

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>Indirect Impacts: The limited on-site ESA provides the most significant natural habitat and very limited ecological corridor to fauna in the area but will only be partially affected by the pipeline replacement</p> <p>Cumulative Impacts: Indiscriminate and uncontrolled activities within the CBAs could cause sedimentation of the downstream rivers and dams, alter the aquatic environment and impact on downstream environments.</p>				

2.4 IMPACTS ON THE HERITAGE FEATURES

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
CONSTRUCTION PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts: Direct or physical impacts, implying alteration or destruction of heritage features</p> <p>As no sites, features or objects of cultural heritage significance were identified on the project area, there would be no impact as a result of the proposed development.</p> <p><i>A single lane concrete road bridge is near the project (see Figure 14 and 15). It is understood that the upgrade would take place within the confines of the current pump station. It is therefore anticipated that it would not have any impact on the identified bridge.</i></p>	LOW	Nonetheless, some of the heritage resources tend to occur below ground, therefore should graves, fossils or any archaeological artefacts be exhumed during construction, work on the area where the artefacts were found must cease immediately and it should immediately be reported to the police, ECO and heritage practitioner or local museum so that an investigation and evaluation of the finds can be made.	LOW	None

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>Indirect impacts:</p> <p>Impact of cultural heritage resources under threat of the proposed development, is</p> <p>Cumulative impacts:</p> <p>The loss of a number of archaeological sites</p>				
OPERATIONAL PHASE IMPACTS					
No impacts					

2.5 OTHER POTENTIAL IMPACTS

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
CONSTRUCTION PHASE IMPACTS					
Vegetation clearing	<p>Direct Impacts: Change in visual character of the area</p> <ul style="list-style-type: none"> Pollution may occur due to the littering and illegal dumping on the site and surrounding areas which can affect the visual character of the site. <p>Indirect impacts:</p> <p>None</p>	LOW	<ul style="list-style-type: none"> Ensure that no litter, refuse, waste, rubbish, rubble, debris and builders wastes generated on the premises be placed, dumped or deposited on adjacent or surrounding properties including road verges, roads or public places and open spaces during or after the construction period. All waste/litter/rubbish etc. must be disposed of at an approved dumping site as approved by the Council. Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area; The landscape must be rehabilitated in such a way that it corresponds to the surrounding topography; 	LOW	None

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>Cumulative impacts:</p> <p>As more development establish in the area there will be a change in the visual character of the area from agriculture use to mixed land use.</p>		<ul style="list-style-type: none"> • Manage construction activities in accordance with the accepted/ approved construction EMP. • Screen Construction site from neighbouring area by means of a fence and opaque cover/sheeting • Ensure appropriate housekeeping • No construction rubble, construction material, refuse, litter or any other material not found naturally in the surroundings should be allowed at any time to be lying around on the construction site 		
	<p>Direct Impacts: Noise Impacts</p> <ul style="list-style-type: none"> • Increase in noise pollution due to, among others, excavations and site clearing, noise from construction vehicles and construction staff and or drilling activities. • Noise pollution caused during construction could potentially be a nuisance to neighbouring residential areas. <p>Indirect impacts:</p> <p>None</p> <p>Cumulative impacts:</p> <p>As more development establish in the area there is a possibility that the ambient noise levels may change from that of agriculture/residential area to mixed use developed area.</p>	LOW	<ul style="list-style-type: none"> • Construction activities must be limited to normal working hours and according to municipal bylaws, i.e. working hours must be limited to weekdays only. • If construction is required on the weekend; permission from adjacent landowners will be required prior to construction. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc) must be used as per operating instructions and maintained properly during site operations. • Construction activities must abide by the national noise laws and the municipal noise by-laws with regard to the abatement of noise caused by mechanical equipment. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise impact. 	LOW	None
	<p>Direct Impacts: Air Quality</p> <p>Construction activities have the potential to be sources of fugitive dust on site. These include:</p> <ul style="list-style-type: none"> • Dust from access roads. • Dust from area cleared for construction. • Emissions from construction machinery and equipment. <p>Trucks transporting spoil and fill material.</p> <p>Indirect impacts:</p> <p>None</p>	LOW	<ul style="list-style-type: none"> • Dust suppression measures must be implemented on access roads and working areas during dry periods. • Water used for this purpose must be in quantities that do not result in the generation of run-off. • Adherence to speed limits on site roads to prevent the liberation of dust into the atmosphere must be enforced • All site workers will need to wear the appropriate PPE • Transported material that can be blown off as dust must • Contractor to provide method statement of site-specific dust control measures • A speed limit of 40km/h to be maintained on all dirt roads. 	VERY LOW	None

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>Cumulative impacts:</p> <p>None</p>		<ul style="list-style-type: none"> Dust suppression by means of either water or biodegradable chemical agent is required. 		
	<p>Direct Impacts: Traffic Impacts</p> <ul style="list-style-type: none"> Anticipated impact on traffic owing to construction vehicles and heavy vehicles delivering materials to the site. Traffic congestion in and around the area may offend neighbouring property owners during the construction phase. <p>Indirect impacts:</p> <p>None</p> <p>Cumulative impacts:</p> <p>Possible traffic congestion or delays if no mitigation measures are implemented</p>	LOW	<p>The approval is subject to the following:</p> <ul style="list-style-type: none"> Construction vehicles are not to be parked on the roads thereby blocking the way to the neighbouring properties. Clear signs should be displayed and entrance to the site indicating a construction site and turning construction vehicles. Construction vehicles are to avoid main roads during peak traffic hours and mitigation measures outlined in the EMP are to be implemented. Ensure an appropriate access procedure to avoid backlog of traffic at the entry point to the site 	VERY LOW	None
	<p>Direct Impacts: Employment Opportunities</p> <p>In terms of employment opportunities, the following should be considered:</p> <ul style="list-style-type: none"> The number of jobs that would be created during the construction and operational phase of the proposed project; and The extent to which certain groups such as the unemployed, disadvantaged and minority groups could be employed. Typical of a project of this nature, some specialised skills are required although some opportunities for local labour in the unskilled and semi-skilled categories would be available even if only of a limited nature. At this stage the extent of labour required is not finalised. <p>Indirect impacts:</p> <p>Economic multiplier effects from the use of local contractors such as (waste transporters and security personnel used to provide services on site)</p>	LOW	<p>Enhancement:</p> <ul style="list-style-type: none"> It is recommended that local employment policy is adopted to maximize the opportunities made available to the local labour force. Training and skills development programmes should be provided to all employees. The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. 	LOW	None

ACTIVITY/SOURCES	POTENTIAL IMPACTS:	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION:	SIGNIFICANCE RATING OF IMPACTS (WITH MITIGATIONS)	RISK OF THE IMPACT AND MITIGATION NOT BEING IMPLEMENTED
	<p>Cumulative impacts:</p> <p>Possible economic boost</p>				

2.6 NO GO OPTION

Table 6: Potential impacts should the development not be Approved “No-Go” Alternative

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Impact on Aquatic Biodiversity	Low (+ve)	There are no mitigation measures	Negligible	No risk
Impact on Fauna and flora	Low (+ve)	There are no mitigation measures	Negligible	No risk
Visual Impacts	Low (+ve)	There are no mitigation measures	Negligible	No risk
Noise Impacts anticipated	Low (+ve)	No noise disturbance to neighboring residential estate	Negligible	Low
Loss and disturbance of heritage sites due to the development.	Low (-ve)	There are no mitigation measures	Negligible	No risk
Social impacts	Low (-ve)	There would have to be alternative employment opportunities	Negligible	No risk



List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

- Aquatic Biodiversity & Wetland Assessment
- Vegetation Report
- Fauna Report
- Heritage Report

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

- The information provided by the client forms the basis of the planning and layouts discussed.
- All wetlands within 500 m of any developmental activities should be identified as per the DWS Water Use Licence application regulations. Wetlands within the study sites were delineated on a fine scale based on detailed soil and vegetation sampling. Wetlands that fall outside of the site, but that fall within 500 m of the proposed activities were delineated based on desktop analysis of vegetation gradients visible from aerial imagery.
- The detailed field study was conducted from a once off field trip and thus would not depict any seasonal variation in the wetland plant species composition and richness.
- Description of the depth of the regional water table and geohydrological and hydrogeological processes falls outside the scope of the current assessment
- Floodline calculations fall outside the scope of the current assessment
- A Red Data scan, fauna and flora, and aquatic assessments were not included in the current study

3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), +significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposed and Alternative Designs

Potential impacts:	Significance rating of impacts (positive, negative or neutral):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Considering the strategic importance of this infrastructure, it is unlikely that it will be decommissioned in the foreseeable future. The infrastructure may however require maintenance and repairs during the life of its operation, whereby the similar impacts might be experienced as during construction phase of the project. Should the infrastructure need maintenance or repairs, the mitigation and management measures provided for during the construction phase will be implemented.				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Specialist studies for decommissioning and closure phase will be undertaken at the time when decommissioning is contemplated by the developer.

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Ongoing post decommissioning management cost will not be determined at this stage as this phase of the development is not yet contemplated.

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Cumulative impacts can result from an effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development.

The anticipated cumulative impacts of this development include the following:

- Changes in water flow: Some changes in the hydrology of the rivers could occur due to ineffective sediment control during the construction phase.
- Changes in sediment entering and exiting the system: **Expected to be moderate to low**. Should mitigation measure not be implemented effectively, sediment deposition may affect the capacity of downstream watercourses and may cause flooding. Reversing this process is unlikely and should be prevented in the first place.
- Introduction and spread: Cumulative impacts include further infestation of alien plants. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.
- Loss and disturbance of watercourse: **Expected to be moderate** since the development footprint lies within the delineated watercourse
- Changes in water quality: **Expected to be low** given that standard best practice is followed during construction
- Loss of functionality of the vegetation Loss of functionality of the vegetation within the watercourse, as well as erosion due to edge effects is expected to be low
- Cumulative Impacts on the socio-economic up-liftment as a result of the proposed development (Positive Impact), constructing the proposed development will result in additional jobs being created in the area and skills development during the construction phase. Due to the high unemployment rate in the study area. The positive impact will be very low positive but with enhancement it can be low positive.

*Generally, the **cumulative impact** is rated as **Low** for the larger part of the project as it falls within developed areas, however the cumulative impacts on the wetland area could be medium significance should mitigation measure not be implemented as changes made to the bed or banks of watercourse and unstable channel conditions may result causing erosion, meandering, increased potential for flooding and movement of bed material, which will result in*

property damage adjacent to and downstream of the site. Reversing this process is unlikely and should be prevented in the first place.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

The following **conclusions were drawn from the specialist studies** undertaken within this Basic Assessment:

Aquatic Biodiversity & Wetland Assessment:

The upgrade of infrastructure at the sewage pump station should have an overall positive impact to the integrity of downstream watercourses since it will enable the pump station to better accommodate sewage volumes in the area, and spills are likely to decrease. However, impacts during the construction phase may occur and are expected to be associated with accidental pollution or spills of contaminated water into the watercourse. Furthermore, the disturbance of riparian habitat may lead to the further establishment of alien Invasive species. The SASS score of the site must be used as baseline with no degradation from this allowed as the scores are very low (ASPT of 1.5) and must be improved by the development.

Vegetation Assessment

The riparian area, as well as the proposed site has been reduced to a very narrow corridor, with high anthropogenic impact and can be considered to have low sensitivity in terms of terrestrial vegetation. The vegetation is dominated by alien invasive plant species. Although the species composition and diversity has been modified, the vegetation plays a functional role in stabilising the soils and regulating floods. The vegetation is classified as moderately modified and in a poor ecological condition.

The proposed project will not directly impact on any sensitive vegetation and no plant species of conservation concern were recorded during a site verification, nor are any expected to be present. The proposed project may have a positive impact on the vegetation, as well as downstream thereof, by the reduction of alien invasive plant species, improving water quality and the introduction of indigenous species.

Fauna assessment:

The photographic assessment supported the initial desktop findings and indicated that the area was very disturbed and the CBA has little value in terms of habitat provision for sensitive or significant terrestrial fauna, but does still provide ecological connectivity and fauna may move through the area.

Sewage leaks are a cumulative impact in all South African Rivers, impairing water quality and associated riverine and wetland habitats utilised by many terrestrial faunas, in some cases exclusively by aquatic and wetland species. Therefore, the overall benefit of the proposed project outweighs the few marginal negative impacts as long as construction activities proceed discretely and in an environmentally responsible manner.

In terms of the terrestrial fauna, if the above conditions are met there should be no reason not to authorise the

activity**Heritage assessment:**

During the survey no sites, features or objects of cultural significance were identified. Although an old single lane concrete road bridge was identified adjacent to the pump station, it is anticipated that there would be no impact on it as the upgrade is to take place inside the confines of the pump station boundary. It is understood that the upgrade would take place within the confines of the current pump station. It is therefore anticipated that it would not have any impact on the identified bridge. *From a heritage point of view, it is recommended that the Proposed Project be allowed to continue on acceptance of the mitigation measures presented in Appendix G4.*

Overall Conclusion:

Based on the environmental assessment presented, the proposed project will have relatively low impacts on the environment as poor availability of expected flora and the introduction of terrestrial vegetation on the stream riparian zones has reduced the sensitivity of this landscape to., this implies that the significance of most impacts on site from an environmental perspective is considered to be of low significance.

The mitigation measures proposed in section E (2) of this report are intended to prevent further degradation to watercourses as a result of the proposed refurbishment should be read in conjunction with the accompanying General Rehabilitation and Monitoring report included in Appendix H. The details of the mitigation measures that are finally put in place should ideally be based on these issues, but must necessarily take into consideration the physical and economic feasibility of mitigation. It is important that any mitigation be implemented in the context of an Environmental Management Plan in order to ensure accountability and ultimately the success of the mitigation.

Alternative 1

See above, the impacts of alternatives are similar and therefore are not comparatively assessed.

Alternative 2**6. IMPACT SUMMARY OF THE PROPOSAL AND ALTERNATIVE****For Proposal**

A summary of the impact assessments is presented in **Table 7 and 8**; the tables cover the construction and operational impacts. An overall weighted score is provided in each case. Thus far each of the environmental issues are assigned equal weighting (i.e. the weighted score is the average of each of the individual scores. The impact scores are also colour coded according to the following:

< 30	Low significance
30 to 60	Moderate significance
>60	High significance

It must be noted that the impact scores in Table 7 & 8 below are not intended to be definitive measures of environmental impact, but they are a useful guide to evaluating the overall environmental performance of a new development and they assist in interpreting key influences of a development

Table 7: Impact Summary table: CONSTRUCTION PHASE

Environmental Aspect	Without Mitigation	With Mitigation
IMPACT ON THE AQUATIC BIODIVERSITY		
Changes in water flow regime	Medium	Low
Changes in sediment entering and exiting the system	Medium	Low
Introduction and spread of alien vegetation.	Medium	Low
Loss and disturbance of wetland habitat and fringe vegetation.	Medium	Low
Changes in water quality due to foreign materials and increased nutrients.	Medium	Low
IMPACT ON VEGETATION		
Destruction of Modified grassland	Low	Low
Destruction or degradation of watercourse vegetation	Low	Low
IMPACTS ON FAUNA		
Destruction of fauna habitat and ecological connectivity	Low	Low
Disturbance to fauna through noise, vibration and dust	Low	Low
HERITAGE IMPACT		
Loss and disturbance of heritage sites due to the development	Low	Low
OTHER POTENTIAL IMPACTS		
Change in visual character of the area	Low	Low
Noise Impacts anticipated	Low	Low
Air Quality impacts	Low	Low
Traffic impacts	Low	Low
Employment Opportunities	Low	Low

Table 8: Impact Summary table: OPERATIONAL PHASE

Environmental Aspect	Without Mitigation	With Mitigation
IMPACT ON THE AQUATIC BIODIVERSITY		
Changes in water flow regime.	Medium	Low
Changes in sediment entering and exiting the system	Medium	Low
Introduction and spread of alien vegetation.	Medium	Low
Loss and disturbance of wetland habitat and fringe vegetation.	Medium	Low

Changes in water quality due to foreign materials and increased nutrients.	Medium	Low
IMPACT ON VEGETATION		
Destruction of Modified grassland	Low	Low
Destruction or degradation of watercourse vegetation	Low	Low
IMPACTS ON FAUNA (Terrestrial)		
Destruction of fauna habitat and ecological connectivity	Low	Low
Disturbance to fauna through noise, vibration and dust	Low	Low

For alternative:

Please refer to **Table 7 & 8**

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

It is a conclusion of this Basic Assessment that the only sensitive area in this study is the stream which is confined to a small channel with houses and buildings built on its banks. Due to the urban sprawl the river is greatly impacted from pollution, litter and invasive species. Overtopping observed at the pump station (RHDHV, 2017) is likely that the sewerage pump station also contributes to a decrease in water quality. There the proposed refurbishment of the sewer pump is expected to decrease with the reduction of sewage leaks into the river system- which is a positive impact. The reduction in sewage loads into the river system will improve and stabilise the ecological processes over time. Reduced sewage loads into the river can alter the hydrology of the system from an unnatural to a natural regime. Any development that aims to improve the functionality of important sewage management infrastructure must be supported. The mitigations of such activities however must ensure that the development does not further degrade the system. It is recommended that the site is contained in a temporary bunded area equivalent to 120% of the capacity of the system per flow segment.

Cognisant of the above-mentioned conclusions established through the basic assessment investigation, there were areas of environmental sensitivity identified along the recommended route. These include areas such as sensitive watercourses, these are shown in the environmental sensitivity map (refer to Appendix A). The significance levels of the majority of identified negative impacts for all alternatives investigated can generally be reduced to acceptable **low significance** levels thus, the proposed developments could proceed provided that the mitigation measures set out in this report and in the EMPr and the Rehabilitation Plan (Appendix H) are diligently implemented to limit the potential impacts on vegetation, watercourses and social during construction and operation of the developments.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

Provincial Spatial Development Framework (PSDF)

The Gauteng PSDF is a provincial and strategic planning policy that responds to and complies with in particular the

National Development Plan vision 2030 and the National Spatial Development Perspective (NSDP). This framework promotes a developmental state in accordance to the principals of global sustainability as is stated by among others, the South African constitution and enabling legislation. The Gauteng PSDF is based on six growth and development pillars, each of which has its onset of drivers with long term-programmes. Pillar 1 highlights the job creation. The proposed development will create jobs opportunities during the construction phase, these employment opportunities will target local community members that are usually excluded from mainstream economic and formal employment. Therefore, the development is in line with the Gauteng PSDF.

Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).

The study area falls within the **City of Johannesburg Metropolitan Municipality Region E**. According to the CoJ IDP 2018/19 *The city's total infrastructure backlog stands at R170 billion composed of collapsing bridges, city pavements that are in a poor condition, potholes, burst water pipes and ailing substations. Finding effective solutions to these basic infrastructural problems is crucial, particularly if the City is show increased economic growth and cater to the needs of its poorest and most vulnerable citizens. Despite a requirement to renew approximately 2% of the water network per year, the City has historically renewed only about 0.2% thereof. This decay is reflected in available data from 2016/17 which shows that the water network suffered 45 000 bursts for the year have reached 31% and there are currently 371 leaks per kilometre of water pipes. This is despite the fact we know that water will be one of the greatest challenges in our future*".

The proposed development will therefore not compromise the IDP objectives but would rather assist the Local Municipality in achieving the performance areas as identified by the Local Municipality, namely growth in the region and creation of more employment opportunities as well as through the improvement of public services and broadening access to communities and thereby improving quality of living which is further aligned with achieving the goal of opportunity in terms of economic growth and employment which also entails access to basic services, social infrastructure and quality environment. Furthermore, the Municipality aims to achieve inclusivity which aims to integrate communities and improve transport corridors and human settlements. One such priority for the Municipality is the improvement of mobility corridors with specific reference to proposed development (road infrastructure). The Municipality seeks to address past spatial planning imbalances by bringing services and economic opportunities close to previously disadvantaged areas.

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).

YES

If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

This Draft BAR has provided a comprehensive assessment of the potential environmental impacts associated with

Jukskei Park Pump Station Refurbishment. It is the opinion of the EAP and various specialists that there are no environmental or social impacts of high significance that would prevent the establishment of the proposed project, **it is therefore recommended that the project should be authorised for implementation.** The authorisation must be subjected to the following conditions:

- A final detailed layout must be submitted to the relevant authority for approval prior to commencement with the project;
- The Environmental Management Programme (EMPr) as contained within **Appendix H** of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed power line, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the project is considered to be key in achieving the appropriate environmental management standards as detailed for this project.
- An independent Environmental Control Officer (ECO) should be appointed to monitor compliance with the specifications of the EMPr for the duration of the construction period.
- Implementation of the Wetland Rehabilitation Plan
- An appropriate stormwater management plan must be developed and implemented to the site. Adequate measures must be put in place to prevent polluted runoff water from entering the, wetland and soil, thus preventing surface and groundwater pollution;
- The relevant authorisations and water use licenses must be obtained from Department of Water Affairs prior to the commencement of construction activities. No activities may proceed within or in proximity to watercourses without a Water Use License permitting the activity.
- The protected species found onsite can only be removed once a permit for the removal or relocation of such species was granted by the GDARD.
- All relevant legislation and requirement of other government departments (National, Provincial), in particular of Section 28 (duty of care) of NEMA, must be complied with
- In the event of a major incident (e.g. fire causing damage to property and environment, major spill or leak of contaminants), the relevant authorities should be notified as per the notification of emergencies/ incidents, as per the requirements of NEMA.
- Compliance with all legal requirements in relation to environmental management and conditions of the authorisation issued by GDARD.

9. THE NEEDS AND DESIREBILITY OF THE PROPOSED *(as per notice 792 of 2012, or the updated version of this guideline)*

The average population growth rate in the City of Johannesburg from 2001 to 2011 is 3.18% per annum. The average population growth rate in Cape Town from 2001 to 2011 is 2.57% per annum (StatsSA - http://www.statssa.gov.za/?page_id=993&id=city-of-johannesburg-municipality). An average of 2.75% was selected for this catchment.

The constraints with regard to the projection of peak flow rates in to the future (2023) and ultimate scenarios are limited to the assumed population growth rates and future development plans. The population growth rate is assumed at 2.75% per annum from 2017 to 2023. Furthermore, the percentage of undeveloped land in the catchment is assumed to be between 20% and 30% of the current catchment size. It is assumed that the future developments will be of similar nature and proportional size as the existing developments.

Infrastructural improvement programme within the City of Johannesburg is one of the key strategies aimed at improving the level of service to the residents of the City. Johannesburg Water Infrastructure Planning Section commissioned a desktop study to identify areas requiring urgent interventions. From the investigations and assessments, ageing is the main contributing factor to the city's infrastructure.

Joburg Water has identified a need for to refurbish the Jukskei Pump Station due to the dilapidated and poor condition of the infrastructure at the Pump Station There the proposed refurbishment of the sewer pump is expected to decrease with the reduction of sewage leaks into the river system- which is a positive impact. Any development that aims to improve the functionality of important sewage management infrastructure must be supported.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED (Consider when the activity is expected to be concluded)

Duration and Validity: The environmental authorization is required for a period of 10 years from the date of issue. Should a longer period be required, the applicant/EAP will be required to provide a detailed motivation on what the period of validity should be

11. THE PERIOD ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

(must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached

YES

SECTION F: APPENDICES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan (s) – (must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.