



Basic Assessment for the Proposed Construction of the Bulk Sewer Pipeline and Upgrade of the Bulk Water Pipeline in Langaville Ext 12, City of Ekurhuleni, Gauteng Province

**In terms of:
THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (NEMA)**

DRAFT BAR FOR PUBLIC REVIEW

**Prepared for:
City of Ekurhuleni – Human Settlements Department**

**Date:
May 2021**



**Prepared by:
THEMBEKA ENVIRONMENTAL CONSULTING (PTY) LTD
Registration number: 2014 / 233368 / 07**



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DOCUMENT SUMMARY DATA

PROJECT: Basic Assessment for the Proposed Construction of the Bulk Sewer Pipeline and Upgrade of the Bulk Water Pipeline in Langaville Ext 12, City of Ekurhuleni, Gauteng Province

CLIENT: **City of Ekurhuleni – Human Settlements Department**
CoE Water and Sanitation: Planning – Project Manager

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Report Status : Draft Basic Assessment Report for public review

Review period **The 30-day period for review is from**
27 May 2021 to 28 June 2021



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 authorization 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 authorization 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 authorization 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

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, the report has been submitted within 90 days

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? **Yes**

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? **Yes**

If no, why?

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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 Construction of the Bulk Sewer Pipeline and Upgrade of the Bulk Water Pipeline in Langaville Ext 12, City of Ekurhuleni, Gauteng Province.

1.2 Background and Introduction

The City of Ekurhuleni has identified the requirement for a bulk water and sewer line to be implemented for the Langaville Ext. 12 proposed development. The proposed Langaville Ext.12 development consists of a mixed residential type of housing units planned for the lower income housing market.

The following bulk water and sewer reticulation lines and proposed diameters have been identified:

1. Bulk Water Line:

- * Installation of 4000m x 400/450mm Ø parallel reinforcement pipeline
- * Installation of 800m x 250mm Ø parallel reinforcement pipeline
- * Installation of 1050m x 250mm Ø pipeline
- * Installation of 100m x 160mm Ø pipeline

The water lines required to service the proposed development are the **1050m** and **100m** lines that will connect onto the existing municipal infrastructure. These two water lines are newly added lines into the network system. The 1050m line will start from Rokhana Street and will run parallel to Tonk Meter Road (M86) in a southerly direction and then turn west towards the proposed development. This line will provide a connection point at the north-eastern corner for the proposed development.

The 100m line will start at the unknown street running from Masibeni Street to Maziya Street at the north-western boundary of the site and terminate at 100m to the proposed development.

Refer to drawing no. CE103-1100-Rev A (1050m & 100m WATER LINE). The water lines required to address the pressure problem within the system are the 4000m and 800m lines. These lines have been horizontally aligned to replace existing AC (Asbestos Cement pipes).

- * Refer to drawing no. CE103-1100-Rev A (1050m & 100m WATER LINE).

The water pipelines earmarked for repair and upgrade are all located in existing servitudes. The pipelines of interest in this Basic Assessment process as those of **100m** and **1050m** as these occur in sensitive environments. The others are precluded as they occur within the urban verge and within road reserves. However the mitigation measures provided are holistic of all works on site.

The wetlands closest to the water pipelines, and consequently the most likely to be impacted are Pans 2 and wetland 2 which lies within the 1050m servitude and Pan 3 occurs within the 1050m pipeline servitude. Particularly Pan 3 lies immediately adjacent to a section of pipeline 1050m. Earthworks associated with removal of old pipes and replacement with new pipes may negatively affect the wetland. Refer to the Wetland Delineation Map, Figure 8, which shows the Wetlands on site in relation to the pipeline servitude.

(Refer to Appendix C for Water Layouts)

2. Bulk Sewer Line:

- * Installation of 315mm Ø pipeline
- * Installation of 250mm Ø pipeline

The GLS report has indicated the current sewer collector system has sufficient capacity to receive the outflow from the proposed development. The new bulk sewer line will connect the development from its bottom south-east corner and travel east, crossing Tonk Meter Road, towards the collector sewer located in Wentzel Street. The proposed development can be accommodated within the Grundlingh WWTP drainage area.

The start point of the sewer is regarded as an ecological support area due to the Tsakana grassland which is regarded as endangered. However the vegetation on site is transformed and not a true representative of the Tsakane clay grassland. The proposed sewer pipeline is located outside the delineated boundaries of Wetland 1 and its buffer zone and therefore it is unlikely that the construction related activities will affect this wetland. However, spills of sewage into the downslope wetland during operation will have a significant effect on aquatic biota and water quality.

(Refer to Appendix C for Sewer Layouts) drawing no. CE103-1300-Rev A (Sewer Layout)

The Sewer and Water pipelines designs will be carried out according to the City of Ekurhuleni's guidelines, standards and the facility drawing are attached within Appendix C

Project Locality

The proposed development, will be established within the Langaville Ext. 12 residential area, this can be accessed from Tonk Meter Road and Siboyala Street. The R51 lies to the east and the M45 lies to the south. The new residential area of Sharon Park lies directly north of the proposed sewer line. The water pipelines included in this assessment comprise five sections that lie north of Vlakfontein Road and west of Tonk Meter Drive. South Rand Road (N17) lies 2km north of the northernmost section of the water pipeline discussed in this report (**Error! Reference source not found.**). The central co-ordinates of the proposed development are 26°00'12.86" South and

28°13'44.52" East.

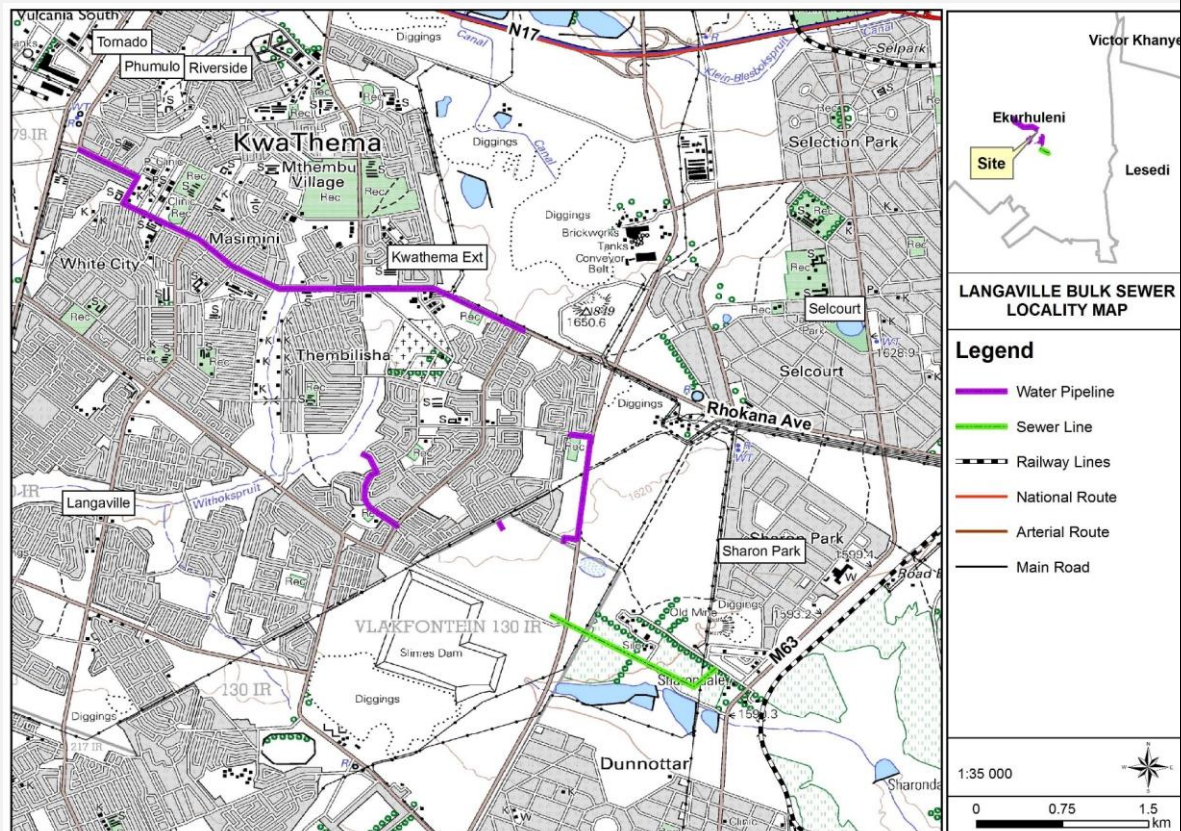


Figure 1: Locality Map

1.3 Basic Assessment Process

This Basic Assessment Report (BAR) covers the findings of the site assessment and impacts identified in the structural material difference for the proposed construction of the sewer and upgrade of the existing water pipeline. An existing corridor of 30m was assessed for the proposed routes within which the water and sewer bulk pipelines will be constructed.

1.5.1. The Activities being applied for:

The activities to be undertaken will trigger the need for an application to the Gauteng Department of Agriculture and Development (GDARD) for environmental authorization. Due to activities impacting on a watercourse, a Water Use License (WUL) application will also be submitted to the Department of Water and Sanitation (DWS). In terms of these Regulations (Government Notice R. 982, Government Gazette No. 38282 of 04 December 2014, under sections 24(5), and 44, of the National Environmental Management Act, 1998 ; Act No.107 of 1998); a Basic Assessment is required for this project as per the following listed activities :

Table 1: Listed activities triggered by the proposed development requiring Environmental Authorization

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
GN 983 of 08 Dec 2014, as amended (327 of 07 April 2017)	Listing Notice 1	<p>Activity 19: “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, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse”.</p> <p><i>The proposed project will result in infilling and depositing of more than 10m³ into a watercourse. In addition the excavation and removal of soil materials of more than 10m³ from a watercourse may take place during construction as the water pipe lays adjacent to a pan on site</i></p>
GNR 985 of 08 Dec 2014, as amended (324 of 07 April 2017)	Listing Notice 3	<p>Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan</p> <p>c. Gauteng</p> <p>ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans.</p> <p><i>There is vegetation coverage as a result of the wetland area. The clearance of vegetation of approximately 300 square metres may occur within the wetland and buffer area. A section of the proposed activities (sewer line) falls within an Ecological Support Area. Clearance of vegetation is likely for the construction camp.</i></p>
GNR 985 of 08 Dec	Listing Notice 3	Activity 14: The development of:–

<p>2014, as amended (324 of 07 April 2017)</p>		<p>(xii) infrastructure or structures with a physical footprint of 10 square meters or more – where such development occurs - a) within a watercourse; b) In Gauteng: iv. sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) Gauteng Conservation Plan or in bioregional plans.</p> <p><i>The physical combined footprint of the proposed works is over ± 10m² within a wetland area, an area identified as sensitive area, and as an Ecological Support Area as per the Gauteng Conservation Plan.</i></p> <p><i>The development (water pipeline) will cross a wetland area which is regarded as a sensitive area protected by the National Water Act (Act No. 36 of 1998).</i></p>
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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 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 makers 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.

1.4 Details of Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment.

The EAPs from **Thembeke Environmental Consulting (Pty) Ltd** responsible for this project is Samantha Moodley (refer to **Appendix I** for CV's)

I. Specialist's Details

Name of Specialist	Title of specialist report/ s as attached in Appendix G	Date issued
Antoinette Bootsma of Limosella Consulting	Biodiversity: Wetland and Aquatic Assessment	May 2021
	General Wetland Rehabilitation and Monitoring Plan	
Refer to Appendix G-Wetland report for the specialist CV		

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 replacement of water reticulation infrastructure. This implies trenching parallel and within the delineated wetland and its buffer zone. Pipes will be laid primarily through trenching. The water pipelines earmarked for repair and upgrade are all located in existing servitudes. Watercourses occur within the 500m area of investigation around each section of pipeline discussed in this report. The wetlands closest to the water pipelines, and consequently the most likely to be impacted are Pans 2 and 3. Particularly Pan 3 lies immediately adjacent to a section of the 100m pipeline. Earthworks associated with removal of old pipes and replacement with new pipes may negatively affect the wetland unless care is taken to implement effective mitigation.

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.

The Water Use License is subject to authorization by the Department of Water and Sanitation (DWS) which is the national authority responsible for the management of the water resources.

If yes, have you applied for the authorization(s)?
If yes, have you received approval(s)? (attach in appropriate appendix)

Yes <input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	No <input type="checkbox"/>

Impacts on the watercourse have been assessed through the BA process (Appendix G1 - Wetland Report) for the infrastructure. The following reports / studies as outlined below will be required to be attached to the water use license application which will be submitted to the competent authority the Department of Water and Sanitation via their EWULA online portal following the decision of the Basic Assessment Process by the Competent Authority GDARD.

The following will be uploaded among others on the online portal

- Basic Assessment Report
- Environmental authorization from GDARD once issued
- Wetland and Aquatic Assessment Specialist Study
- Wetland Rehabilitation Plan
- Other documents as requested by DWS.

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

Table 2: List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
Constitution of the Republic of South Africa, Act 108 of 1996:	<ul style="list-style-type: none"> ▪ Section 24 of the Constitution provides for the environment that is not harmful for the health and people's wellbeing. 	-	The proposed Development has been properly planned to ensure that it conforms to the principles of sustainable development.
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 minimized 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." 	National Department of Forestry, Fisheries and Environment Gauteng Department of Agriculture and Resource Development	In terms of sections 24 and 24D of the National Environmental Management Act (No 107 of 1998), as read with the EIA Regulations 2014 of GN R982 – R985 a Basic Assessment process is required to be undertaken for the proposed project.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<ul style="list-style-type: none"> ▪ EIA Regulations have been promulgated in terms of Chapter 5. Activities which may not commence without an environmental authorization 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 authorization. 		
National Environmental Management Act (Act No. 107 of 1998)	<ul style="list-style-type: none"> ▪ A project proponent is required to consider a project holistically and to consider the cumulative effect of potential impacts. ▪ In terms of the Duty of Care provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this 	National Department of Forestry, Fisheries and Environment Gauteng Department of Agriculture and Resource Development	While no permitting or licensing requirements arise directly, the holistic consideration of the potential impacts of the proposed project has found application in the EIA Phase. <ul style="list-style-type: none"> ▪ The implementation of mitigation measures are included as part of the EMPr and will continue to apply throughout the life cycle of

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	project to ensure that any pollution or degradation of the environment associated with a project is avoided, stopped or minimized.		the project.
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 November 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. ▪ 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"> ○ The containers in which any waste is 	National Department of Forestry, Fisheries and Environment (hazardous waste) GDARD (general waste)	In terms of GNR921, no waste license is required for the project. However, 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 this EMPr.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste;</p> <ul style="list-style-type: none"> ○ Adequate measures are taken to prevent accidental spillage or leaking; ○ The waste cannot be blown away; ○ Nuisances such as odor, visual impacts and breeding of vectors do not arise; and <ul style="list-style-type: none"> ▪ (e) Pollution of the environment and harm to health are prevented. 		
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”. ▪ Declaration of controlled emitters (Part 3 of Act) and 	National Department of Forestry, Fisheries and Environment City of Ekurhuleni	While no permitting or licensing requirements arise from this legislation, this Act will find application during the construction phase of the project for dust management.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>controlled fuels (Part 4 of Act) with relevant emission standards.</p> <ul style="list-style-type: none"> ▪ The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act. ▪ Dust control regulations promulgated in November 2013 may require the implementation 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 authorization. ▪ 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 	<p>National Department of Human settlement Water and Sanitation</p> <p>Gauteng Department of Agriculture and Resource Development</p>	<p>The proposed development requires a Water Use License as per the following regulations: According to the National Water Act (NWA), 1998 (Act No.36 of 1998), the project will be required to be licensed in terms of the National Water Act (Act 36 Of 1998) for the following activities under Section 21:</p> <ul style="list-style-type: none"> ▪ Impeding or diverting the flow of water in a watercourse ▪ Altering the bed, banks, course

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	the effects of pollution to water resources from occurring, continuing, or recurring.		<p>or characteristics of a watercourse.</p> <p>The water use license application has been initiated.</p> <p>Requirements set by S19 will apply throughout the life cycle of the project.</p>
Environment Conservation Act (Act No. 73 of 1989)	<ul style="list-style-type: none"> ▪ National Noise Control Regulations (GN R154 dated 10 January 1992) 	<p>National Department of Forestry, Fisheries and Environment</p> <p>Gauteng Department of Agriculture and Resource Development</p> <p>Local Authorities</p>	There is no requirement for a noise permit in terms of the legislation. However the act finds applicability in ensuring construction noise is below the legislated 85decibels
Hazardous Substances Act (Act No. 15 of 1973)	<ul style="list-style-type: none"> ▪ This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitizing, or inflammable nature or the generation of pressure thereby in certain instances 	Department of Health	It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> ▪ Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance; ▪ Group IV: any electronic product; 		

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<ul style="list-style-type: none"> ▪ Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force. 		
National Environment Management Protected Areas Act, 2003 (Act No. 57 of 2003).	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	National Department of Forestry, Fisheries and Environment	A wetland specialist was appointed to determine the impacts and the residual effects of mitigation measures. Refer to appendix G1.
Conservation of Agricultural Resources Act (Act No 43 of 1983).	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 categorized according to one	Department of Forestry, Fisheries and Environment	Alien mitigation measures have been included in the project EMPr. In addition an Alien Plant guideline report is attached as Appendix A of the EMPr.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>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 flood line of watercourses and wetlands. 		
The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011)	<ul style="list-style-type: none"> ▪ The plan has classified areas within the province on the basis of its contribution to reach the conservation targets within the province. 	GDARD	On the study site only the sections associated with the watercourse is classified while the rest of the areas remain unclassified. The areas associated with the watercourses are

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>Critical Biodiversity Areas (CBAs) contain irreplaceable, important and protected areas (terms used in C-Plan 2) and are areas needed to reach the conservation targets of the Province. In addition 'Ecological Support Areas' (ESAs), mainly around riparian areas and other movement corridors were also classified to ensure sustainability in the long term. Landscape features associated with ESAs is essential for the maintenance and generation of biodiversity in sensitive areas and requires sensitive management where incorporated into C-Plan 3.</p>		<p>classified as Important and Ecological Support Area.</p>
<p>National Environmental Management: Biodiversity Act 2004 (Act 10 of 2004)</p>	<ul style="list-style-type: none"> ▪ This Act provides management and conservation of South Africa's biodiversity within the framework of the National Environmental Management 	<p>National Department of Forestry, Fisheries and Environment Gauteng Department</p>	<p>During the site visit it was observed that numerous additional alien invasive species were present on site. Alien plant management measures are included in the project EMPr.</p>

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>Act107 of 1998; the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resource.</p> <ul style="list-style-type: none"> ▪ Protection of biodiversity features and where possible relevant permits will need to be obtained. ▪ The National Environmental Management: Biodiversity Act (NEMBA) is the most recent legislation pertaining to alien invasive plant species. In August 2014 the list of Alien Invasive Species was published in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (Government Gazette No 78 of 2014). ▪ The Alien and Invasive Species Regulations were published in the Government Gazette No. 37886, 1 August 2014. The legislation calls for the removal 	<p>of Agriculture and Resource Development</p>	<p>A water use licence will be required to be obtained from Department of Water and Sanitation for undertaking works in the watercourse and its buffer areas.</p> <p>An environmental authorisation from GDARD is being applied for, for undertaking works in the water course. and ecological support areas</p>

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>and / or control of alien invasive plant species (Category 1 species). In addition, unless authorised thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within close proximity to a watercourse.</p>		
<p>The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011)</p>	<ul style="list-style-type: none"> ▪ The plan has classified areas within the province on the basis of its contribution to reach the conservation targets within the province. Critical Biodiversity Areas (CBAs) contain irreplaceable, important and protected areas (terms used in C-Plan 2) and are areas needed to reach the conservation 	<p>GDARD</p>	<p>On the study site only the sections associated with the watercourse is classified while the rest of the areas remain unclassified. The areas associated with the watercourses are classified as Ecological Support Areas</p>

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<p>targets of the Province. In addition 'Ecological Support Areas' (ESAs), mainly around riparian areas and other movement corridors were also classified to ensure sustainability in the long term. Landscape features associated with ESAs is essential for the maintenance and generation of biodiversity in sensitive areas and requires sensitive management where incorporated into C-Plan 3.</p>		
<p>Promotion of Access to Information Act, 2000 (Act No 2 of 2000):</p>	<p>Legislation that allows the public access to information about activities that influence their well-being and to make contributions to decision making.</p>	<p>National Department of Forestry, Fisheries and Environment Gauteng Department of Agriculture and Resource Development</p>	<ul style="list-style-type: none"> ▪ No permitting is required the act finds applicability during the public participation process phase of the basic assessment process.
<p>National Heritage Resources Act (Act No. 25 of 1999)</p>	<ul style="list-style-type: none"> ▪ Section 38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including 	<p>South African Heritage Resources Agency</p>	<p>From the heritage screening that was undertaken for the project, no known heritage resources occur on site..</p>

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	<ul style="list-style-type: none"> ▪ (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length <p>Section 34. (1) of the act states that` No person may alter or demolish any structure or part of a structure which is older than</p>		

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

Table 3: Description of Proposed Remedial Plans and Alternatives

No.	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 City of Ekurhuleni (CoE) has identified the requirement for a bulk water and sewer line to be designed and implemented for the Langaville Ext. 12 proposed development. The Langaville Ext.12 development to be serviced by the proposed basic service infrastructure consists of a mixed residential type of housing units and in need of basic services like water and sewage infrastructure. Basic services provision is one of the key strategies aimed at improving human settlements. It is for this reason that CoE Water and Sanitation: Planning – commissioned a desktop study to identify areas requiring urgent basic services (water provision and sewer infrastructure). From the investigations and assessments, Langeville Ext 12 was identified as in critical need of the proposed basic services (water and sewer infrastructure).</p> <p>Thus the identified site is the <u>only one site is deemed feasible</u> and practicable for the proposed development.</p>
1	Pipe Material type:	<p>Structural Material Design: uPVC / HDPE.(Proposed)</p> <ul style="list-style-type: none"> * Sewer pipeline: The structural material type for the sewer pipe is uPVC CI 34. * Water pipe line: The material type for the water pipe is uPVC / HDPE.

		<p>Structural Material Design - Concrete (Alternative 1)</p> <ul style="list-style-type: none"> * Sewer pipeline The material type for the sewer pipe is Concrete * Water pipe line The material type for the water pipe is Concrete <p>Environmental: The Two Options detailed above with respect to structural Material Design will thus be assessed from an environmental perspective in this Basic Assessment Process.</p>
3	Other alternatives	Please note that only structural Material Designs were considered for the purposes of this project as the project is an upgrade of an existing water pipeline infrastructure and a new sewer bulk line.

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

N/A

2. 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	
Alternatives:	
Alternative 1)	-
Alternative 2 (if any)	

or, for linear activities: ([Water Pipelines](#))

Proposed activity ((Proposed bulk Water pipelines)

Length of the activity:

Pipe 1: 1050m line

Pipe 2: 100m

Alternatives:

Alternative 1

Alternative 2 (if any)

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 ([Water servitude width](#))

2.0m

Alternatives:

Alternative 1

Alternative 2 (if any)

N/A

Ha/m²

The water pipelines earmarked for repair and upgrade are all located in existing servitudes.

or, for linear activities: ([Sewer Pipeline](#))

Proposed activity ((Proposed Sewer pipeline)

Length of the activity:

1437m

Alternatives:

Alternative 1

Alternative 2 (if any)

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 ([Sewer servitude width](#))

13.266m

Alternatives:

Alternative 1

Alternative 2 (if any)

	N/A

Ha/m²

3. SITE ACCESS

Proposed activity

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

YES	
	N/A

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

Describe the type of access road planned:

The R51 lies to the east and the M45 lies to the south. The new residential area of Sharon Park lies directly north of the proposed sewer line. The water pipelines included in this assessment comprise five sections that lie north of Vlakfontein Road and west of Tonk Meter Drive. South Rand Road (N17) lies 2km north of the northernmost section of the water pipeline. The site is therefore well-connected and easily accessible. Refer to Figure 2. No new access roads are planned for the development.

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).



Figure 2: Overview of already existing access roads to site

Alternative 1 (Same as above)

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

YES	NO
-----	----

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

m

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).

Alternative 2 (Not Applicable)

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

YES	NO
-----	----

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

m

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 Number of times duplicated

(only complete

when applicable)

4. 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)

- shape files` 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)

Layout and route corridors for the sewer and water pipelines are enclosed within **Appendix C**

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 kilometers, 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 and sensitivity map for the proposed development are enclosed within **Appendix A**

5. 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.

Color photographs taken on site together with a description of each photograph are attached within **Appendix B**.

6. 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.

Please see facility illustrations attached within **Appendix C**

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

- 1) 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.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) 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 times the route

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)

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

The affected properties include the following.

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

Farm Name/ Township Agriculture Holding A.H	Portion Number	21 Surveyor General Codes
Grootfontein 165 IR,	Portion 39/ RE	T0IR00000000016500039
Grootfontein 165 IR,	Portion 48	T0IR00000000016500048
Vlakfontein 130 IR,	Portion 20	T0IR00000000013000020

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.

Note: Alternative site in terms of this development is not applicable only Activity Alternatives were considered.

Proposed Activity:

Centre point of the activity

Latitude (S):

Longitude (E):

--	--

In the case of linear activities:

Proposed Activity: **Water pipeline (1050m)**

Starting point of the activity

Middle point of the activity

End point of the activity (

Latitude (S):

Longitude (E):

26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"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

N/A

The 21 digit Surveyor General code of each cadastral land parcel

The 21 digit surveyor general code of each cadastral land parcel is included in Section 1 Under Property Description.

Proposed Activity: **Water pipeline (100m)**

Starting point of the activity

Middle point of the activity

End point of the activity (

Latitude (S):

Longitude (E):

26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"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

N/A

The 21 digit Surveyor General code of each cadastral land parcel

The 21 digit surveyor general code of each cadastral land parcel is included in Section 1 Under Property Description.

Proposed Activity: **Sewer pipeline (1437m)**

Starting point of the activity
Middle point of the activity
End point of the activity (

Latitude (S):	Longitude (E):
26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"E.
26° 10' 32.66"S	27°59 '37.79"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

N/A

The 21 digit Surveyor General code of each cadastral land parcel

The 21 digit surveyor general code of each cadastral land parcel is included in Section 1 Under Property Description.

3. GRADIENT OF THE SITE

Both the Sewer and Water pipeline fall within the same similar environmental and will thus be assessed together

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
------	--------------------	-------------	-------------	--------------	-------------	------------------

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
-----------	---------	--------------------------	--------	-------	----------------------------	--------------------

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	NO ✓	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	NO ✓	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	YES	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

Hydrology and Topography

Hydrologically the study site falls within the quarternary catchment C21E. The Major rivers include the #5, Vaal Major: rivers include the Wilge-, Liebenbergsvlei-, Mooi-, Renoster-, Vals-, Sand-, Vet-,

Harts-, Molopo and Vaal River. The wetlands in catchment C21E on the study site drains into the Nigel dam which in turn drains into the Blesbokspruit River. Wetlands in catchment C22C drain into a tributary of the Rietspruit

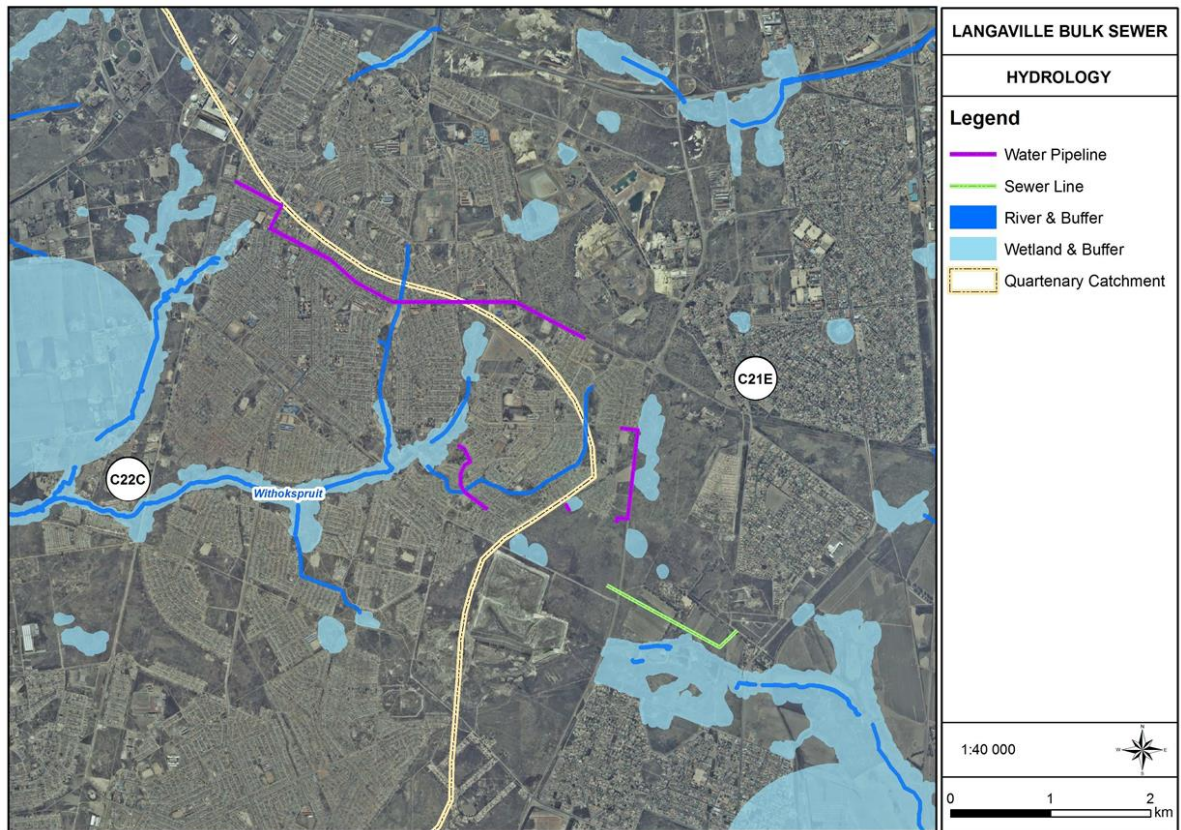


Figure 3: Regional hydrology

Geology and Soils

Geology

The geology of the study sites is predominantly Vryheid geology with smaller sections located on Alberton, Dwyka and Turfontein Figure 4.

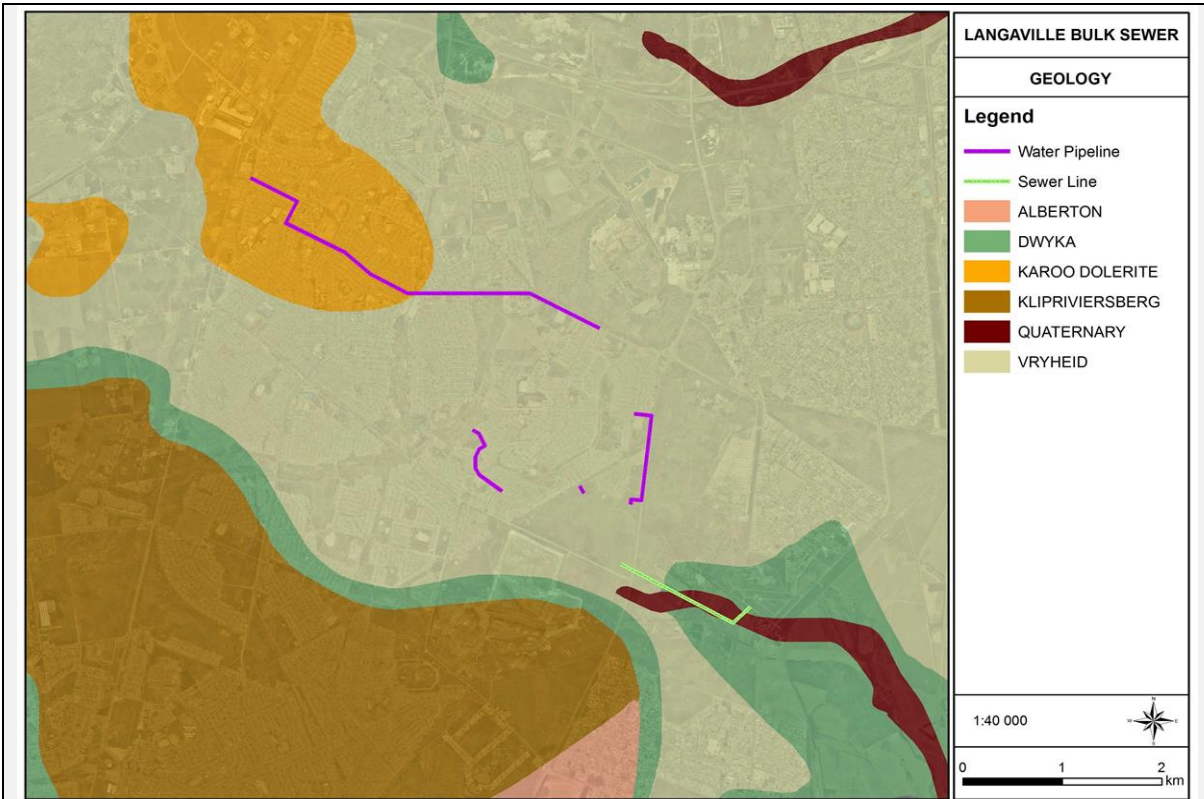


Figure 4: Geology of the study site.

Soils

The pipeline lies on soil predominantly classified as mAV27 (Avalon) with small sections extending onto dHU27 (Hutton) and dRg20 (Rensburg). Sections of the water pipelines lie on Unconsolidated soil (U) Figure 5.

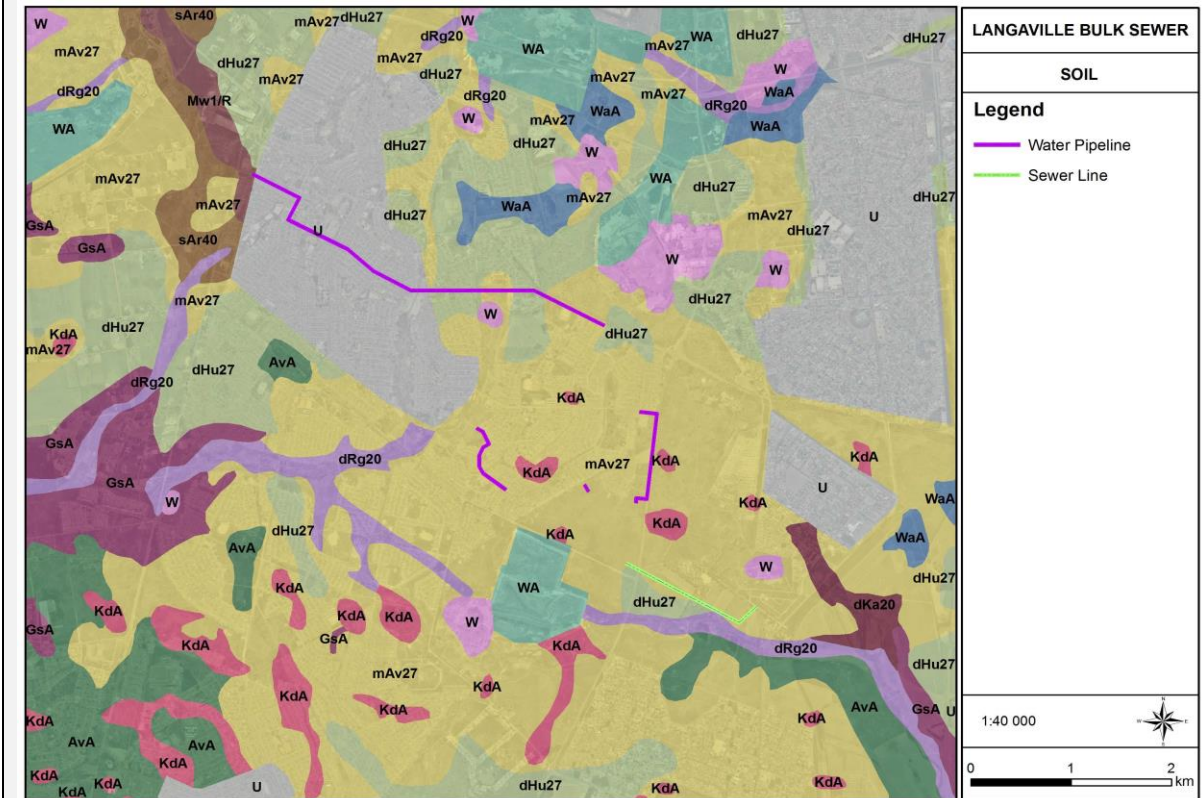


Figure 5: Regional soil classification of the study site and surroundings.

6. AGRICULTURE

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

	NO <input checked="" type="checkbox"/>
--	--

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

7. GROUNDCOVER

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

Proposed Activity

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =20	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land %=	Paved surface (hard landscaping) % =	Building or other structure % =30	Bare soil % =50

7.1 Land Use, Cover and Ecological State

Historical mining forms and important context of the land use of the site. To the south, the Vlakfontein Gold Mine which was mined from 1942-1977. Mine dumps are also visible to the west of the site. Water from this mine likely leaches into the watercourse directly south of the pipeline. Current land use is dominated by residential infrastructure, roads and associated commercial activities including cemeteries, retail and community centres. The lands traversed by the proposed sewer pipe are clearly ploughed. High density residential areas have established over several decades and include roads, schools, retail and commercial components.

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

	No
--	----

If YES, specify and explain:

7.2 Regional Vegetation Description & Threatened Ecosystems

The site is situated within the Grassland Biome that experiences summer rainfall and dry winters with frost (and fire), which are unfavourable to tree growth. Therefore, grasslands comprise mainly of grasses and plants with perennial underground storage organs, for example bulbs, tubers and suffrutex species. In some grassland areas, the surface topography (e.g. rocky hills and protected valleys) creates habitats that are favourable to shrub lands and trees (Mucina & Rutherford, 2006). The grassland biome is under severe threat from urbanisation, industrialisation, mining and agriculture, especially in Gauteng. The site is situated in the Tsakane Clay Grassland, Gm 9 vegetation type that is classified as Endangered as the extent conserved is less than the targeted extent that should be conserved (Mucina & Rutherford, 2006) (Figure 5).

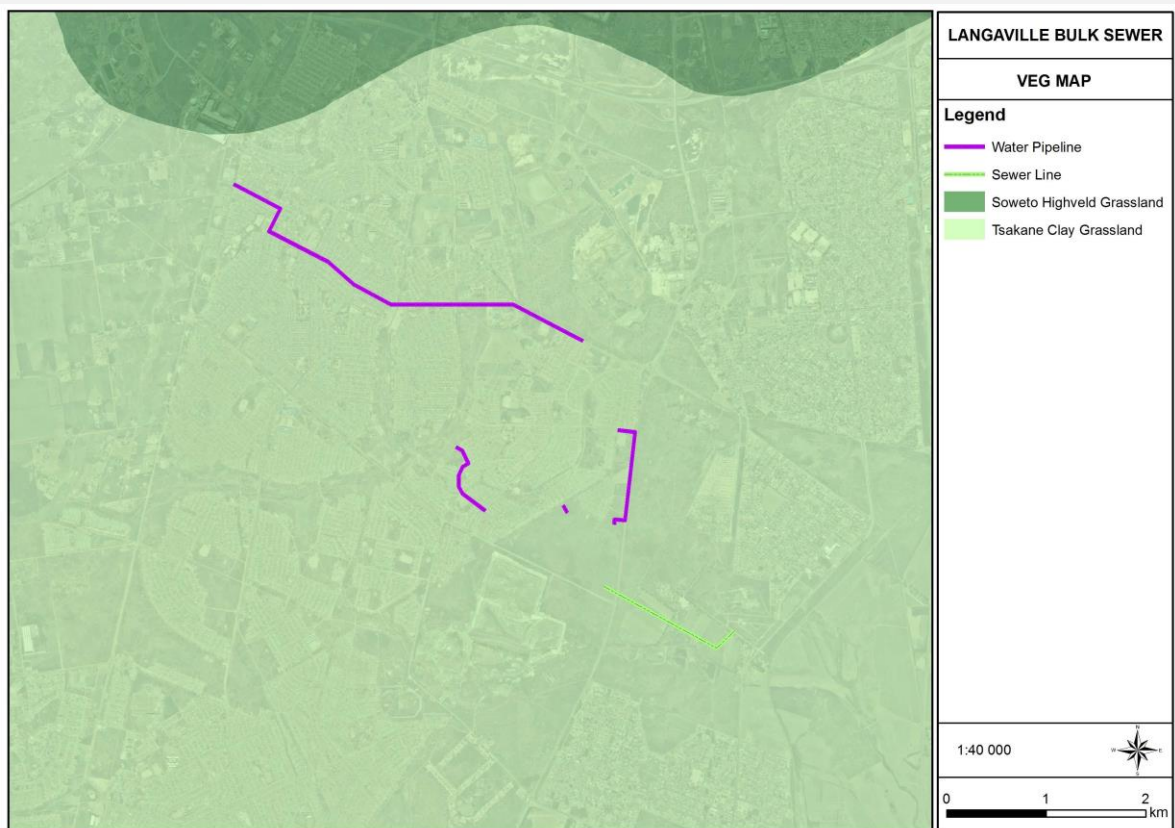


Figure 5: The site falls within the historic extent of the Tsakane Clay Grassland

7.2.1 Site Vegetation

The vegetation in proximity to wetland 1 was characterised by large sections of disturbed vegetation growth surrounding areas such as the old mine dump and remnant infrastructure as well as large areas that has been recently burnt subsequently not all the vegetation could be identified. The burnt area does however provide some benefits such as exposing gullies, trenches, broken dam walls and other infrastructure that would likely not have been seen when vegetation growth is robust. The wetland indicators species (Figure 6) that was recorded include *Juncus effesus*, *Schoenoplectus corymbosus*, *Typha capensis* and *Berkeya sp.* Some of the grass species include *Imperata cylindrical*, *Leersia hexandra*, *Paspalum dilatatum*, *Cynodon dactylon* and *Pennisetum clandestinum*. The exotic woody species recorded include *Pinus sp.*, *Eucayptus sp.* and *Quercus sp.*



Figure 6: Vegetation characteristics of the wetland

7.2.2 Gauteng Conservation Plan

According to the Gauteng Conservation Plan (version 3.3), the area forms part of an Ecological Support Area (ESA) and surrounding grassland falls within a Critical Biodiversity Area (CBA): Important (Figure 11). The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011) classified areas within the province based on its contribution to reach the conservation targets within the province. These areas are grouped as Critical Biodiversity Areas (CBAs) or Ecological Support Corridors (ESAs). The CBAs comprise 'Irreplaceable' areas that must be conserved and areas classified as 'Important' to reach the conservation targets of the Province. ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The pipelines lie on unclassified area with watercourse crossing classified as Important and Ecological Support Areas, refer to Figure 7.

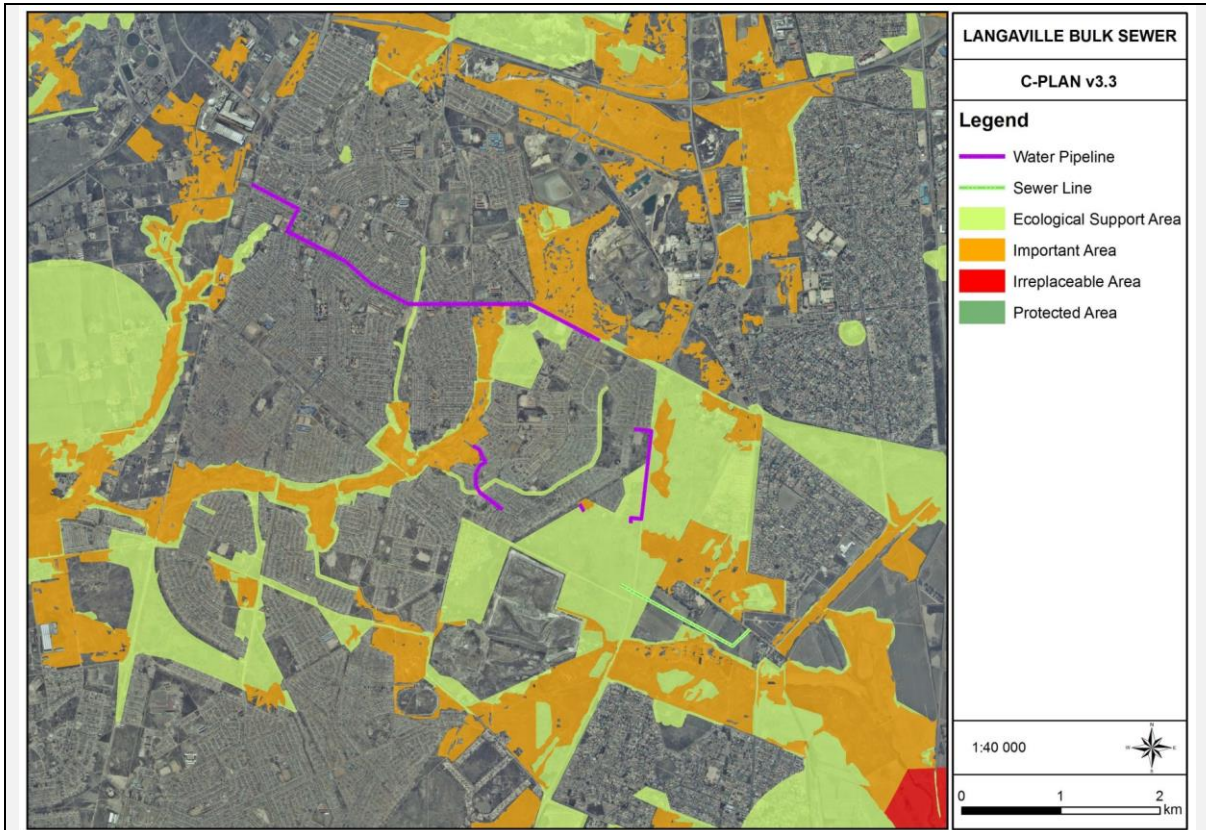


Figure 7: C-Plan classification of the study area and surroundings

7.2.3.5 Provincially Protected Plants

No provincially protected species was recorded.

7.2.3.6 Alien Invasive Plant Species

Declared weeds and invader plant species have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition and function of natural ecosystems. Therefore, it is important that these plants are controlled and eradicated by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species (Henderson, 2001). The exotic woody species recorded on site include *Pinus sp.*, *Eucayptus sp.* and *Quercus sp.*

7.3 Fauna

7.3.1 Terrestrial Fauna

The area is a built up environment which does not provide conducive habitats for wild animals, thus no wild mammals were noted on site.

7.3.4 Birds

No TOPS or endemic species were observed on site, the study area is a built up environment. therefore the site and immediate area is unlikely to support significant TOP bird.

7.3.5. Reptiles and Frogs

Many reptiles and frogs are insectivores and contribute to control of invertebrate populations with other insectivorous species. They are also prey-base for many animals. No significant TOP Hepertofauna populations are expected on site. The specific site is not considered significant in terms of maintaining endemic herpetofauna populations. No frogs or reptiles were noted on site.

Due to the existing status of the site, no fatal flaws or special recommendations are relevant and no additional faunal assessments or studies are required.

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.

	No
--	----

If YES, specify and explain:

--

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

Yes <input checked="" type="checkbox"/>	
---	--

If YES, specify and explain:

Wetland (An Ecological Sensitive Habitat)

Watercourses in the 500m area of investigation around each section of pipeline discussed in this report lie in two quarternary catchments. In quarternary catchment C21E 2 valley bottom and 3 pan wetlands drain into the Blesbokspruit. In Quarternary catchment C22C 3 valley bottom wetlands drain into a tributary of the Rietspruit. A canalised watercourse extends across both catchments. Figure 8 present the delineated wetlands as well as the associated buffer zones and DWS regulated area.

Catchment C21E Information in relation to identified wetlands on site:

- * Channelled valley bottom wetland 1
- * Unchannelled valley bottom wetland 2
- * Pan 1
- * Pan 2
- * Pan 3
- * A section of a canal

Catchment C22C:

- * Unchannelled valley bottom wetland 3
- * Unchannelled valley bottom wetland 4

* Unchannelled valley bottom wetland 5

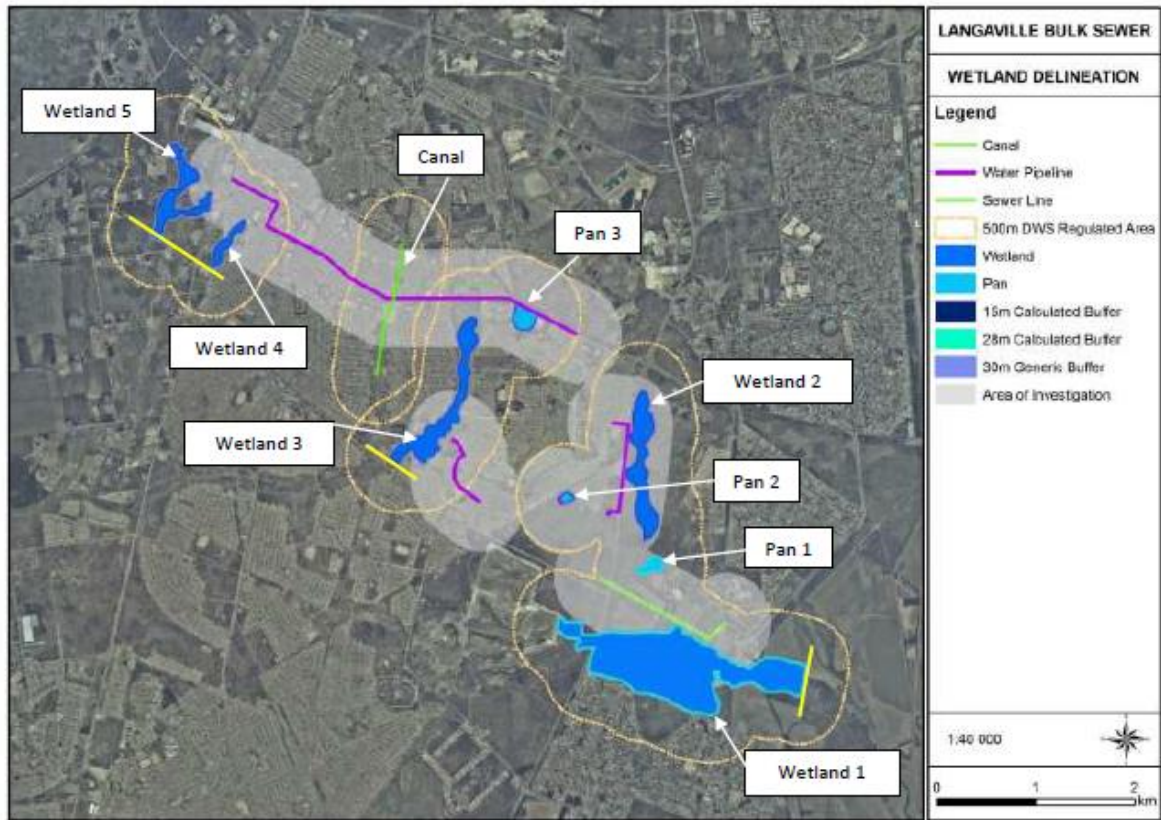


Figure 8: Wetland delineation also showing buffer zones and DWS regulated zones

Wetland 1

The channelled valley bottom wetland associated with the proposed sewer pipeline lies in a valley and flows from the mine spoils to the west (Figure 9). A section of this wetland is clearly channelled and it is consequently classified as a channelled valley bottom wetland. However, it is likely that the mine dump to the west has significantly affected the hydrology of this wetland. A small flat wetland lies approximately 340m north of the pipeline. Due to elevation changes in the landscape, it is unlikely that this wetland will be affected by the proposed sewer pipeline.

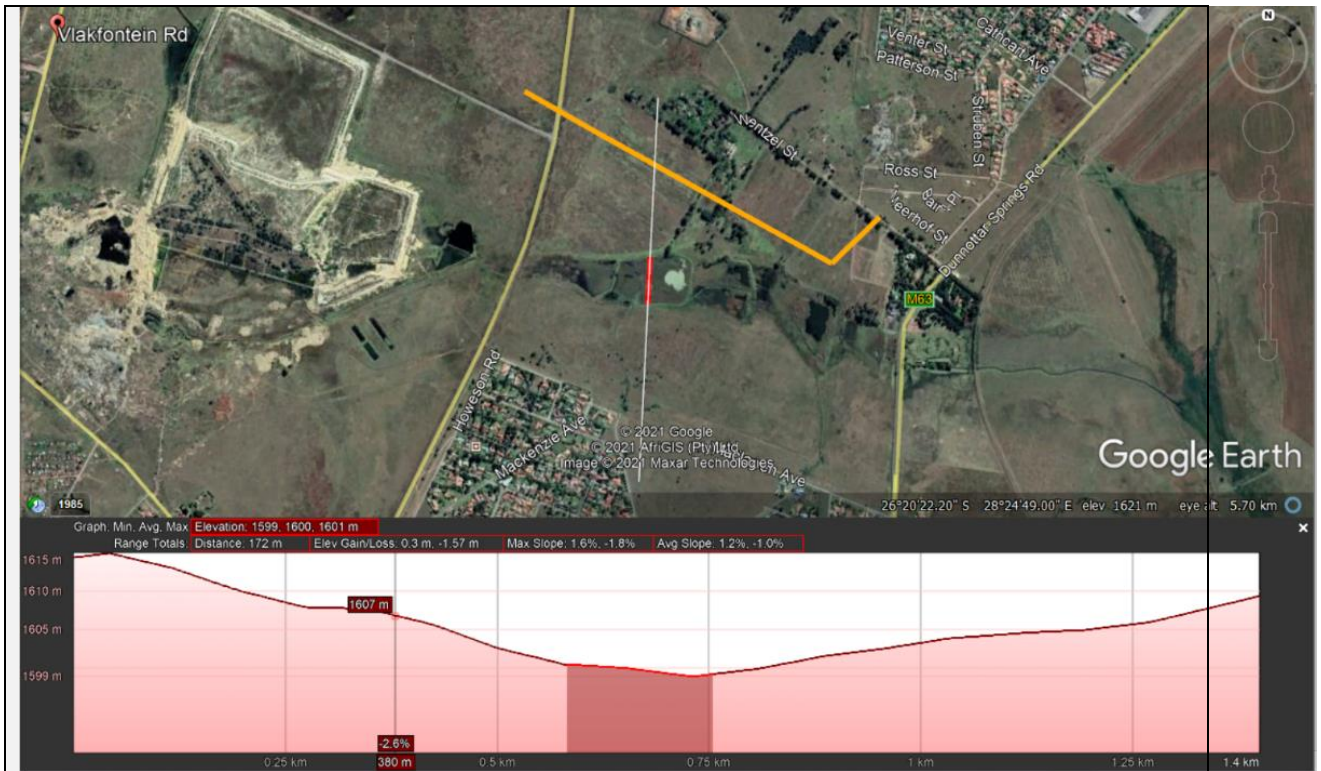


Figure 1: The elevation profile showing the valley in which the wetland lies

The soil in wetland 1 was dominated by clay and/or loam that has some degree of water retention properties. It should be noted that the historical mining and other impacts has caused pronounced changes in large sections of the soil profile (Figure 10).

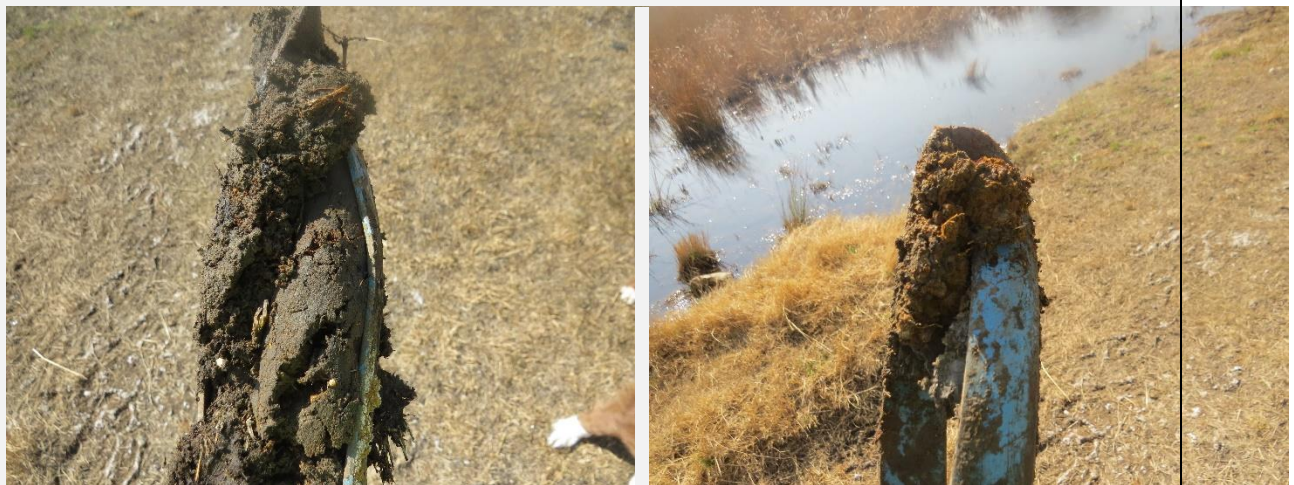


Figure 2: Soil samples taken in wetland 1

The vegetation in proximity to wetland 1 was characterised by large sections of disturbed vegetation growth surrounding areas such as the old mine dump and remnant infrastructure as well as large areas that has been recently burnt subsequently not all the vegetation could be identified. The burnt area does however provide some benefits such as exposing gullies, trenches, broken dam walls and other infrastructure that would likely not have been seen when vegetation growth is robust. The wetland indicators species (Figure 11) that was recorded include *Juncus effesus*, *Schoenoplectus corymbosus*, *Typha capensis* and *Berkeya* sp. Some of the grass species include *Imperata cylindrical*, *Leersia hexandra*, *Paspalum dilatatum*, *Cynodon dactylon* and

Pennisetum clandestinum. The exotic woody species recorded include *Pinus* sp., *Eucalyptus* sp. and *Quercus* sp.



Figure 3: Vegetation characteristics of the wetland

Overall Wetland 1 Health Scores

Impacts to the hydrology, geomorphology, water quality and vegetation components of the valley bottom wetland to the south of the proposed sewage pipeline were assessed, also considering the larger topographic catchment and the area 200m adjacent to the delineated wetland. Impacts (identified as disturbance units) included in this assessment included mining, agriculture, residential settlements and impoundments. Sources of pollution include runoff from the mine and stormwater outlets from residential areas into the wetland. The results of the Wet-Health (Version 2) assessment indicate that the wetland falls within a combined EC Category D, having obtained a combined impact score of 5.2 (Present Ecological Status 48%) (Refer to Table 4 of the wetland specialist report attached within Appendix G). Wetlands in this category are considered to be **Largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred (Kotze *et al.*, 2020).

Wetland 2

This wetland lies north of Wetland 1. It slopes to the east, away from a section of water pipeline included in the proposed activity discussed in this report. The pipeline runs parallel to Wetland 2 in the existing servitude of Tonk Meter Drive. The pipeline lies close to the wetland in two places, one of which is approximately 32m and the other approximately 38m west of wetland 2. No aquatic habitat occurs in this wetland. Vegetation is dominated by mosaics of grassland species with very little woody vegetation (Figure 12).



Figure 12: General characteristics of Wetland 2

Overall Wetland 2 Health Scores

Impacts (identified as disturbance units) in this wetland included agriculture, road crossings, residential infrastructure and extensive digging and earthworks related to unknown activities. Sources of pollution include runoff from the adjacent Tonk Meter Road.

The results of the Wet-Health (Version 2) assessment indicate that the wetland falls within a combined EC Category D, having obtained a combined impact score of 4.7 (Present Ecological Status 53%) (Refer to Table 10 of the wetland specialist report attached within Appendix G). Wetlands in this category are considered to be **Largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred (Kotze *et al.*, 2020).

Wetland 3

This wetland falls in quaternary catchment C22C and drains into a tributary Rietspruit. It is an unchanneled valley bottom wetland although a channel forms south of the study area. Similar to other wetlands in the area, it is dominated by grass and sedge species and supports little woody (Figure 13). Several stormwater outlets from adjacent residential areas flow into this wetland. Littering is an obvious impact to habitat integrity. This wetland lies approximately 90m west of the western extent of the water pipeline that lies along Matlala Street. It further extends to approximately 210m south of the water pipeline that lies along Rhokana Street.



Figure 13: General characteristics of Wetland 3 as seen from Vlakfontein Road south of the pipeline

Overall Wetland 3 Health Scores

Impacts (identified as disturbance units) in this wetland included road crossings and footpaths, residential infrastructure, numerous stormwater outlets into the wetland from adjacent residential areas and extensive littering.

The results of the Wet-Health (Version 2) assessment indicate that the wetland falls within a combined EC Category D, having obtained a combined impact score of 4.5 (Present Ecological Status 52%) (Refer to Table 12 of the wetland specialist report attached within Appendix G). Wetlands in this category are considered to be **Largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred (Kotze *et al.*, 2020).

Wetland 4

This wetland falls in quaternary catchment C22C and drains into a tributary Rietspruit. It is an unchanneled valley bottom wetland although channels have been dug in this wetland. Impacts to this wetland are similar to the others discussed above and include road crossings, drains, significant infilling and littering (Figure 14). Again, vegetation cover is dominated by grass and sedge species with a sparse woody component. No aquatic habitat occurs in this wetland which is dominated by seasonal zones of wetness. This wetland lies approximately 220m southwest of the water pipeline that lies along Joe Maseko and Kgawsane Streets. No aquatic habitat occurs in this wetland.



Figure 14: General characteristics of Wetland 4 as seen from Thema Road

Overall Wetland 4 Health Scores

Impacts (identified as disturbance units) in this wetland included road crossings and footpaths, residential infrastructure, numerous stormwater outlets into the wetland from adjacent residential areas and extensive littering.

The results of the Wet-Health (Version 2) assessment indicate that the wetland falls within a combined EC Category E, having obtained a combined impact score of 6.5 (Present Ecological Status 35%) (Refer to Table 14 of the wetland specialist report attached within Appendix G). Wetlands in this category are considered to be **Seriously modified**. The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable (Kotze *et al.*, 2020).

Wetland 5

This wetland joins with wetland 4 to drain into a tributary of the Rietspruit. It lies west of the residential built-up area and the western extent of the water pipeline. The area to the west and south of this wetland was affected by gold mining in the past. Currently, small-holdings dominate land-use. The wetland is also unchanneled and is impacted by road crossings, grazing and dumping (Figure 15). This wetland lies approximately 240m west of the water pipeline in Joe Maseko Street. This wetland is dominated by seasonal and temporary zones of wetness. Although some trees grow here, plant species composition remains dominated by grass and sedges.



Figure 15: General characteristics of Wetland 5 as seen from Rademan Street

Overall Wetland 5 Health Scores

The results of the Wet-Health (Version 2) assessment indicate that the wetland falls within a combined EC Category E, having obtained a combined impact score of 4.3 (Present Ecological Status 57%) (Refer to Table 16 of the wetland specialist report attached within Appendix G). Wetlands in this category are considered to be **Largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred (Kotze *et al.*, 2020).

Pans 1, 2 and 3

Three pan wetlands occur on the site. Pan 1 lies approximately 260m north of the sewer pipeline (upslope) and 577m south of the water pipeline along Tonk Meter Drive. This wetland is unlikely to be affected by the development and is not discussed in more detail. Pan 2 lies approximately 20m east of the 100m long water pipeline located northeast of Langaville Ext 12. Pan 3 lies immediately adjacent to the section of water pipeline located in Rhokana Steet. Both pan 2 and 3 are located adjacent to densely developed areas. Consequently vegetation cover is significantly altered, water that drains into these depressions is likely to be polluted and daily human activities including use of footpaths and littering affect their integrity (Figure 16). Since the impacts to the tow pans are similar, they are assessed together.



Figure 16: Characteristics of Pan 2 from Rhokana Street

Overall Wetland Health Scores

The overall wetland health score for the two pans aggregates the scores for the four modules, namely hydrology, geomorphology, water quality and vegetation. The trajectory of change serves as a prediction of the future status of the wetland. The scores fall in the D class, Largely Modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.

Canal

A canalised watercourse west of Wetland 3 conflues with this wetland to drain into a tributary of the Rietspruit. This canal received stormwater from the adjacent residential areas. Isolated wetland conditions may persist along the canal, but this watercourse no longer functions as a wetland (Figure 17). This canal does not provide ecosystem services and it does not contribute to support of biodiversity.



Figure 17: Characteristics of the canal from Kgaswane Street

Overall Wetland Health Scores

The overall wetland health score is calculated which aggregates the scores for the four modules, namely hydrology, geomorphology, water quality and vegetation (Refer to Table 20 of the wetland specialist report attached within Appendix G). A score of F reflects a wetland that has been critically modified. The modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota (Macfarlane *et al.* 2020).

Was a specialist consulted to assist with completing this section Yes

If yes complete specialist details

1.) Wetland Specialist

Name of the specialist:	Antoinette Bootsma		
Qualification(s) of the specialist:	B. Sc (Botany & Zoology) University of South Africa (1997 - 2001), B. Sc (Hons) Botany University of Pretoria (2003-2005), MSc Ecology, University of South Africa (2010 - ongoing), Short course in wetland delineation, legislation and rehabilitation, University of Pretoria (2007) and Short course in wetland soils, Terrasoil Science (2009).		
Postal address:	P.O. Box 32733, Waverley, Pretoria		
Postal code:	0135		
Telephone:	012 543 9982	Cell:	083 4545 454
E-mail:	antoinette@limosella.co.za	Fax:	
Are any further specialist studies recommended by the specialist?			NO <input checked="" type="checkbox"/>
If YES, specify:	N/A		
If YES, is such a report(s) attached?			NO <input checked="" type="checkbox"/>
If YES list the specialist reports attached below	N/A		

Signature of specialist:  Date: 19 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

8. LAND USE CHARACTER OF SURROUNDING AREA

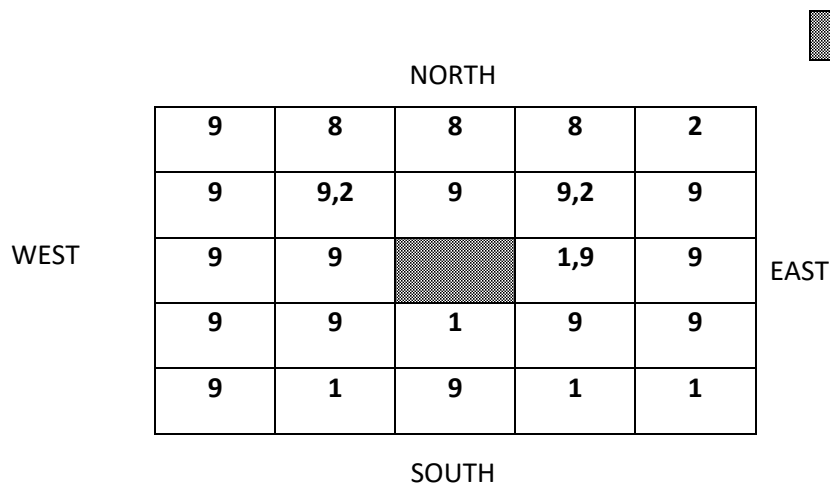
Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site.

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	. 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	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	
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



Note: 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

- Aquatic Biodiversity Assessment Report
- Heritage Screener 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 site is located within the jurisdiction of the City of Ekurhuleni within the Gauteng Province. The network of roads, airports, rail lines, telephones, electricity grids and telecommunications found in Ekurhuleni rivals that of a developed country. The area is home of the OR Tambo International Airport that plays a dominant role in the local economy.

Ekurhuleni has a resident population of 3 178 470 million people, of which 41.5% is economically active. The area contributes approximately 6.1% to national production. Over the period 1996 to 2011, Ekurhuleni’s economy grew by an estimated average of 3.2% per annum. The economically active people constitute 41.5% of the population. The area contributes approximately 6.1% to national production. Over the period 1996 to 2011, Ekurhuleni’s economy grew by an estimated average of 3.2% per annum. (Source: IHS Global Insight Rex v 655). According to Census 2011 (Statistics South Africa, 2017), 99.4% of the population in Ekurhuleni live in urban settlements. In Tembisa, 72.5% are formal. More than one-fifth of households in Tembisa (22.2%) and Ivory Park (22.5%) do not have an income. In Tembisa 31.3%, and in Ivory Park 34.9%, have household incomes of between R0 and R9 600.

The “dependency ratio” is the proportion of the population aged below 15 years and those aged 60 years and older, divided by those between ages 15 and 64 (Statistics South Africa, Census 2011). Census 2011 found that the 75.4% of the population in Tembisa was of working age (15 to 64 years old). In

In Ekurhuleni, there is about 1, 6 million economically active people (i.e. those who are employed, or unemployed but looking for work). Of these, 28, 8% are unemployed. Amongst

840 000 economically active youth (15–34 years), 36, 9% are unemployed. Of the 2 261 490 economically active individuals in Johannesburg (employed or unemployed but looking for work), 25, 0% are unemployed. Amongst the 1 228 666 economically active youth, 31,5% are unemployed.

Ekurhuleni’s mission is “To provide sustainable and people-centred development services that are affordable, appropriate and of high quality by focusing on the social, environmental and economic regeneration of our city and communities, as guided by the principles of Batho Pele and through the commitment of a motivated and dedicated team”. Two of the City’s core values are community-centeredness and Co-operative Governance.

The facility will contribute to employment opportunities both directly and indirectly during construction. It will also cumulatively contribute to an economic stimulus to the local economy through the establishment of other small related businesses e.g. (waste collectors and security during), creating additional indirect jobs in the Municipality

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 paleontological sites, on or

NO

close (within 20m) to the site?

--	--

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:

Heritage statement and character of the area

The area proposed for development is located in the rural agricultural landscape situated approximately 10km north east of Nigel in Gauteng, on the edge of the East Rand. The town of Nigel grew around a mine established on the farm Varkensfontein after gold was discovered here in 1886. In general, the East Rand has a rich history of both mining and colonial expansion, however there are no known resources associated with historic mining practices or with colonial expansion in the area proposed for development. According to Gailgher (2013, SAHRIS NID 131952), “the cultural landscape for this area is richly associated with the colonial period as well as its violent past. A unique stone architectural heritage was established in the Eastern Highveld from the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used in the Eastern Highveld. These included sandstone, ferricrete (ouklip.), dolerite (blouklip.), granite, shale and slate.” However, no such structures are located within the area proposed for development. As such, it is unlikely that the proposed development will negatively impact heritage associated with mining, highveld stone architecture or colonial expansion in this area. For details refer to the heritage screening report attached within **Appendix G**

Recommendation

Based on the available information, the proposed development is not likely to impact on significant cultural landscape, built environment, archaeological or palaeontological heritage resources and as such, it is recommended that no further studies in terms of section 38 of the NHRA are required.

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

YES	☐
-----	---

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO ☐
--	------

If yes, please attached the comments from SAHRA in the appropriate Appendix

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	NO
-----	----

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

YES	NO
-----	----

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

Please note that, this DBAR is currently being released out to public and any comments that will be received will be added into the comments and response report.

1. The Local ward councilors (Ward 25)

The Regional Head and local ward councilor were consulted and neither objection nor comment was received during the process notification period.

2. Environmental Resource Management Department: City of Ekurhuleni

The DBAR has been submitted to the commenting authority and comments are expected during the DBAR review period.

3. Department of Water and Sanitation

Comments are expected during the DBAR review period. A Water Use License application is underway.

4. Gauteng Department of Agriculture and Rural Development (GDARD).

The DBAR has been submitted to the competent/authorizing authority and comments are expected during the DBAR review period.

All comments and responses provided will be included in Appendix E6 Comments and Response Report.

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

As this is the Draft Basic Assessment Report at present, it will be submitted for comment to the local authority and as well as to other stakeholders. Once comments have been received at the end of the 30-day review period, they will be recorded and reflected in the Final Basic Assessment Report.

The following public participation was conducted for the proposed project as per the approved Public Participation Plan:

Identification of stakeholders, including occupiers of the property, owners and occupiers of land adjacent to the site, municipal officials and relevant State Departments as part of the Public Participation Process. All respondents were placed on the project database. This database will be supplemented by I&APs who will contact the EAP to be included on the database. The database will be used throughout the process to inform the stakeholders of the project. In order to canvass the issues and concerns of the broader public and to ensure that all IAPs are afforded the opportunity to comment on the proposed development, the proposed project was announced as follows:

- Erection of site notices, size (A2) advertising the proposed development and displaying the contact details of the EAP were prepared and displayed on-site. The site notices will serve the purpose of informing potential IAPs of the project and therefore afford them the opportunity to comment.
- Distribution of the notification letter with a registration and comment sheet, and the locality map to state departments and other potential stakeholders through emails.
- An advert was placed in the local Newspaper to notify the public about the Basic Assessment process, invite members of the public to register as I&APs on the project's database as well as comment on the Draft BAR
- Communication with local authorities and stakeholders via emails
- The DBAR has also been uploaded on the provided emails and online portals to all affected Organs of State
- No public meeting will be held due to the Covid 19 pandemic.
- Focus group meeting via Zoom will be arranged with the local ward councilor where required.
- All comments and responses provided throughout stakeholder engagement will be captured and recorded within the Comments and Response Report in the final Basic Assessment Report that will be submitted to GDARD.
- Once GDARD has made a decision: The registered I&APs, stakeholders and organs of state will be notified of the department's decision

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?

Yes?

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

The public have been notified of the application, via site notices, emails and newspaper advertisement. Comments are expected during the review period of this DBAR which runs from 27th May 2021 to 28th June 2021.

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

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 is to be ordered as detailed below

Appendix 1 – Proof of site notice. Refer to Appendix E1 for wording of site notice. Proof of site notices will be included in the FBAR.

Appendix 2 – Written notices/ Background Information Document to I&APs & Correspondences. Refer to Appendix E2 for Background Information Document. Proof of site notices will be included in the FBAR.

Appendix 3 – Proof of newspaper advertisements. Refer to Appendix E3 for wording of newspaper advertisement. Proof of site notices will be included in the FBAR.

Appendix 4 – Correspondence – N/A at this stage

Appendix 5 – Minutes of any public and/or stakeholder meetings – N/A at this stage

Appendix 6 – Comments and Responses Report – N/A at this stage

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. Refer to Appendix E9.

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 checked="" type="checkbox"/>	
Could not be determined at this stage m ³	

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

Construction rubble/ solid waste will be temporarily stored on site in designated waste skips and then 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. The nearest licensed landfill site is the FG Landfill site. 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?

	NO <input checked="" type="checkbox"/>
m ³	

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

No solid waste will be produced during the operational phase of the proposed project.

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 <input checked="" type="checkbox"/>
--	--

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

During construction a registered landfill sites e.g. Marie Louise landfill- Roodepoort can be used as they still have capacity and no waste will be generated during the operation phase.

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?

	NO <input type="checkbox"/>
--	-----------------------------

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?

	NO <input type="checkbox"/>
--	-----------------------------

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 and as foundation for the proposed rehabilitation processes where possible. The re-use of construction rubble and other waste materials will minimize the amount of waste that will need to be disposed of at registered municipal waste facilities.

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?

	NO <input type="checkbox"/>
--	-----------------------------

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 on site?

	NO <input type="checkbox"/>
--	-----------------------------

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?

	NO <input type="checkbox"/>
--	-----------------------------

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 <input type="checkbox"/>	<input checked="" type="checkbox"/>
------------------------------	-------------------------------------

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

Unknown at this state

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

<input checked="" type="checkbox"/>	NO <input type="checkbox"/>
-------------------------------------	-----------------------------

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

<input checked="" type="checkbox"/>	NO <input type="checkbox"/>
-------------------------------------	-----------------------------

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 waste service provider for treatment at a treatment facility.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

<input checked="" type="checkbox"/>	NO <input type="checkbox"/>
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If yes, is it controlled by any legislation of any sphere of government?

YES <input type="checkbox"/>	NO <input type="checkbox"/>
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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:

The activity itself will not contribute directly to emissions released into the atmosphere except possible short-term dust emissions during the construction phase. Emissions generated will be in the form of dust, carbon dioxide and other vehicle emissions generated by diesel powered machinery and trucks during the construction process i.e. tip trucks, TLB's, excavators and dust from the movement of the construction vehicles. These emissions will be composed primarily of CO ₂ and will be of a low concentration.
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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
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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

A Water Use License is required for the following Section 21 water uses:

- Impeding or diverting the flow of water in a watercourse;
- Altering the bed, banks, course or characteristics of a watercourse.

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

NO

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

YES

NO

The Water Use License Application (WULA) has been initiated on the DWS online portal. The DBAR will also be made available to the Department of Water and Sanitation for comment during the DBAR review period.

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:

No particular considerations of energy saving/ conservation were deemed applicable in this project. However, 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.

Summary of main issues raised by I&APs	Summary of response from EAP
The public have been notified of the application, via site notices, emails and newspaper advertisement. Comments are expected during the review period of this DBAR which runs from 27th May 2021 to 28 th June 2021	

As this is the Draft Basic Assessment Report at present, it will be submitted for comment to the local authority and as well as to other stakeholders and the public. Any additional comments that will be received at the end of the 30-day review period will be recorded and reflected in the Final Basic Assessment Report.

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):

Refer to the table above

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 potentially significant 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 planning phase of the development. Risks and key issues were identified and addressed through an internal process based on similar developments, and an environmental evaluation.

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 PHASE** for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

They are two material options proposed for construction for this project which is **Pipe Materials: UPVC Pipelines and the Concrete Pipelines**. **From an environmental perspective the material difference do not have a significant difference from each other and therefore the Proposed Materials (UPVC Pipelines) and Alternative Material (Concrete) will be assessed together.**

2.1 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

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 PHASE. **The potential impacts discussed below are relevant for the Proposed (UPVC Pipes) and the Alternative (Concrete Pipelines)**

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
1. IMPACT ON WATERCOURSES				
<p>Direct Impacts (1a) Impacts to hydrological function at a landscape level</p> <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, particularly at Pan 3.</p> <p><i>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.</i></p>	Medium	<ul style="list-style-type: none"> • The position of the structures should avoid the delineated watercourses of their buffer zones • At Pan 3, take particular care to ensure that only the minimum are required for pipeline replacement is disturbed. The adjacent wetland must be fenced off and entry into this sensitive area must be prevented and monitored • Dewatering from trenches during the pipe implementation phase should not be discharged directly into watercourse. Dewatering discharge must be routed through properly constructed silt traps and erosion control measures. • A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. • Where disturbance of wetland habitat occurs, rehabilitation should be implemented 	Low	<p>Considered to be moderate. Future maintenance of this pipeline in the wetland will lead to some impact</p>

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: None</p> <p>Cumulative Impacts: Low to moderate and could include edge effects to remaining natural vegetation as the footprint of the activities may result in vegetation clearing. This may lead to sedimentation and establishment of alien plant species.</p> <p>Residual Risks: Expected to be low given that structures fall outside the delineated sensitive areas and that stormwater is effectively managed.</p>				
<p>Direct Impacts (1b) Changes in sediment entering and exiting the system</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 	Medium	<ul style="list-style-type: none"> Store topsoil and subsoil stockpiles from the trench outside of buffered the watercourse Dewatering from trenches during the pipe implementation phase should not be discharged directly into wetland or river systems. Dewatering discharge must be routed through properly constructed silt traps. These dewatering silt traps should be located outside of 	Low	Moderate

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"> Erosion (e.g. gully formation, bank collapse) <p>Cumulative Impacts: Expected to be limited provided that the mitigation measures are implemented effectively and sedimentation is appropriately managed.</p> <p>Residual Risks: Expected to be limited provided that the mitigation measures are implemented effectively and sedimentation is appropriately managed.</p>		<p>the buffered watercourse areas and be frequently monitored to ensure they remain effective.</p> <ul style="list-style-type: none"> Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area. Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the adjacent surface vegetation. 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. Monitoring should be done to ensure that sediment pollution is timeously dressed 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (1c) Introduction and spread of alien vegetation</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: Since alien vegetation is already present in the catchment, cumulative impacts can be Moderate to High. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.</p> <p>Residual Risks: Expected to be limited provided that alien plants are effectively controlled</p>	Medium	<ul style="list-style-type: none"> • Undertake an Alien Plant Control Plan which specifies actions and measurable targets • 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. • Long-term monitoring for 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, as specified in the Alien Vegetation Management Pan • Rehabilitate or revegetate disturbed areas. • All construction vehicles and equipment, as well as construction material should be free of plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction areas. This should be verified by the ECO. • If filling material is to be used, this should be sourced from areas free of invasive species. • No foreign plant matter or soil may be introduced into 	Low	Expected to be medium since alien vegetation is already present in the catchment

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 area.</p> <ul style="list-style-type: none"> • Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services for disposal of waste to prevent the attraction of scavenging pest species to the site. • Inspect and clear domestic waste from site on a daily basis. 		
<p>Direct Impacts (1d) Loss and disturbance of watercourse habitat and fringe vegetation</p> <p>Indirect Impacts: Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. Earthworks in close proximity to Pan 3 is a particular risk to habitat loss in this wetland.</p> <p>Cumulative Impacts:</p>	Medium	<ul style="list-style-type: none"> • The development footprint should remain outside the delineated wetland and buffer zones. • Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas • Implement an Alien Plant Control Plan • Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed. • Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive 	Low	Expected to be Medium

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Expected to be moderate since natural wetland habitat has already been significantly impacted in this area.		species are observed to establish		
<p>Direct Impacts (1e) Changes in water quality due to foreign materials and increased nutrients</p> <p>Indirect Impacts: 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>Cumulative Impacts: Decreased water quality from spills of contaminants will contribute to regional water quality decrease, therefore should be considered a significant cumulative impact.</p> <p>Residual Risks:</p>	Medium	<ul style="list-style-type: none"> • Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone. • Implementation of appropriate storm water 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. • Locate the infrastructure outside the calculated 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. • Provision of adequate sanitation facilities located 	Low	Expected to be moderate should any spills occur

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Although it may be controlled and largely prevented, the impact of a single spill will have a significant residual effect on the local watercourse integrity. Residual risks should therefore be considered significant</p>		<p>outside of the watercourse area or its associated buffer zone</p> <ul style="list-style-type: none"> • 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. • 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 • Measures should be put in place to prevent spills or water contaminated by waste material by for example constructing sumps or drains which can contain any spills in order for contaminated water to be isolated from the watercourse and removed from the site for appropriate disposal • A lined holding tank must have sufficient pumps and other measures to ensure that any spills are contained and can be safely removed without 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<p>impact to the watercourse.</p> <ul style="list-style-type: none"> The design of the holding tank must accommodate 1:50 year flood lines to ensure that realistic flooding does not result in the release of contaminants downstream. 		
<p>Direct Impacts (1g) :Loss of aquatic biota Nature: Loss of instream habitat, deposition of wind-blown sand, loss of fringing vegetation and erosion, alteration in natural fire regimes and subsequent loss of non-marginal and marginal vegetation. Increase in invasive species due to disturbance. Change in water quality. Changes in flow.</p> <p>Direct: Loss and disturbance of biota due to direct development on the watercourse as well as changes in habitat including water quality, the water column, increased sediment, increased alien vegetation fire regime and habitat fragmentation.</p> <p>Cumulative impacts: Irreplaceable loss</p>		<ul style="list-style-type: none"> Ensure that no additional vegetation is removed, Avoid unnecessary aquatic ecosystem crossing - limit work within the stream, river or wetland. The use of single access points for crossings. Other than approved and authorized structure, no other development or maintenance Infrastructure is allowed within the delineated wetland and riparian areas or their associated buffer zones. Mark all areas which don't form part of the proposed development within wetlands and riparian areas as no-go areas. Weed control in aquatic ecosystem and buffer zone. Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance of the proposed infrastructure and take immediate corrective action where invasive species are observed to establish. 		

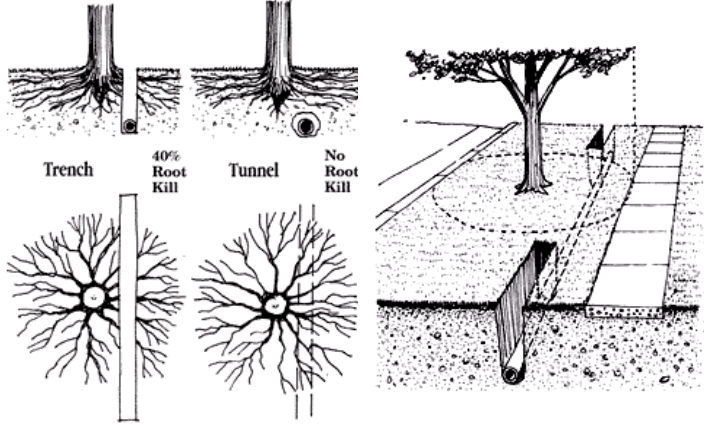
Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>of the aquatic biota</p> <p>Residual Risks: Due to the already seriously modified nature of the aquatic ecosystems surrounding the proposed development it is expected to be limited provided that the mitigation measures are implemented correctly, and effective rehabilitation of the site is undertaken where necessary</p>		<ul style="list-style-type: none"> All management procedures listed above for the change in water quality. It is essential that the ecological reserve of the two non-perennial tributaries should be determined prior to impoundment Installation of early warning systems to detect possible leakage in the sewer pipeline. 		
2. IMPACT ON VEGETATION				
<p>Direct Impacts (2a): Destruction of vegetation of low and medium sensitivity (Tsakane grasslands)</p> <p>The development will require the removal of the modified vegetation along sidewalks, as well as from modified grassland and mowed grassland. All removal of vegetation, whether sensitive or not, could have an impact on soil stabilisation and water infiltration.</p>		<p><i>Planning:</i></p> <ul style="list-style-type: none"> Construction camps can be placed within road verges, or modified grassland. However, these areas must be rehabilitated to the current status quo, including indigenous lawns and trees. Plan to remove as little indigenous trees as possible, if any. Plan to remove grass sods from the development footprint in the mowed grassland. These sods must be replanted as part of rehabilitation. 		<p>Localised alteration of soil surface characteristics and loss of flora.</p>

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>Reduction of indigenous species. Alien plants are likely to invade the site as a result of the disturbance created during construction</p>		<p><i>Construction:</i></p> <ul style="list-style-type: none"> • An independent Environmental Control Officer (ECO) should be appointed to oversee construction. • A temporary fence or demarcation must be erected around the construction area to prevent access to adjacent grasslands • Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. • No open fires are permitted within naturally vegetated areas or open spaces. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through vegetated areas. • Only remove vegetation where absolutely necessary and retain vegetation in place for as long as possible prior to removal. • A vegetation rehabilitation plan should already be implemented during construction and include the following: 		Edge effects into wetland areas
<p>Cumulative Impacts:</p> <p>none</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>If mitigation measures are adequately implemented, no cumulative impacts are expected.</p>				

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"> ○ In vegetated areas (<u>particularly the wetland</u>), grass sods should be removed and stored in transformed vegetation or other disturbed areas. The sods must preferably be removed during the winter months and be replanted by latest springtime. The sods should not be stacked on top of each other. Once construction is completed, these sods should be used to rehabilitate the disturbed areas from where they have been removed. In the absence of timely rainfall, the sods should be watered well after planting and at least twice more over the next 2 weeks. ○ Grasses that naturally occur in the area should be sown / hydroseeded in the disturbed footprint. ● No activities should take place during rainy events and at least 2 days afterwards. ● Where topsoil needs to be removed, store such in a separate area where such soils can be protected until they can be re-used for post-construction rehabilitation where applicable. Never mix topsoil with subsoils or other spoil materials. 		

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"> Maintain site demarcations in position until the cessation of construction work. After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction. Rehabilitation must take place immediately post construction and only use indigenous species naturally occurring in the area. 		
Direct Impacts (2c): Destruction or damage to street trees	Medium	<i>Planning:</i> <ul style="list-style-type: none"> Avoid removing large, established indigenous trees where possible. Where damage to the trees cannot be avoided, the trees can be removed and replaced with the same species post construction. Severed roots of street trees may be reduced with careful planning to avoid root damage. Trees could fall when the structural roots have been compromised causing damage to property. Instead of trenching through roots, consider the option of boring under the roots. 	Low	Destabilized trees, damage to property and infections to roots, slowly killing trees.
Indirect Impacts: Trenching could sever tree roots and destabilise large trees. Trees often fail when the structural roots have been compromised, either by cutting or infection, causing damage to property. Removing large tree roots can make the tree unstable or unhealthy later on. If				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>large roots are removed or severed, the tree may not be able to get enough nutrients and water and could become unstable (Airhart & Zimmerman, 2003).</p> <p>Cumulative Impacts: Reduction in street trees and impact on micro-climate and vertebrate habitat.</p> <p>Indirect Impacts: Increased erosion and contamination of soil and groundwater.</p> <p>Cumulative Impacts: A number of invasive species are present within the area that the proposed development is situated in. Therefore, if mitigation measures to limit and prevent the spread of alien species are not implemented, the cumulative impact could lead to remaining natural vegetation transformed by alien plant species and alien fauna out-competing local indigenous species. Ultimately this</p>		<ul style="list-style-type: none"> • Trenches adjacent to a trunk could cut off about 40% of the tree roots (Figure 12a) which could destabilise the tree in windy conditions. As per Airhart and Zimmerman (2003) trenches should ideally be dug outside of the drip line of trees where possible. The best route is to trench directly toward the tree trunk, but tunnel under the tree trunk. This will sever less roots. Alternatively, trench just one-third into the drip line from either side (Figure 8b) then tunnel under the middle of drip line to connect the trenches. • Pneumatic digging is a method that allows trenching through a tree's critical root zone without severing vital roots 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
will result in reduction of natural indigenous biodiversity in the area.		 <p data-bbox="853 879 1585 994">Figure 18: a) Tunnel underneath roots where possible, instead of trenching through roots and b) Tunnelling under drip line</p> <p data-bbox="864 1038 1025 1066"><i>Construction:</i></p> <ul data-bbox="853 1078 1585 1321" style="list-style-type: none"> • Avoid removing street trees where possible. • Tree roots damaged by digging trenches must be treated with an appropriate fungicide or sealant, in accordance with manufacturers specifications • Contractors must prevent root zone compaction, mechanical damage to trunks and branches and 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<p>chemical spillage around tree roots.</p> <ul style="list-style-type: none"> • Ensure that soil is replaced around tree roots to the same height as before. Roots may not remain exposed and neither should soil be heaped higher around the roots and trunk than prior to construction. • No topsoil should be store against tree trunks. • Damaged indigenous trees must be replaced with the same species. 		
Direct Impacts (2e): Clearing of land for construction camps and potential pollution of the soil and water	Medium	<p><i>Planning:</i></p> <ul style="list-style-type: none"> • Construction camps must be located outside of moist grassland or wetland area. • Ensure there is a method statement in place to remedy any accidental spillages immediately. 	Low	Compaction on construction camps could result in altered topsoil characteristics and vegetation composition. These areas are also prone to invasion by alien invasive plant species.
Indirect Impacts: none		<p><i>Construction:</i></p> <ul style="list-style-type: none"> • Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering. • No open fires may be lit for cooking or any other 		

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>Pollution of ground water</p>		<p>purposes, unless in specifically designated and secured areas</p> <ul style="list-style-type: none"> No vehicles may be washed on site, except in suitably designed and protected areas 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 		
3. IMPACT ON FAUNA				
<p>Direct Impacts 3(a): Destruction of fauna habitat and ecological connectivity</p> <p>The wetland and associated CBA and buffer ESA provides the most significant natural habitat and ecological connectivity to fauna in the area. These areas will only be minimally impacted and ecological connectivity should be minimally impacted by the pipeline replacement.</p>	Medium	<p><i>Planning:</i></p> <ul style="list-style-type: none"> Construction camps must avoid the CBA and ESA area. Alternative on-site open-spaces must be selected. As the CBAs are associated with wetlands, these should remain as no go areas. Activities in wetlands and buffers can only proceed once a water use authorisation is obtained. Activity in the on-site ESAs should consider reduced time and smaller footprint (for example considering pipe-cracking technique in these areas) as far as practically possible with immediate rehabilitation. 	Low	<p>Sedimentation could alter drainage patterns within the downstream aquatic ecosystems and reduce water holding capacity</p>
Indirect Impacts:				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Habitat fragmentation		<ul style="list-style-type: none"> Where excavations are required in proximity to the CBAs and ESAs consider timing these for the dry season to reduce disturbance to breeding avifauna. This will also reduce risk of sedimentation. <p><i>Construction:</i></p> <ul style="list-style-type: none"> An independent Environmental Control Officer (ECO) should be appointed to oversee construction. A temporary fence or demarcation must be erected around the construction area to prevent access to adjacent areas Berms must be established between activity areas and CBAs and ESAs where these are adjacent to each other to prevent sedimentation through runoff to these areas. 		and flow characteristics important to ecosystems in the long term.
<p>Cumulative Impacts:</p> <p>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>				
<p>Direct Impacts 3 (c): Hindrance, trapping, killing of fauna</p>	Low	<p><i>Planning:</i></p> <ul style="list-style-type: none"> No animals are allowed to be caught under any circumstances. This is applicable to all groups of fauna, from invertebrates to mammals. All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any indigenous fauna species. Contracts with contractors must specify actions that will be taken against contractors who do not conduct 	Low	No significant residual impacts are expected due to the current status of site and the nature of the activities.
<p>Indirect Impacts:</p> <p>The site is unlikely to support significant populations of ecologically significant species and species that are likely to be impacted are more likely to be generalist species, common species and species adapted to man-modified habitats.</p>				

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: No significant cumulative impacts are expected due to the current status of site and the nature of the activities.</p>		<p>activities in line with the EMP.</p> <p><i>Construction:</i></p> <ul style="list-style-type: none"> • Ensure safe speed limits in the development area. • Should any fauna be trapped within the development area, activities will cease, and specialists brought in to safely remove the animals from site. This must be done in line with the Gauteng Nature conservation Ordinance. 		
<p>Direct Impacts 3 (d): Disturbance to fauna through noise, vibration and dust</p> <p>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.</p>	Very Low	<p><i>Planning:</i></p> <ul style="list-style-type: none"> • Select and utilise quieter equipment where feasible. <p><i>Construction:</i></p> <ul style="list-style-type: none"> • 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. 	Very Low	No significant residual impacts are expected due to the current status of site and the nature of the activities.
<p>Indirect Impacts: none</p>				
<p>Cumulative Impacts: none.</p>				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
4. IMPACTS ON THE HERITAGE FEATURES				
Direct Impacts: <ul style="list-style-type: none"> There are no known formal heritage sites or features of any SAHRA Grade on the study area or in its immediate vicinity. As no sites, features or objects of cultural significance are known to exist in the development area, there would be no impact as a result of the proposed development. 	Very Low	No known heritage resources occur in the area, however 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.	Very Low	Low
Indirect impacts: None				
Cumulative impacts: The loss of a number of archaeological sites				
5. VISUAL IMPACTS				
Direct Impacts:		<ul style="list-style-type: none"> Ensure that no litter, refuse, waste, rubbish, rubble, 		

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"> 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. 	Medium	<p>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.</p> <ul style="list-style-type: none"> 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; Manage construction activities in accordance with the accepted/ approved construction EMPr. 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. Supply sufficient garbage bins throughout the site and service regularly. Ensure good housekeeping is implemented at all times. 	Low	
<p>Indirect impacts:</p> <p>None</p>				
<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>				

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"> Keep the property neat and litter free at all times and maintain the landscaped areas. Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area; 		
6. NOISE IMPACTS				
Direct Impacts: <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. 	Medium	<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 	Low	Medium
Indirect impacts: None				

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 is a possibility that the ambient noise levels may change from that of agriculture/residential area to mixed use developed area.</p>		<p>site operations.</p> <ul style="list-style-type: none"> • 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. 		
7. IMPACTS ON THE AIR QUALITY				
<p>Direct Impacts:</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. • Trucks transporting spoil and fill material. 	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. • Dust suppression by means of either water or biodegradable chemical agent is required. 	Low	Low
<p>Indirect impacts:</p> <p>None</p>				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Cumulative impacts: None				
8. TRAFFIC IMPACTS				
Direct Impacts: <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. 	Medium	The approval is subject to the following: <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 EMPr are to be implemented. Ensure an appropriate access procedure to avoid backlog of traffic at the entry point to the site 	Low	Low
Indirect impacts: None				
Cumulative impacts: Possible traffic congestion or delays if no mitigation measures are implemented.				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
9. SOCIAL ECONOMIC (POSITIVE IMPACTS)				
<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. 	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 labor force. • Where reasonable and practical University of Johannesburg should appoint local contractors and implement a (local first) policy especially for semi-skilled and low skilled job categories. • Training and skills development programmers should be initiated prior to the commencement of the construction phase. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. • Where possible, efforts should be made to employ local employees that are compliant with Black Economic Empowerment (BEE) criteria. 	Medium ++	None, it is a positive impact
Indirect impacts:				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
Economic multiplier effects from the use of local contractors such as (waste transporters and security personnel used to provide services on site)				
Cumulative impacts: Possible economic boost				
10. ; HEALTHY AND SAFETY & SECURITY				
Direct Impact: <ul style="list-style-type: none"> ▪ Influx of people looking for jobs to site ▪ Employees using the surrounding environment for ablution ▪ Open fires ▪ Theft etc. ▪ Injuries due to construction hazards 	Medium	<ul style="list-style-type: none"> ▪ All flammable substances must be stored in dry area which do not pose an ignition risk to the said substances ▪ Ensure all construction vehicles and machinery is under the control of competent personnel. ▪ No open fires will be allowed on site unless in a demarcated area identified by the ECO ▪ Limit access to the construction site to the workforce only. Comply with the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). ▪ Construction footprints, including site offices, excavations, storage areas, materials lay-down 	Low	Medium
Indirect impacts:				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>None</p> <p>Cumulative impacts: Unsafe communities</p>		<p>areas, stockpile area, and workers rest areas should be clearly demarcated or fenced off before construction commences.</p> <ul style="list-style-type: none"> ▪ All construction activities should be limited to the demarcated areas. ▪ Access to these demarcated areas strictly controlled. ▪ Entry points and access routes to the sites must be clearly marked and traffic limited to those areas as far as possible. ▪ Suitable warning and information signage should be erected before construction commences. ▪ Adequate toilet facilities must be provided for all staff members as standard health and safety practice. ▪ The ablution facilities must be regularly serviced to reduce the risk of surface or groundwater pollution ▪ Packaging and other waste material may not be burned on site under any circumstances. ▪ The Contractor shall supply firefighting equipment in proportion to the fire risk presented by the type of construction and other on-site activities and materials used on site. This equipment shall be kept in good operating order. This particularly applies to welding activities. ▪ Smoking is only allowed in designated safe smoking 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<p>areas.</p> <ul style="list-style-type: none"> Emergency preparedness and response plan for the construction phase must be developed and implemented. All new laborers recruited from the community must undergo relevant training to reduce hazards that may arise from job responsibilities and improve on job skills. No accommodation will be allowed on site. The contractor and project site manager are responsible for making the necessary arrangements for transporting staff to and from site on a daily basis 		
11. Pollution caused by Inappropriate Management and Handling of Waste				
<p>Nature of the Impact:</p> <ul style="list-style-type: none"> Inappropriate management of construction rubble left onsite may attract vermin, encourage the growth of opportunistic alien vegetation and become unsightly Hazardous waste e.g. used oils, offcuts, empty bitumen containers etc., could pollute surface and 	Medium	<ul style="list-style-type: none"> Regular litter picking and general waste bins must be readily available for litter disposal and general housekeeping. All solid waste generated during the construction process must be placed in a designated waste collection area within the construction camp and must not be allowed to blow around the site, be accessible to animals, or be placed in piles adjacent the waste skips / bins. All solid waste must then be disposed of at the nearest licensed landfill and safe disposal certificates obtained. Separate waste skips/ 	Low	Medium

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>groundwater resources if not properly contained.</p> <p>Indirect impacts: None</p> <p>Cumulative impacts: Visual impacts</p>		<p>bins for the different waste streams must be available on site.</p> <ul style="list-style-type: none"> ▪ The waste containers must be appropriate to the waste type contained therein and where necessary should be lined and covered. This will be managed through the site specific EMP and monitored by the ECO. ▪ No waste (hazardous or general) will be disposed of in the trenches around the construction footprint. All hazardous material must be carefully stored and then disposed of offsite at the licensed hazardous landfill site ▪ All excess material and rubble must be removed from the site so not to restrict the rehabilitation process. ▪ Adequate toilet facilities must be provided for all staff members as standard construction practice. Monitor the sewerage facilities for spillages, and handle any spillages as hazardous waste; ▪ Chemical toilets must be placed within the construction camp and not in close proximity to the river/wetlands. The chemical toilets to be provided must be from a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record. 		

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"> Machinery must be properly maintained to keep oil leaks in check 		
12. Soil and Groundwater Pollution				
<p>Nature of the Impact: Mismanagement, handling and storage of hazardous chemicals and materials may result in spillages causing pollution to soil, surface and groundwater resources.</p> <p>Indirect impacts: None</p> <p>Cumulative impacts: Infertile soils and polluted groundwater resources</p>	Medium	<ul style="list-style-type: none"> Any hazardous or dangerous goods utilized during the construction phase must be stored on an impermeable surface that is bunded, fenced, locked and covered. A spill kits must be clearly marked and visible when utilizing hazardous or dangerous materials to ensure all spills can be immediately cleaned. Remediation of spillages must be conducted within 24h of spillage. Contaminated soil will be considered to be hazardous waste and disposed of accordingly Any hazardous or dangerous goods utilized during the construction phase must be stored on an impermeable surface that is bunded, fenced, locked and covered. The contractors must provide and maintain a method statement for mixing of cement and asphalt. The method statement must provide information on proposed location, storage, washing and disposal of cement, packaging, tools and plant storage. The mixing of concrete should only be done at 	Low	Medium

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
		<p>specifically selected sites on mortar boards or similar structures to contain pollution</p> <ul style="list-style-type: none"> ▪ Washing and cleaning of equipment and vehicles should also be done within a bermed area (wash bay area). ▪ Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bunded areas or under lock and key, as appropriate, in well-ventilated areas ▪ Drip trays (minimum of 10cm deep) must be placed under all vehicles suspected of leaking these must not be left unattended. ▪ Drip trays must be utilized during repairs and maintenance of all machinery. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle 		

2.2 IMPACTS THAT MAY RESULT FROM THE OPERATION PHASE

Table 5: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the **OPERATION PHASE**

They are two material options proposed for construction for this project which is **Pipe Materials: UPVC Pipelines and the Concrete Pipelines.**

From an environmental perspective the material difference do not have a significant difference from each other and therefore the Proposed Materials (UPVC Pipelines) and Alternative Material (Concrete) will be assessed together.

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
1. IMPACT ON WATERCOURSES				
<p>Direct Impacts (1a) Changes in water flow regime impact ratings</p> <p>Changing the quantity and fluctuation properties of the watercourse by for example diverting or obstructing flow.</p> <p>Indirect Impacts: None</p> <p>Cumulative Impacts: Moderate. We assume that the pipeline is existing and will be replaced so the largest impact has already occurred in the past. Further earthworks in this wetland may add to impacts. Careful mitigation and rehabilitation should</p>	Medium	<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. After closure of the trench, the contours should resemble pre-development conditions. Where lateral water flow in the soil profile is intercepted by the trench and pipe, this water should be released back into the wetland in such a ways as to not cause scouring or erosion Effective rehabilitation of disturbed areas is key to minimising impacts Rigorous monitoring should ensure that unintended negative consequences such as scouring or damming up of water are timeously addressed 	Low	<p>Considered to be low since impacts during the operational phase are unlikely to affect the watercourse</p>

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
therefore be done.				
<p>Direct Impacts (1b) Changes in sediment entering and exiting the system</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: deposition may affect the hydrology of the wetland by reducing the capacity of open water areas, smothering niche habitats and changing hydrological zonation. Reversing this process is unlikely and should be prevented in the first place..</p>	Low	<ul style="list-style-type: none"> • Runoff from the construction area must be managed to avoid erosion and pollution problems. • Implementation of best management practices • Monitoring should be done to ensure that sediment pollution is timeously dressed 	Low	Moderate to high since reversing sediment pollution is unlikely to be effective and may cause more damage

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (1c) Introduction and spread of alien vegetation</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: <i>Expected to be moderate. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.</i></p>	Medium	<ul style="list-style-type: none"> Rehabilitate or revegetate disturbed areas 	Low	Expected to be high due to large extent of exotic vegetation in the area.

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (1d) 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 natural wetland habitat has already been significantly impacted in this area.</p>	Low	<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 Ensure that effective rehabilitation is undertaken and monitor for the reestablishment of wetland habitat and unintended negative consequences such as erosion 	Low	Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation and control of alien species on the site is undertaken where necessary.
<p>Direct Impacts (1e) Changes in water quality due to foreign materials and increased nutrients</p> <p>Indirect Impacts: 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>	Low	<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. Maintenance of buffer zones to trap sediments with associated toxins Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects. 	Low	Expected to be moderate should any spills occur

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: Expected to be high should any spills occur</p>		<ul style="list-style-type: none"> Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse Treatment of pollution identified should be prioritized accordingly. 		
2. IMPACT ON VEGETATION				
<p>Direct Impacts (2a): Destruction of vegetation of low and medium sensitivity</p> <p>The development will require the removal of the modified vegetation along sidewalks, as well as from modified grassland and mowed grassland. All removal of vegetation, whether sensitive or not, could have an impact on soil stabilisation and water infiltration.</p>	Medium	<ul style="list-style-type: none"> Rehabilitate cleared areas that were impacted on by the construction. Use grass sods that were removed prior to construction to rehabilitate the construction footprints. Sods must not be stored for lengthy periods and should not be stacked on top of each other. The sods should preferably be removed during the winter months and replanted by springtime latest. Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular or pedestrian access. Ensure that maintenance work does not take place haphazardly, but according to a fixed plan. Maintenance workers may not trample natural vegetation and work should be restricted to previously disturbed footprint. In addition, mitigation measures as set out for the construction phase should be adhered to. Address erosion donga crossings, applying soil erosion control and bank stabilisation procedures as specified by the ECO 	Low	Low
<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>none</p>				

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>Direct Impacts (2c): Destruction or damage to street trees</p>	Medium	<ul style="list-style-type: none"> Avoid damage to trees and tree roots. 	Low	low
<p>Indirect Impacts:</p> <p>Trenching could sever tree roots and destabilise large trees. Trees often fail when the structural roots have been compromised, either by cutting or infection, causing damage to property. Removing large tree roots can make the tree unstable or unhealthy later on. If large roots are removed or severed, the tree may not be able to get enough nutrients and water and could become unstable (Airhart & Zimmerman, 2003).</p>				
<p>Cumulative Impacts:</p> <p>Reduction in street trees and impact on micro-climate and vertebrate habitat.</p>				
<p>Direct Impacts (2d): Potential increase in invasive vegetation</p> <p>The seed of alien invasive plant species that occur on and in the vicinity of the construction areas could spread into the disturbed and stockpiled soil. Also, the</p>	Medium	<ul style="list-style-type: none"> Only use indigenous species, naturally occurring in the area, to rehabilitate the disturbance footprint. Monitor and control the rehabilitated areas and remove alien invasive species as soon as they become apparent. If maintenance activities are conducted in the area the 	Low	low

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
<p>construction vehicles and equipment were likely used on various other sites and could introduce alien invasive plant seeds or indigenous plants not belonging to this vegetation unit to the construction site.</p> <p>Indirect Impacts:</p> <p>This could lead to the loss of vegetation and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater.</p> <p>Cumulative Impacts:</p> <p>A number of invasive species are present within the area that the proposed development is situated in. Therefore, if mitigation measures to limit and prevent the spread of alien species are not implemented, the cumulative impact could lead to remaining natural vegetation transformed by alien plant species and alien fauna out-competing local indigenous species. Ultimately this will result in reduction of natural indigenous biodiversity in the area.</p>		above management measures are applicable.		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
3. IMPACT ON FAUNA				
Direct Impacts 3(a): Destruction of fauna habitat and ecological connectivity Indirect Impacts: Habitat fragmentation 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.	Low	<ul style="list-style-type: none"> If maintenance activities are conducted in the area the management measures provided under the construction phase are applicable 	Low	None
Direct Impacts 3(b): Hindrance, trapping, killing of fauna Indirect Impacts: None Cumulative Impacts: None.	Low	<ul style="list-style-type: none"> If maintenance activities are conducted in the area the management measures provided under the construction phase are applicable 	Low	No significant residual impacts are expected due to the current status of site and the nature of the activities.
Direct Impacts 3 (c) Disturbance to fauna		<ul style="list-style-type: none"> If maintenance activities are conducted in the area the 		

Potential impacts:	Significance rating of impacts	Proposed mitigation:	Significance rating of impacts (with Mitigations)	Risk of the impact and mitigation not being implemented
through noise, vibration and dust		management measures provided under the construction phase are applicable		
Indirect Impacts: none				
Cumulative Impacts: none				

1. NO GO OPTION

No Go Alternative (compulsory). This is the option of not rehabilitating the under capacity and deteriorating water pipelines and also the building of the new sewer pipeline

Table 8: 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 wetland	Low	There are no mitigation measures	Negligible	No risk
Impact on vegetation	Low	There are no mitigation	Negligible	No risk

		measures		
Sedimentation	Negligible	There are no mitigation measures	Negligible	No risk
Establishment of alien plants	N – Very High	There are no mitigation measures	N – Low	Very Low risk
Loss of wetland habitat	Negligible	There are no mitigation measures	Negligible	No risk
Pollution of watercourses	Negligible	There are no mitigation measures	Negligible	No risk
Visual Impacts	Negligible	There are no mitigation measures	Negligible	No risk
Noise Impacts anticipated	Negligible	There are no mitigation measure	Negligible	
Loss and disturbance of heritage sites due to the development.	Negligible	There are no mitigation measures	Negligible	No risk
Social impacts anticipated during the construction period (Positive)	N – Very High	There are no mitigation measures	Negligible	No risk
Social impacts anticipated during the construction period (Negative)	Negligible	There are no mitigation measures	Negligible	No risk

If the No Go Alternative is pursued, then the operational-related positive impacts will not be realised, no jobs will be created during construction either. The No Go Alternative is not preferred as the applicant is providing a crucial service to the local community to provide basic services (water) and also sewage infrastructure.

In consideration of the above. The **No Go Option** is an **UNDESIRABLE OPTION** for the project as it will pose negative impacts on the social and economic perspective and is not considered desirable

Benefits of Undertaking the Proposed Works on Site.

The potential positive impacts of the proposed remedial works include the following:

- Employment opportunities and skills transfer during construction.
- Provision of basic services to communities

The negative impacts of the No Go Option Alternative are considered to outweigh the positive impacts of this alternative.

The No Go Option is therefore not preferred.

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

- G1: Wetland and Aquatic Assessment Report
- G3: Heritage Screening Report

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

EAPs Assumptions

- All information provided to EAP by the applicant was accurate and up to date.

Wetland specialist Assumptions

The information provided by the client forms the basis of the planning and layouts discussed.

- The information provided by the client forms the basis of the planning and layouts discussed.
- All wetlands within 500 m and riparian areas within 100m of any developmental activities should be identified as per the DWS Water Use Licence Application regulations. Wetlands and riparian areas associated with 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 macroinvertebrates or wetland plant species composition and richness.
- The presence of heavy clay soils throughout the region together with uncharacteristically heavy rains made access to all sections of the site difficult. Observations were limited to accessible areas.
- 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 assessments were not included in the current study
- The recreation grade GPS used for wetland and riparian delineations is accurate to within five meters.
- Wetland delineation plotted digitally may be offset by at least five meters to either side. Furthermore, it is important to note that, during the course of converting spatial data to final drawings, several steps in the process may affect the accuracy of

areas delineated in the current report. It is therefore suggested that the no-go areas identified in the current report be pegged in the field in collaboration with the surveyor for precise boundaries. The scale at which maps and drawings are presented in the current report may become distorted should they be reproduced by for example photocopying and printing.

- In situ water quality was measured. No laboratory analysis was completed.
- No aquatic assessments were conducted for wetlands 2 to 5, or for the pans,
- The delineation of boundaries for wetlands 2 to 5 (including the pans_ was based on desktop evaluation of moisture gradients. No fieldwork was conducted for these wetlands and the delineation is therefore considered low-confidence.

Heritage Assumptions

Assumptions and Limitations

- It is assumed that the description of the proposed project, provided by the client, is accurate.

2. 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 Rehabilitation Options

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
<p>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.</p>				

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

Not Applicable

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

On-going post decommissioning management cost will not be determined for this development due to the nature of the development. In addition ongoing post decommissioning management cost will not be determined at this stage as this phase of the development is not yet contemplated

3. 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 actions which may not be significant on their own but which are significant when added to the impact of other similar actions. The water and sewer servitudes and its immediate surroundings are highly transformed with dense residential and housing development and road infrastructure.

Existing impact on the study area and its immediate vicinities include the following:

- Encroachment of development (housing developments, and road infrastructure onto wetland areas,
- Transformed vegetation with low sensitivity
- Alien plant invasion
- Erosion resulting in sedimentation of the wetlands
- Pollution of the wetlands reducing water quality

The anticipated **Cumulative Impacts** of this development (for both the Proposed- Structural Material Designs (uPVC)-proposed and Alternative 1 Concrete) includes the following:

- **Spread on Alien Invasive Plant species**

The study site is infested with alien (exotic) plant species, disturbance during construction if not controlled will result in more of these plants occurring on site as such plant species proliferate in disturbed areas. The potential cumulative impact on vegetation is rated as having a **low significance** with the implementation of mitigation measures.

- **Loss of Indigenous Vegetation**

There is impact on site vegetation due to severe encroachment by residential development and the subsequent spread of alien invasive species. The development on site will contribute to the cumulative impact through the clearance of vegetation during site preparations.. The impact is anticipated to be **Low** and can be reduced to **Very Low** significance through the implementation of suggested mitigation

measures.

- **Encroachment of development onto wetland areas**

Impacts associated with construction could increase the significance of this impact already present as a result of other activities in the area such as housing developments and roads. The potential cumulative impact is **Low significance** with or without mitigation.

Positive Cumulative Impacts
Social environment.

- The development may have positive social impacts during construction through the provision of job opportunities to local people and improving on skills transfer. The impact will be Medium after enhancement.

Responsible environmental management will be required during the entire project life cycle. These management measures should be guided by the **Environmental Management Plan**, attached as **Appendix H**

4. 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.

Comparison of uPVC Pipelines (Proposed & Preferred) and Concrete Pipelines (Alternative 1)

This section provides a summary of the environmental assessment and conclusions drawn for the the Proposed Langaville Extension 12 Bulk Sewer and Water Pipeline, Gauteng Province. This can be achieved either via the Material design of the pipelines using uPVC pipelines (Proposed & Preferred) or Alternative 1 –Concrete pipelines. The Two Options will be compared. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultant during the course of the process and presents an informed opinion of the environmental impacts associated with the proposed project.

In summary, the Basic Assessment has assessed potential impacts and identified appropriate management and mitigation measures.

CONSTRUCTION PHASE EVALUATION OF ALTERNATIVES

CONSTRUCTION PHASE, The anticipated impacts during the implementation of the Proposed Langaville Extension 12 Bulk Sewer and Water Pipeline via **uPVC pipelines** OR **Concrete pipelines** during the construction phase are similar with the same level of significance, the identified impacts are in the majority of Medium Significance before mitigation. The impacts can be effectively mitigated to have a **Low Significance** provided the prescribed mitigation measures are implemented. As detailed above the impacts of the two structural design Materials for the pipelines on the biophysical and social environment do not differ from one another.

ENVIRONMENTAL CUMULATIVE IMPACTS that can be expected to arise as a result of the project proceeding in either way of implementation include the following:

Negative Cumulative Impacts

- Spread of alien vegetation
- Encroachment of the development into wetland areas
- Loss of indigenous vegetation

These impacts are expected to occur at a site and local level and are considered acceptable

provided the mitigation measures as outlined in this Basic Assessment and **EMPr** attached in **Appendix H** are implemented.

OPERATION PHASE EVALUATION OF ALTERNATIVES

OPERATION PHASE, The impacts during the Proposed Langaville Extension 12 Bulk Sewer and Water Pipeline via **uPVC pipelines** OR **Concrete pipelines** during the operation phase are also similar. The identified negative impacts have **Medium-Low** significance and can be effectively mitigated to have a lower significance impact rating after management and mitigation. Refer to the summary of the operations impact table in Table 11, of this report. However the structural material difference emanates from the technical perspective as per below Table 9

Table 9: Technical Evaluation of Alternative Solutions during Operation

ITEM	Structural design material- Concrete-uPVC	Structural design material- Concrete
1. Safety	Comparable	Comparable
2. Capital Cost	Less expensive	More expensive
3. Durability	Less durable	More durable
4. Field Adaptability	Quick field adaptability	Field adaptability can be a challenge
5. Maintenance Intervals	Comparable	Comparable

PREFERRED ALTERNATIVE

On the basis of the foregoing comparisons in Tables 9 above, and Capital cost, Durability, Maintenance Interval estimates, The problem with option 2 is that bar-wrapped concrete pressure pipe is designed as flexible pipe but does have some rigid characteristics that can provide great confidence to owners; however, quick field adaptability can be a challenge and condition assessment can be more difficult. It is also more costly. Therefore from a technical perspective Alternative or **Structural design material- Concrete** is not preferred.

Project Implementation Measures exist with respect to the implementation of the Proposed Langaville Extension 12 Bulk Sewer and Water Pipeline via **uPVC pipelines** OR **Concrete pipelines** Both options would have the same net effect on the **receiving environment**.

In conclusion, From an environmental perspective no environmental fatal flaws have been identified from either of way of implementing the project. The project can be implemented in either way.

Alternative 1: Structural Material Concrete

See above, the impacts are similar with minor difference only from a technical and cost perspective and therefore compared collectively.

Alternative 2 Design

N/A

No-Go Alternative (compulsory)

The **`Do Nothing Alternative`** is the option of not implementing the Proposed Langaville Extension 12 Bulk Sewer and Water Pipeline. This alternative would result in no additional environmental impacts on the site or its surrounding area. Nonetheless, the site itself has some existing impacts therefore it is not a pristine environment. In addition the water pipelines are only being upgraded and will remain within the same servitude.

Identified Problems on Site that require remediation works

- Insufficient water capacity to handle the current water demand in the project area.
- Insufficient sewer capacity to handle the current sewer volume, this can result in sewer pipes constantly bursting due to carrying capacity of the pipes being exceeded.

Current baseline conditions

The environment is highly disturbed due to urbanisation and not a green field.

In consideration of the above, the **`Do Nothing Alternative`** will not assist the **City of Ekurhuleni Water and Sanitation: Planning** to provide the much needed basic services in the project area. The cost of the **`Do Nothing Alternative`** are expected to outweigh the benefits and therefore this alternative is **not a preferred alternative**.

6. IMPACT SUMMARY TABLES OF THE ASSESSED ALTERNATIVES

For Proposal and Alternative

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 WATERCOURSES		
Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow or increasing flood flows.	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 Destruction of vegetation of low and medium sensitivity	Medium	Low
Destruction or damage to street trees	Medium	Low
Potential increase in invasive vegetation	Medium	Low
Clearing of land for construction camps and potential pollution of the soil and water	Medium	Low
IMPACTS ON FAUNA (Terrestrial)		
Destruction of fauna habitat and ecological connectivity	Very Low	Very Low
Hindrance, trapping, killing of fauna		
Disturbance to fauna through noise, vibration and dust		
HERITAGE IMPACT		

Loss and disturbance of heritage sites due to the development.	Medium	Low
VISUAL IMPACT		
Visual Impacts	Medium	Low
NOISE IMPACT		
Noise Impacts anticipated	Medium	Low
SOCIAL ECONOMIC IMPACT		
Positive Social impacts	Low	Medium
Negative Social impacts	Medium	Low
HEALTHY, SAFETY AND SECURITY		
Healthy, Safety and Security	Medium	Low
SOIL AND GROUNDWATER POLLUTION		
Soil and Groundwater Pollution	Medium	Low
POLLUTION CAUSED BY INAPPROPRIATE MANAGEMENT AND HANDLING OF WASTE		
Pollution caused by Inappropriate Management and Handling of Waste	Medium	Low
Table 8: Impact Summary table: OPERATIONAL PHASE		
Environmental Aspect	Without Mitigation	With Mitigation
IMPACT ON WATERCOURSES		
Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow or increasing flood flows.	Medium	Low
Changes in sediment entering and exiting the system	Low	Low
Introduction and spread of alien vegetation.	Medium	Low
Loss and disturbance of wetland habitat and fringe vegetation.	Low	Low
Changes in water quality due to foreign materials and increased nutrients.	Low	Low
IMPACT ON VEGETATION		
Destruction of Destruction of vegetation of low and medium sensitivity	Medium	Low
Destruction or damage to street trees	Medium	Low
Potential increase in invasive vegetation	Medium	Low
Clearing of land for construction camps and potential pollution of the soil and water	Medium	Low
IMPACTS ON FAUNA (Terrestrial)		
Destruction of fauna habitat and ecological connectivity	Low	Low
Hindrance, trapping, killing of fauna	Low	Low

Disturbance to fauna through noise, vibration and dust	Low	Low
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For alternative:

During construction and operation phases of the development. It is noted that the impacts of Structural Material Design UPVC (Proposed) and Structural Design Concrete (Alternative 1) are similar from an environmental perspective. The impacts can all be reduced to low after mitigation.

Please refer to Table 7 & 8

5. 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 City of Ekurhuleni (CoE) Spatial Development Framework (SDF) is a key legislative mechanism and integral component of the IDP providing a citywide perspective of spatial challenges and interventions. The SDF and associated Regional Spatial Development Frameworks (RSDFs) seek to guide, direct and facilitate both public and private development, investment and growth within the City in a manner that will expand opportunities and contribute towards the visible upliftment of all communities in the City (City of Ekurhuleni (CoE), Spatial Development Framework, 2020-2021). As such the City of Ekurhuleni (CoE) SDF suggests among others the following undertakings:
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 human settlements. One such priority for the Municipality is the improvement of basic services with specific reference to proposed development (water and sewer infrastructure). The Municipality seeks to address past spatial planning imbalances by bringing services and economic opportunities close to previously disadvantaged areas.

Level Of Unemployment: The IDP states that unemployment in City of Ekurhuleni (CoE) calculated on official figures were approximately 25% in 2019 down from approximately 29.6% in 2019. Approximately 65.8% of the household heads in City of Ekurhuleni (CoE) are unemployed. The significant number of the population not economically active pushes up the dependency ratio. This has even worsened now due to Covid 19; many people are out of work or have lost their means of earning a livelihood. The proposed works on site will contribute to the social benefit that include job creation and skills transfer that will occur during the construction phase of the project, increased employment and skills transfer is aligned with the Municipalities Development Plans.

6. 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	
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If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

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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:

In conclusion, from an environmental perspective no environmental fatal flaws have been identified from either of way of implementing the project. The activity is limited to repair and of existing basic services within an already existing servitude and also the development of the sewage network to service the Langaville Ext 12 which is existing services are under capacity to handle the current sewage volumes. From an environmental perspective the upgrade of the water pipelines and development of the bulk sewage network should be allowed to proceed.

The following mitigation measures should be taken into consideration.

- The EMPr should be a legal binding document and an extension of the Environmental authorization if issued by GDARD.
- The appointed contractor should be contractually bound to comply with the conditions of the EMPr

- An independent ECO should be present during construction to monitor the implementation of the EMPr and the environmental authorization once issued and compile monthly audit report for submission to the relevant authorities
- Works should only be undertaken on the authorized property
- 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 section 30 of NEMA.
- A Water Use License must be obtained from Department of Water and Sanitation prior to the commencement of construction activities.
- Compliance with all legal requirements in relation to environmental management and conditions of the authorization issued by GDARD.
- Construction noise on site must not exceed 85DB as required by the Health and Safety Act
- Remedial works in the watercourse should preferably be undertaken during the drier months of the year.
- The site after construction in areas where it has been disturbed must be rehabilitated back to its original state, if not possible to a state that conforms to the principles of sustainable development.

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

Need and Desirability of the Proposed Project include among others:

The City of Ekurhuleni (CoE) has identified the requirement for a bulk water and sewer line to be designed and implemented for the Langaville Ext. 12 proposed development. The Langaville Ext.12 development to be serviced by the proposed basic service infrastructure consists of a mixed residential type of housing units and in need of basic services like water and sewage infrastructure. Basic services provision is one of the key strategies aimed at improving human settlements. It is for this reason that CoE Water and Sanitation: Planning – commissioned a desktop study to identify areas requiring urgent basic services (water provision and sewer infrastructure). From the investigations and assessments, Langeville Ext 12 was identified as in critical need of the proposed basic services (water and sewer infrastructure).

With the proposed bulk and sewer reinforcement pipes in place, the network servicing the area that the development falls within will be able to operate at the required pressures. This in turn provides the adequate requirements for the development to connect to the existing reticulation network system. The construction of the parallel reinforcement pipes will prevent the decrease in residual pressures and the increase in the flow velocities within the existing reticulation network system.

8. 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

9. 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: APPENDIXES

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)

A1: Locality Map

A2: Layout Plan overlain on Sensitivity Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information (N/A)

Appendix E: Public participation information

- Appendix E1: Proof/ wording of site notice
- Appendix E2: Proof/ wording of Notification
- Appendix E3: Proof/ wording of newspaper advertisements
- Appendix E4: Consultation – N/A at this stage
- Appendix E5: Minutes of any public and/or stakeholder meetings – N/A at this stage
- Appendix E6: Comments and Responses Report – N/A at this stage
- Appendix E7: Comments from I&APs on Draft Basic Assessment (BA) Report – Comments are anticipated during the Draft BAR review period
- Appendix E8: Comments from I&APs on amendments to the BA Report – N/A
- Appendix E9: I&APs and Registered I&APs Database

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

Appendix G: Specialist reports

- G1: Aquatic Biodiversity Assessment Report
- G2: Heritage Screening Report

Appendix H: EMPr

- H1: Environmental Management Programme
- H2: Wetland Rehabilitation Plan

Appendix I: Other information

- I1: EAP declaration and Expertise
- I2: Specialists Expertise
- I3: DFFE Screening Report
- I4: Geotechnical Report
- I5: Impact on Sewer System GLS

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.