



**RAND WEST CITY
LOCAL MUNICIPALITY**



**UPGRADE AND
IMPLEMENTATION/CONSTRUCTION OF THE
BULK WATER AND SEWER LINES
RAND WEST CITY LOCAL MUNICIPALITY
DRAFT BASIC ASSESSMENT REPORT
REV 02**

March 2021

GAUT 002/20-21/E0046

Prepared by:

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Environmental Assessment Practitioner

Draft Basic Assessment Report_Revision 2 – Bulk Water and Bulk Sewer Lines
Rand West City Local Municipality

GENERAL INFORMATION

Report name:	Draft Basic Assessment Report for the upgrade and implementation/ construction of the bulk water and bulk sewer lines between Randfontein and Westonaria, Rand West City Local Municipality. Draft Report Revision 2
Client:	Rand West City Local Municipality
Project Manager/ Engineer:	Aphane Consulting (Pty) Ltd
Report Compiled by:	Yonanda Martin CV attached as Appendix I
Date of Report:	30 March 2021
Ref No:	GAUT 002/20-21/E0046

DECLARATION OF INDEPENDENCE

I, Yonanda Martin, appointed environmental assessment practitioner responsible for compiling the Final Basic Assessment Report for the upgrade and implementation/ construction of the bulk water and bulk sewer lines, declare that I: -

- act as an independent environmental consultant, my conclusions are formed independently and without influence from external parties;
- I will perform the work relating to this scoping report in an objective manner, even if the results and findings are not favourable to the applicant;
- have no financial interest in Aphane Consulting (Pty) Ltd or any of its subsidiaries;
- do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed;
- undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document;
- based on information provided to me by the project proponent, and in addition to information obtained during the course of this study and the site visit, will present the results and conclusion within the associated document to the best of my professional judgment;
- will include all comments and inputs from stakeholders and interested and affected parties as part of the Scoping Report; and
- will address the comments and inputs received from stakeholders and interested and affected parties to the best of my abilities.

Signed:

Date: 2020/07/31

ABBREVIATIONS AND ACCORNYMS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
CoJ	City of Johannesburg Metropolitan Municipality
DO	Dissolved Oxygen
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMI	Environmental Management Inspectorate
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development
GDARD C- Plan	Gauteng Department of Agriculture and Rural Development Conservation Plan (Version 3.3)
GIS	Geographical Information System
GPEMF	Gauteng Province Environmental Management Framework
GSDF	Gauteng Spatial Development Framework
I&AP	Interested and Affected Party
JHB	Johannesburg
LC	Least Concern
LT	Least Threatened
l/s	Litre per second
MI	Mega Litre
NEMA	National Environmental Management Act, Act No. 107 of 1998
NEMAQA	National Environmental Management: Air Quality Act 39 of 2004
NEMBA	National Environmental Management Biodiversity Act 10 of 2004
NEMPA	National Environmental Management Protected Areas Act 57 of 2003
NEMWA	National Environmental Management: Waste Act 59 of 2008
NFEPA	National Freshwater Ecosystem Priority Areas
OH&S	Occupational Health & Safety
RWCLM	Rand West City Local Municipality
SANBI	South African National Biodiversity Institute
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework

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SST	Secondary Sedimentation Tank
VU	Vulnerable
WULA	Water Use License Application
WWTW	Waste Water Treatment Works

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PROJECT SUMMARY

Green Tree Environmental Consulting was appointed by Aphane Consulting (Pty) Ltd to conduct the Environmental Impact Assessment (EIA) Process and the Water Use License Application Process for the upgrade and implementation/ construction of the bulk water and bulk sewer lines, located between the towns of Randfontein and Westonaria, Rand West City Local Municipality, refer to Figure 1_1: Locality - Aerial View and 1_2: Locality - Topographical Map.

Project Description and Location:

The **bulk water pipeline** (indicated as a blue line on the maps) will include the upgrade of existing water pipelines as well as the construction of new lines in order to transport water to the newly developed areas of Randfontein and Westonaria. The bulk water pipeline will also include the construction of additional water towers, reservoirs and associated pump stations. The bulk water pipeline has three sections;

Section 1: Mohlakeng Water Pipeline Route Alignment

This section of the pipeline has two route alignments; the first alignment runs in a north south direction from Randfontein (R41), through Toekomsrus and along the R28 towards Mohlakeng. The second alignment is along the R559 in an east-west direction. The majority of the pipeline (both alignments) will be constructed within the road reserve but there is a small section of the line that requires authorization since the road runs along a wetland area and through a Critical Biodiversity Area (CBD), this section is approximately 1.5km in length. The Westergloor Reservoir is located along this route alignment and an additional reservoir will be added to the already existing reservoirs. The reservoir will not require an environmental authorization since none of the Activities according to the National Environmental Management Act 107 of 1998 (NEMA), Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017, will be triggered.

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The second section of the bulk water pipeline project is the Randfontein Water Pipeline that runs east west from Randfontein towards Wheatland Agricultural Holdings along the R41 till it intersects Road 6. From this point the pipeline runs along Road 6, in a southerly direction where it connects with the new Dan Tloome Reservoir and further south to connect to the new Montrose Reservoir. This is the preferred route alignment for the Randfontein Water pipeline since it is not within a wetland area or CBA and there is property available for the construction of the Dan Tloome Reservoir along this route. The pipeline alignment/ route is approximately 12.6km with only a section of the pipeline that will require an environmental authorization of approximately 2.5km, this is indicated on the maps.

The two alternatives, as discussed below (Alternative A_1 and Alternative A_2), are the route alignments that were suggested before we received the input from the wetland specialist.

Section 2: The Randfontein Water Pipeline Route Alignment – Alternative A 1 (pink line on maps)

This alignment was the original alignment suggested (shortest route) by the engineers but on closer inspection it was noted that this alternative will cross a wetland and CBA. This alternative runs east west from Randfontein towards Wheatland Agricultural Holdings along the R41 towards the Droogheuwel Reservoir, from there it runs south towards Middelvlei Agricultural Holdings where it connects with the Finsbury Reservoir and the Montrose Reservoir.

Section 2: The Randfontein Water Pipeline Route Alignment – Alternative A 2 (green line on maps)

This is a second alternative that was considered for the section of the Randfontein Pipeline Route between the Wheatland Agricultural Holdings and the Middelvlei Agricultural Holdings. This alternative follows the same alignment as the Randfontein Pipeline Route but instead of crossing over the wetland areas (Lazar Avenue south) it takes a detour along the Wheatland Agricultural Holdings and follows Road 7 and Road 6 in a southern direction until it meets up with the original Randfontein Pipeline Route Alignment on 1st Road and ends at the Montrose Reservoir. This alternative also avoids the wetland area and the CBA but there is a concern regarding the availability of property for the construction of the Dan Tloome Reservoir along this route.

There are four reservoirs located along the Randfontein Water Pipeline Route, which includes the Droogheuwel, Finsbury, Dan Tloome and Montrose Reservoirs. The Droogheuwel and Montrose Reservoirs will not need an Environmental Authorisation since they will be constructed within an area that has been developed and none of the Activities according to the National Environmental Management Act 107 of 1998 (NEMA), Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017, will be triggered. The Dan Tloome will require an Environmental Authorisation since it is located within a CBA, this area has however been used for agricultural activities. The Finsbury Reservoir has two alternatives since the property on which the existing reservoir is located does not have enough space. The first alternative, which is the preferred alternative, is to expand the existing property in order to construct the new reservoir next to the existing reservoir. The alternative site for the Finsbury Reservoir will need an Environmental Authorisation since it is located within a CBA and across the road from the existing Finsbury Reservoir.

Section 3: The Westonaria Water Pipelines

The Westonaria Water Pipelines are a combination of a few pipelines that will mainly connect the existing bulk water line with the proposed reservoirs. This section includes the following alignments:

- Wagterskop Reservoir and pipeline:
The new reservoir will be constructed next to the existing reservoir and the pipeline will follow the Mointain View Estate's boundary in a northern direction until it meets with the existing bulk water line along the N12. Although the pipeline will not require an environmental authorization the reservoir will be constructed on the ridge and within a CBA.
- Waterpan Reservoir and the Simunye_Thusanang pipeline:

The Simunye_Thusanang pipeline will provide water for both Simunye and Thusanang. The reservoir will be constructed on the ridge, next to the exiting reservoir and will therefore provide water to both sides of the ridge (north and south). The route alignment and the reservoir will need an environmental authorization since it will be located on the ridge and will cross a CBA;

- West Rand Reservoir and pipeline:

The reservoir and pipeline will be constructed within the West Rand Agricultural Holdings and will not require an Environmental Authorisation since none of the Activities according to the National Environmental Management Act 107 of 1998 (NEMA), Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017, will be triggered.

- Bekkersdal Reservoir and pipeline:

The reservoir will be constructed just south of Bekkersdal. The pipeline will run in a southern direction where it will connect with the bulk water pipeline along the N12. The reservoir and a section of the pipeline is located within a CBA and will therefore require environmental authorization.

The following water reservoirs, water towers and associated pump stations are associated with the Bulk Water Pipeline Project:

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Reservoir Site	Coordinates		Ground Reservoir			Tower Storage			Pump Station Capacity (l/s)
	Beginning	End	Capacity (MI)	Diameter (m)	Height (m)	Capacity (MI)	Diameter (m)	Height (m)	
Randfontein Bulk Water Pipeline									
Montrose Mega Reservoir	S 26°13' 32.99" E 27°38' 07.45"		20	58	14	2.0	17	35	
Finsbury Reservoir - PREFERRED ALTERNATIVE	S 26°12' 10.04" E 27° 38' 51.30"		25	56	12	2.0	17	35	
Finsbury Reservoir	S 26°12' 07.22" E 27° 38' 50.30"		25	56	12	2.0	17	35	
Dan Tloome Mega Reservoir	S 26°10' 5.30" E 27°38' 15.90"		35	60	16	2.0	17	35	
Droogheuwel Lifestyle Reservoir	S 26°10' 36.91" E 27°39' 17.29"		30	58	16	2.0	17	35	
Droogheuwel Pipeline	S 26°10' 24.39" E 27°39' 16.11"	S 26°10' 36.91" E 27°39' 17.29"							
Mohlakeng Bulk Water Pipeline									
Westergloor Reservoir	S 26°12' 09.08" E 27°42' 04.73"		30	58	14	1.1	17	32	
Westonaria Bulk Water Pipelines									
Wagterskop Reservoir	S 26°21' 45.14" E 27°38' 09.24"		15	45	10				140
Wagterskop Pipeline	S 26°21' 15.12" E 27°38' 05.07"	S 26°21' 45.14" E 27°38' 09.24"							

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Reservoir Site	Coordinates		Ground Reservoir			Tower Storage			Pump Station Capacity (l/s)
	Beginning	End	Capacity (MI)	Diameter (m)	Height (m)	Capacity (MI)	Diameter (m)	Height (m)	
Waterpan Reservoir for Simunye - Thusanang	S 26°21' 37.58" E 27° 41' 41.21"		25	56	14				
Waterpan Pipeline for Simunye - Thusanang	S 26°19' 58.42" E 27° 42' 04.77"	S 26°24' 27.05" E 27° 42' 16.56"							
Bekkersdal Reservoir	S 26°17'22.64" E 27°43' 1.26"		15	45	10	2.0	17	34	140
Bekkersdal Pipeline	S 26°19'35.17" E 27°43' 13.30"	S 26°17'16.30" E 27°43' 15.78"							
West Rand AH Reservoir	S 26°19' 51.96" E 27°14' 24.24"		5	7	7				80
West Rand AH Pipeline	S 26°19' 14.58" E 27°44' 24.06"	S 26°19' 51.96" E 27°14' 24.24"							

The bulk water pipeline will be a High-Density Polyethylene (HDPE PE100 PN16) pipeline which was chosen since the HDPE pipes perform better than other pipe materials in dolomite geology. The pipeline sizes range from 250mm diameter to 1000mm diameter. There will be pump stations located at the reservoir sites which will be for pumping (lifting) of water from the ground reservoir to the water tower storage.

The construction of the bulk water pipeline will include the following method:

- Establishing a site camp;
- Setting out of the pipeline alignment;
- Clearing a 3-meter-wide strip and stockpiling of top soil on designated areas;
- Excavating trenches to varying depths – approximately 4 meters deep;
- Preparation of pipeline bedding;
- Construction of reinforced concrete reservoirs and chambers;
- Laying and jointing of pipes and the installation of fittings including gate valves, water meters etc., construction of ground reservoirs, construction of pump stations and construction of tower storage;
- Testing of pipelines, reservoirs, pump stations, and installed fittings;
- Backfilling of pipelines and other excavations;
- Final clearing and cleaning of construction site; and
- Rehabilitation of construction site.

The **bulk sewer line (indicated as a red line on the maps)** will include both upgrade of existing systems but also the construction of new pipelines in order to cater for the demand created by the proposed new residential development. The bulk sewer line has four sections:

Section 1: R28 Bulk Sewer

This leg follows the R28 and will be constructed within the road reserve, this section is approximately 6.5km in length. Although this line will be constructed within the road reserve there is a small section where the line will cross the Wonderfontein Spruit which will require an environmental authorization for the crossing.

Section 2: Toekomsrus Bulk Sewer

The second leg runs from the north of Toekomsrus, through the Toekomsrus Residential Area in a southerly direction, it connects with the R559 (the pipeline will run underneath the R559) and from there the pipeline will run along the southern boundary of Mohlakeng (in a westerly direction) until it meets with the existing infrastructure along the R28. This route is the preferred route alignment since it will not cross the wetland/river area but will run through a section of the CBA and ECA. This section of the pipeline is approximately 8.5km in length.

Section 2: Toekomsrus Bulk Sewer – Alternative B_1 (purple line on maps)

This alternative is the original line that was suggested by the engineers. The pipeline runs from the north of Toekomsrus, along the eastern boundary and southern boundary of Mohlakeng and connects to the R28. This section of the pipeline has one crossing over a wetland/river area and runs through a CBA and ECA and will therefore require environmental authorisation.

Section 3: Dan Tloome Bulk Sewer

The third leg of the bulk sewer line is located to the west of the R28 and stretches from Middelvlei Agricultural Holdings in a south-eastern direction towards the R28, this section is approximately 10km in length. This pipeline will have approximately three wetland/river crossings which will require environmental authorisation.

Section 4: Finsbury Bulk Sewer

The fourth leg of the bulk sewer line stretches from the Finsbury Agricultural holdings in a southern direction where it connects with the Dan Tloome Bulk Sewer. The pipeline will follow the Middelvleispruit and most of the pipeline will be within the 32m regulated area of that watercourse, it will therefore require an environmental authorisation. The pipeline is approximately 6km in length.

The bulk sewer pipeline will be a High-Density Polyethylene (HDPE PE100 PN8) pipeline which was chosen since the HDPE pipes perform better than other pipe materials in dolomite geology. The pipeline sizes range from 400mm diameter to 1200mm diameter. There will be no pump stations along the routes since they were all planned/ designed according to gravity flow.

The construction of the bulk sewer pipeline will include the following method:

- Establishing a site camp;
- Setting out of the pipeline alignment;
- Clearing a 3-meter-wide strip and stockpiling of top soil on designated areas;
- Excavating trenches to varying depths – approximately 9 meters deep;
- Preparation of pipeline bedding;
- Construction of reinforced concrete manholes;
- Laying and jointing of pipes including the manhole connections;
- Connecting existing sewer pipelines to the new bulk sewer pipe lines,
- Testing of bulk sewer pipelines and manholes,
- Backfilling of pipelines and other excavations;
- Final clearing and cleaning of construction site; and
- Rehabilitation of construction site.

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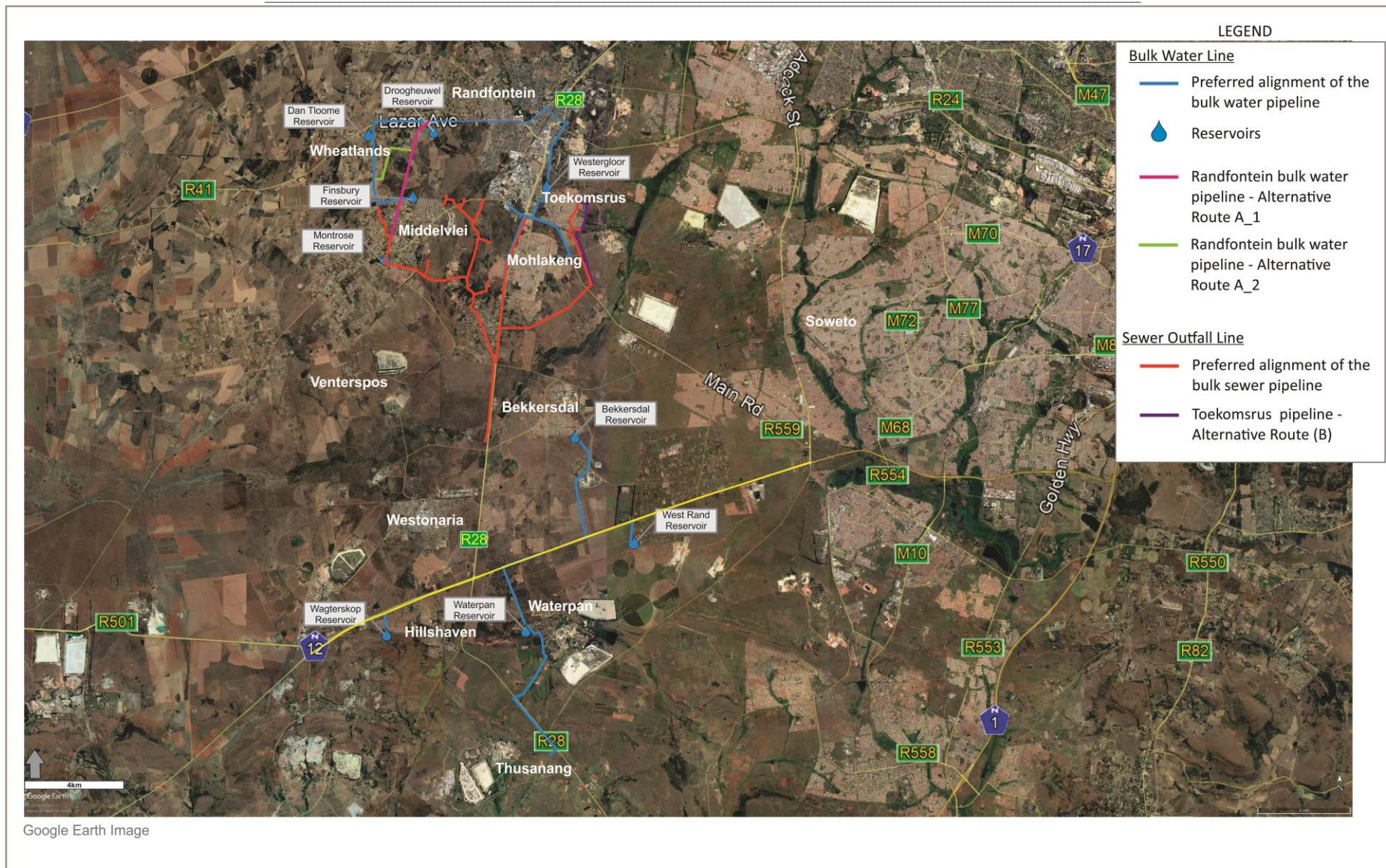


Figure 1_1: Locality Map - Aerial View
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Figure 2_1: Locality Map of the Bulk Water Pipelines North of the N12
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Figure 2_2: Locality Map of the Bulk Water Pipelines South of the N12
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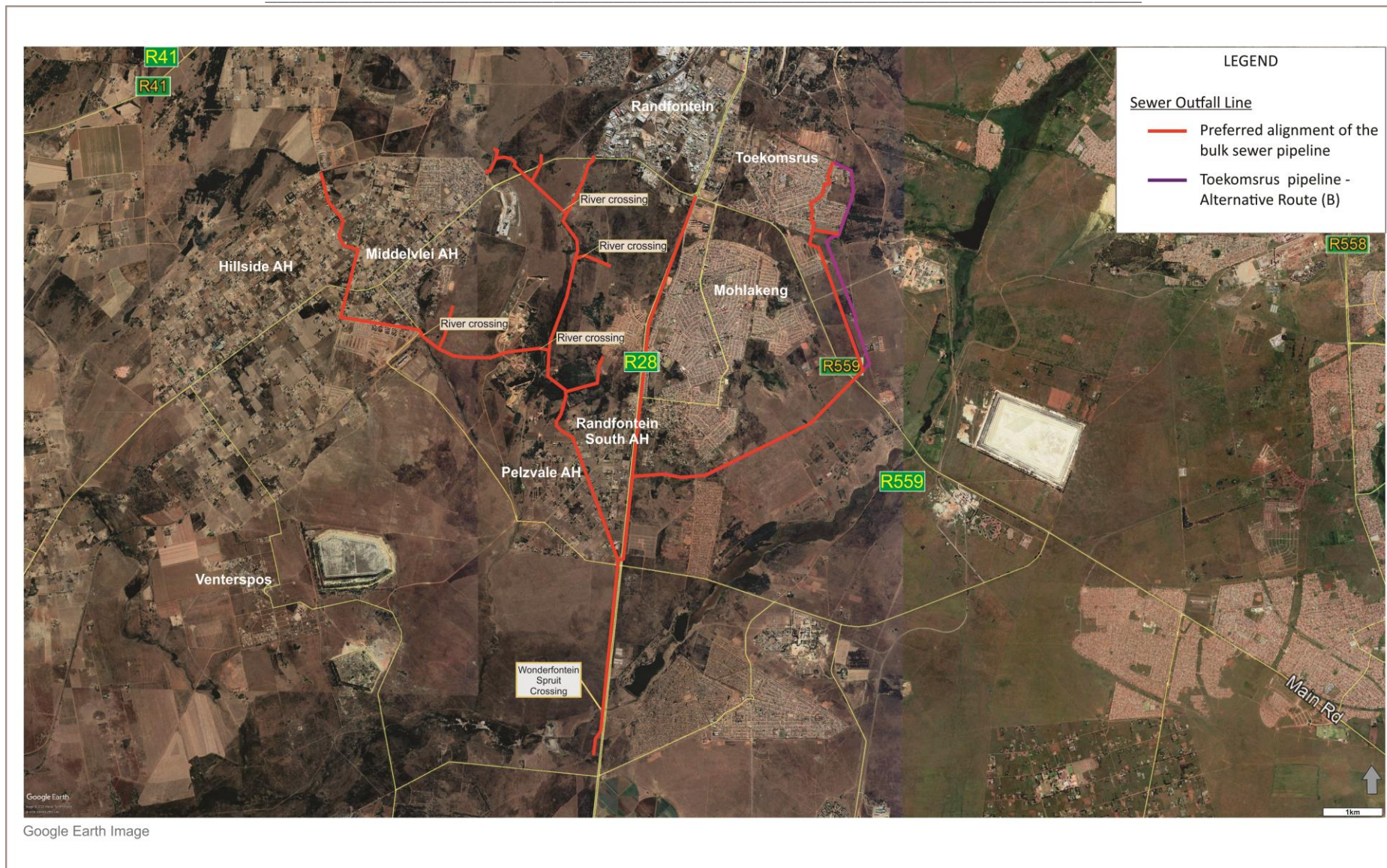


Figure 3_1: Locality Map of the Bulk Sewer Pipelines
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Details of the Environmental Assessment Practitioner and the Applicant:

Table 1 Details of the EAP

Environmental Assessment Practitioner:	Yonanda Martin CV attached as Appendix I
Company Information:	Green Tree Environmental Consulting 7 Dublin Street Rangeview Ext 2 Krugersdorp Gauteng 082 409 0405 yonanda@gtec.net.za
Qualifications:	MSc. Ecological Remediation
Professional Registration:	South African Council for Natural Scientific Professions (SACNASP): 400204/09 Registered Environmental Assessment Practitioner (EAPASA): 2019/1307

Table 2 Details of the Applicant

Applicant:	Rand West City Local Municipality Corner Sutherland and Pollock Street P.O Box 218 Randfontein 1760 011 278 3000
Project Manager/ Engineer:	Aphane Consulting (Pty) Ltd No 60 2nd Ave Alberton North Johannesburg 1458 011 907 6700

Need and Desirability of the Project:

The West Rand City Local Municipality is quickly expanding with multiple applications for new residential areas. Unfortunately, the infrastructure can't accommodate the fast-growing area and will therefore have to be upgraded as soon as is possible in order to cater for the growth. This includes the construction of new waste water treatment works (WWTW), the upgrade of existing WWTW and the upgrade or construction of associated infrastructure such as the bulk water pipelines and bulk sewer lines. A lot of the new developments within the Municipality is located towards the south of Randfontein since there is space for expansion. This has motivated for the construction of a new WWTW as well as the construction and upgrade of the bulk water and bulk sewer line within the area. The upgrade and construction of the bulk sewer and bulk sewer infrastructure will benefit the local community by providing decent services, especially to the communities where the services don't necessarily function effectively and will allow for further expansion of the area. During the construction period there will be several job opportunities but also opportunities to learn, especially for the local labourers. The purchase of material and hiring of equipment will support the economy and will hopefully boost the local economy.

Legislation:

As per the National Environmental Management Act 107 of 1998 (NEMA), Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017, the proposed bulk water and sewer pipelines and associated infrastructure will trigger activities listed in both Listing Notice 1 (GN R327) and Listing Notice 3 (GN R324). The process that will be followed in order to receive an Environmental Authorisation is a Basic Assessment Process.

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Activity	Description	Project Activity
GN R327, 7 April 2017 Listing Notice 1 – Activity 9	<p>The development and related operation or infrastructure exceeding 1 000metres in length for the bulk transportation of water and storm water –</p> <ul style="list-style-type: none"> i. With an internal diameter of 0,36 metres or more; or ii. With a peak throughput of 120 litres per second or more; <p>Excluding where –</p> <ul style="list-style-type: none"> a. Such infrastructure is for the bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or b. Where such development will occur within an urban area. 	<p>The bulk water line will exceed 1 000m and not the entire line will be located within the road reserve, therefore Listing Notice 1 – Activity 10 is applicable.</p>
GN R327, 7 April 2017 Listing Notice 1 – Activity 10	<p>The development and related operation or infrastructure exceeding 1 000metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –</p> <ul style="list-style-type: none"> iii. With an internal diameter of 0,36 meters or more; or iv. With a peak throughput of 120 liters per second or more; <p>Excluding where –</p> <ul style="list-style-type: none"> c. Such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or d. Where such development will occur within an urban area. 	<p>The bulk sewer line will exceed 1 000m and not the entire line will be located within the road reserve, therefore Listing Notice 1 – Activity 10 is applicable.</p>
GN R327, 7 April 2017 Listing Notice 1 – Activity 12	<p>The development of—</p> <ul style="list-style-type: none"> i. dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or ii. infrastructure or structures with a physical footprint of 100 square metres or more; <p>where such development occurs—</p>	<p>The overall footprint of the bulk water line and the bulk sewer line infrastructure with associated structures will be more than the limited 100m²; therefore Listing Notice 1 - Activity 12 is applicable. The following will be applicable:</p> <ul style="list-style-type: none"> • R28 Bulk Sewer Line – Wonderfontein Spruit

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	<p>a) within a watercourse;</p> <p>b) in front of a development setback; or</p> <p>c) if no development setback exists, within 32 metres of a watercourse, measured</p> <p>d) from the edge of a watercourse; —</p> <p>excluding—</p> <p>aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>dd) where such development occurs within an urban area;</p> <p>ee) where such development occurs within existing roads, road reserves or railway line reserves; or</p> <p>ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</p>	<p>crossing;</p> <ul style="list-style-type: none"> • Finsbury Bulk Sewer Line runs along the Middelvlei Spruit and therefore within the 32m. • Toekomsrus Bulk Sewer Line Alternative B runs along a watercourse and therefore within 32m. • Dan Tloome Bulk Sewer Line crosses a section of the Middelvlei Spruit. • Randfontein Bulk Water Line will cross a watercourse – this alternative is not the preferred route alignment and therefore Alternative A was suggested instead.
<p>GN R327, 7 April 2017 Listing Notice 1 – Activity 13</p>	<p>The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.</p>	<p>The capacity of the proposed reservoirs varies from 5 000m³ to 35 000m³, but the combined capacity of all the reservoirs (as per the list above) are more than 50 000m³.</p>
<p>GN R327, 7 April 2017</p>	<p>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</p>	<p>Additional material will be deposited in order to construct the sewer line along the Middelvlei Spruit as</p>

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<p>Listing Notice 1 – Activity 19</p>	<p>rock of more than 10 cubic metres from a watercourse; But excluding where such infilling, depositing, dredging, excavation, removal or moving –</p> <ul style="list-style-type: none"> i. Will occur behind a development setback; ii. Is for maintenance purposes undertaken in accordance with a maintenance management plan; iii. Falls within the ambit of activity 21 in this Notice, in which case that activity applies; iv. Occurs within existing ports or harbors that will not increase the development footprint of the port or harbor; or v. Where such development is related to the development of a port or harbor, in which case activity 26 in Listing Notice 2 of 2014 applies. 	<p>well as the crossings. The bulk water pipeline will cross the Wonderfontein Spruit. The infrastructure will be located inside the 32m regulated buffer area and therefore Listing Notice 1 – Activity 19 will apply. Refer to the list of infrastructures mentioned above.</p>
<p>GN R324, 7 April 2017 Listing Notice 3 – Activity 2</p>	<p>The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres.</p> <p><u>Gauteng:</u></p> <ul style="list-style-type: none"> i. A protected area identified in terms of NEMPAA, excluding conservancies; ii. National Protected Area Expansion Strategy Focus Areas; iii. Gauteng Protected Area Expansion Priority Areas; iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority; vii. Sites or areas identified in terms of an international convention; 	<p>The following reservoirs are located within a CBA or ESA and therefore Listing Notice 3- Activity 2 is applicable; Bekkersdal, Dan Tloome, Droogheuwel, Finsbury (Alternative Site), Wagterskop and Waterpan.</p>

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	<ul style="list-style-type: none"> viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA; ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; x. Sites zoned for conservation use or public open space or equivalent zoning; or xi. Important Bird and Biodiversity Areas (IBA). 	
<p>GN R324, 7 April 2017 Listing Notice 3 – Activity 12</p>	<p>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><u>Gauteng:</u></p> <ul style="list-style-type: none"> i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within Critical Biodiversity Area (CBA) or Ecological Support Areas (ESA) identified in the Gauteng Conservation Plan or bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. 	<p>The overall footprint of the bulk water line and the bulk sewer line infrastructure will result in more than 300m² of vegetation being removed. Sections of the route alignment for both the water pipeline and the bulk sewer pipeline, as well as the some of reservoir sites (Bekkersdal, Dan Tloome, Droogheuwel, Finsbury (Alternative Site), Wagterskop and Waterpan) falls within a CBA and ECA area and will cross streams, therefore Listing Notice 3- Activity 12 is applicable.</p>
<p>GN R324, 7 April 2017 Listing Notice 3 – Activity 14</p>	<p>The development of</p> <ul style="list-style-type: none"> i. Dams or weirs, where the dam or weir, including infrastructure and water surface area exceed 10 square metres; or ii. Infrastructure or structures with a physical footprint of 10 square metres or more; <p>Where such development occurs –</p>	<p>The overall footprint of the bulk water line and the bulk sewer line infrastructure with associated structures will be more than the limited 10m². The site falls within a CBA and ECA area and will cross streams, therefore Listing Notice 3 - Activity 14 is applicable. The following will be applicable:</p>

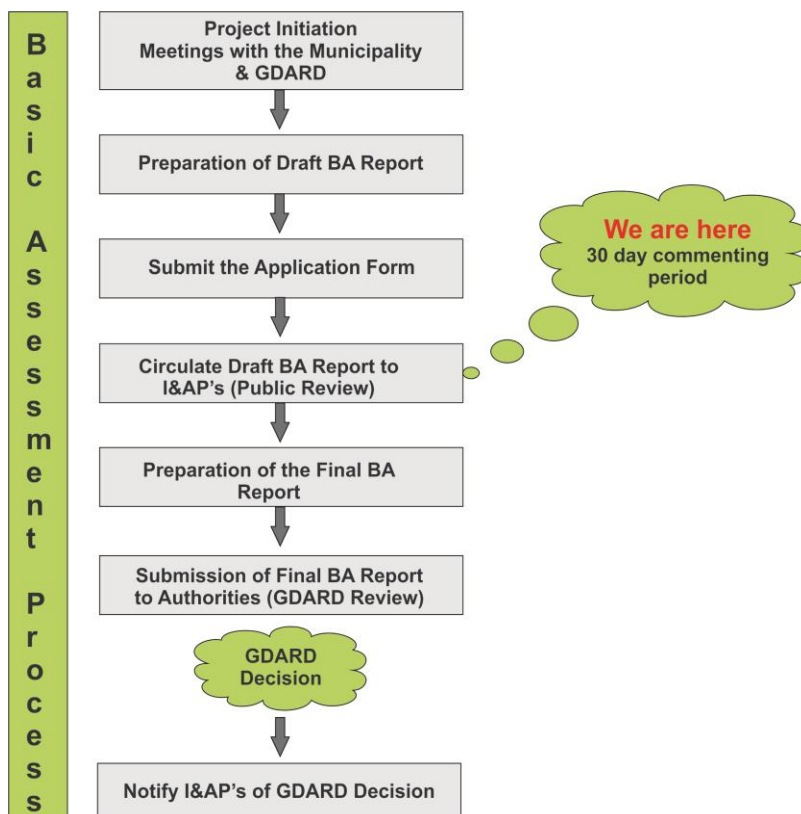
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	<p>a. Within a watercourse;</p> <p>b. In front of a development setback; or</p> <p>c. If no development setback has been adopted, within 32 metres of a watercourse' measured from the edge of a watercourse;</p> <p>Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p><u>Gauteng:</u></p> <p>i. A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>ii. National Protected Area Expansion Strategy Focus Areas;</p> <p>iii. Gauteng Protected Area Expansion Priority Areas;</p> <p>iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</p> <p>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</p> <p>vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</p> <p>vii. Sites or areas identified in terms of an international convention;</p> <p>viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</p> <p>ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</p> <p>x. Sites zoned for conservation use or public open space or equivalent zoning</p>	<ul style="list-style-type: none"> • R28 Bulk Sewer Line – Wonderfontein Spruit crossing; • Finsbury Bulk Sewer Line runs along the Middelvlei Spruit and therefore within the 32m. • Toekomsrus Bulk Sewer Line Alternative B runs along a watercourse and therefore within 32m. • Dan Tloome Bulk Sewer Line crosses a section of the Middelvlei Spruit. • Randfontein Bulk Water Line will cross a watercourse – this alternative is not the preferred route alignment and therefore Alternative A was suggested instead.
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Environmental Process:

The proposed project is a Basic Assessment and will therefore follow the following environmental assessment procedure, as per the National Environmental Management Act, 1998 (Act 107 of 1998) as amended and the Environmental Impact Assessment Regulations, 2014, amended 7 April 2017, refer to the image below:

- Pre-consultation with the Gauteng Department of Agriculture and Rural Development (GDARD), meeting took place on 22 January 2020.
- Notification of Interested and Affected Parties (newspaper advert, site adverts and notices to landowners).
- Circulation of the draft BAR to I&APs, State Departments such as Rand West City Local Municipality (RWCLM) and the Department of Water and Sanitation (DWS), Conservancies and South African Heritage Resource Agency (SAHRA).
- Electronic submission of the application form and draft BAR to the Gauteng Department of Agricultural and Rural Development (GDARD).
- A site visit will be undertaken with the DWS once the project is registered on the e-WULA system.
- Comment received from registered I&APs will be included as part of the draft BAR and should additional comments be submitted it will be included as part of the Final BAR before submitting it to GDARD.
- GDARD will have 107 days to issue a decision on the proposed project.
- Registered I&APs will be notified of the final decision from GDARD.



Public Participation Process:

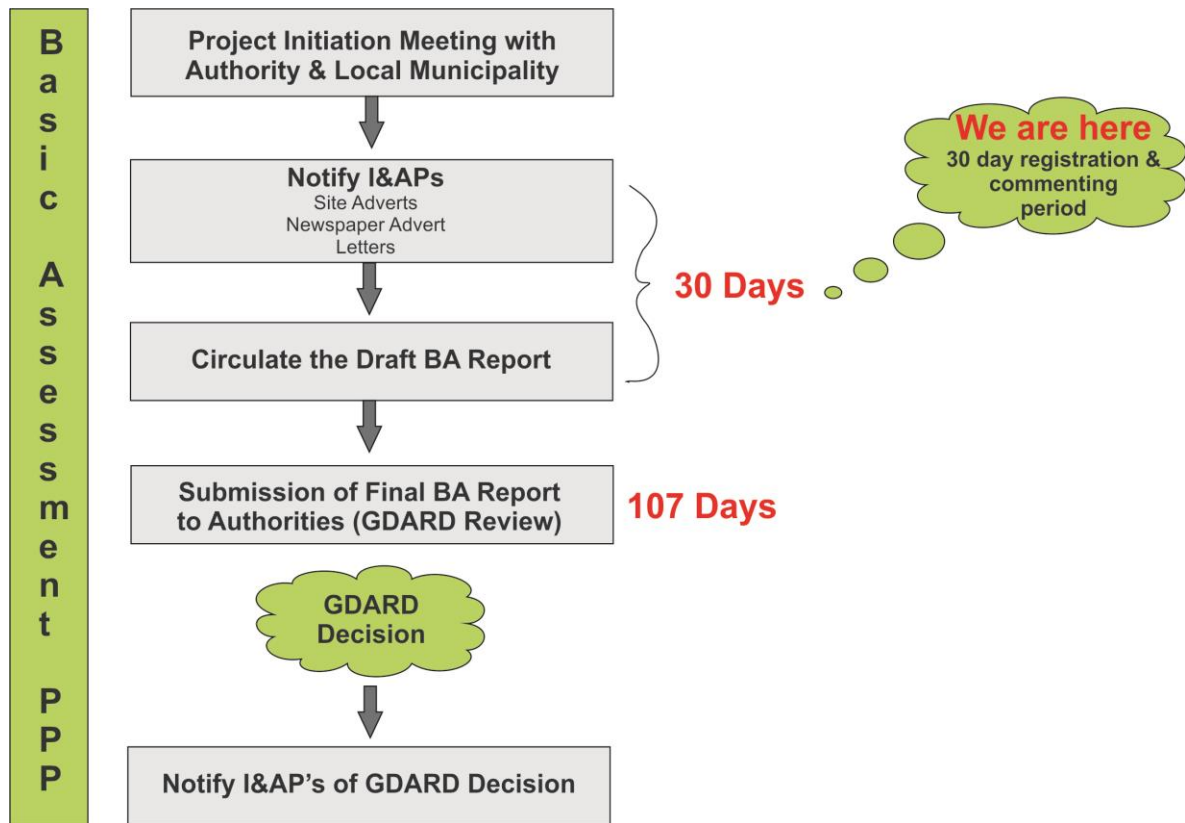
The Public Participation Process, as described below, complies with the national Environmental Management Act 107 of 1998, Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017 as well as the Directions as issued in Government Notice R.970(9 September 2020) and Government Notice R.650 (5 June 2020), Disaster Management Act, 2002 (Act No. 57 of 2002), issued by the Minister of Environment, Forestry and Fisheries Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licenses.

The purpose of these Directions, as mentioned above, is to limit the threat posed by the COVID-19 pandemic and to alleviate, contain and minimise the effects of the national state of disaster, and in particular it is there to provide directions to ensure fair licensing processes and public participation processes as required by the laws contemplated in the Permitting Directions. The restrictions require that public participation processes should be digital as far as possible and therefore no hard copies will be distributed, unless there is no other means of communication, and the draft Basic Assessment Report could therefore also not be left in a public place for review. A plan was submitted to GDARD in order to ensure that the aim or purpose of the Public Participation process is met. The following public participation measures were implemented:

- A pre-consultation meeting was held with the Gauteng Department of Agriculture and Rural Development (GDARD) before the lockdown period began, the meeting took place on 22 January 2020.
- Placing statutory advertising along the route as well as the reservoir sites (14 October 2020). In addition to the normal placement of adverts along the route and on site, care has been taken to identify additional local places where the adverts could be viewed, these include shops and governmental buildings.
- Advertising in a local newspaper on 14 October 2020, the local newspaper in the area is the Randfontein Herald.
- An attempt has been made to also advertise on the Local Municipality's website.
- Notices were issued to the landowners via the Local Municipality's Billing system, the notice was therefore sent electronically with the normal municipal bill.
- Electronic Notices were submitted to the Councillors as well as the relevant Home Owner Associations and the NGO's that are active in the area.
- The notice period for I&APs to register and review the draft Basic Assessment Report (BAR) was for a period of 40 days, 14 October 2020 – 23 November 2020.
- The draft BAR was provided to I&APs by sending out emails with a link that they could use to access the information, by providing the information on the EAP's company website (Green Tree Environmental Consulting). During this period nobody requested a CD of the draft BAR.

- Circulation of the draft BAR to State Departments such as Rand West City Local Municipality (RWCLM), the Department of Water and Sanitation (DWS), Conservancies and South African Heritage Resource Agency (SAHRA) on 14 October 2020. The draft BAR was submitted to RWCLM since they requested CDs, the draft BAR was loaded onto the SAHRIS website and a CD was delivered to DWS. The only comments received was from RWCLM, these comments are included as part of the BAR.
- Electronic submission of the application form and draft BAR to the Gauteng Department of Agricultural and Rural Development (GDARD) on 4 December 2020. The draft BAR was also submitted to GDARD as a hard copy and a CD.
- A site visit was undertaken with GDARD (10 February 2021) and a Microsoft Team meeting was held with GDARD (3 February 2021) as well as DWS (25 January 2021).
- The Public Participation Plan that was submitted to GDARD (refer to Appendix E) suggested that all public meeting, focus group meetings and meetings with RWCLM must be done virtually. There was however no need for public meetings or focus group meetings during the process. The Councillor for Bekkersadal was met on site on the day the adverts were placed within the project site and the project was discussed with RWCLM before the application was submitted to GDARD.
- All comments received from registered I&APs was included as part of the draft BAR before submitting it to GDARD.
- Comments were received from GDARD and the draft BAR was circulated a second time for public comment due to the following reasons:
 - comments received from GDARD resulted in a change in the route alignment of the Finsbury Bulk Sewer Pipeline;
 - Some of the NEMA Activities, associated with the reservoirs and water towers were not included as part of the application and had to be added to the application and therefore circulated for comments.
- The second round of public participation included the following:
 - Advertising in the Randfontein Herald on 13 April 2021, the local newspaper in the area;
 - Circulating the 2nd Draft BAR to all registered I&APs but also to any new I&APs that might register from 13 April 2021;
 - Submitting the 2nd Draft BAR to DWS and loading on the SAHRIS website;
 - Submitting the 2nd Draft BAR to GDARD for comments;
 - The notice period for comments on the 2nd Draft BAR is 30 days, **13 April 2021 to 20 May 2021.**
- The Final BAR will be submitted to GDARD once comments are received from I&APs, State Departments and GDARD.
- Registered I&APs will be notified of the final decision from GDARD.

The image below is an illustration of the Public Participation Process that will be followed for this Basic Assessment Process.



Specialist Studies:

The following specialist assessments were conducted:

Heritage Impact Assessment:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area. There is a formal cemetery is situated in the development area as well as structures older than 60 years, but will not be affected negatively by the development activities. It is important to note that although no heritage sites were noted during the site visit there is always a possibility of sub-surface archaeological and/or historical deposits and graves. Care should therefore be taken during construction and should any of the above be discovered, an archaeologist/heritage practitioner must be commissioned to investigate.

Biodiversity and Aquatic Assessment:

According to Flori Scientific Services (February 2020) there are three major watercourses in the general area of the study site, namely the Rietfonteinspruit (Stream) to the west of the site; the Middelveispruit in the centre of the site; and the Wonderfonteinspruit to the east and south of the site. The Rietfonteinspruit and Middelveispruit are semi-perennial streams that flow from north to south and into the Wonderfonteinspruit. The Wonderfonteinspruit flows into other rivers that eventually flow into the Vaal River. The Rietfonteinspruit is located to the west of the study site and

neither the bulk water line nor the sewer line will have an impact on the spruit. The Donaldson Dam is located to the east of the study site and neither the bulk water line nor the bulk sewer line will have an impact on the dam. Other watercourses identified are several small wetland areas that are mostly associated with the Middelvleispruit and the Wonderfonteinspruit.

According to Flori Scientific Services (February 2020) the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the watercourses on site and close by are as follow:

Streams:

- PES – D (Largely modified)
- EIS – B (High)

Wetlands:

- PES – C (Moderately modified)
- EIS – C / B (Moderate / High)

According to Mucina and Rutherford (2006) the study site is located within the Soweto Highveld Grassland and the Carletonville Dolomite Grassland Vegetation Types. The Soweto Highveld Grassland is characterised by gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland. In places not disturbed, there are scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops. This veld type is regarded as endangered (EN) (Mucina and Rutherford 2006). According to the South African National Biodiversity Institute (SANBI) the veld type is a threatened ecosystem with a status of vulnerable (VU) (www.bgis.sanbi.org).

The Carletonville Dolomite Grassland is characterised by slightly undulating plains dissected by prominent rocky chert ridges and species-rich grasslands forming a complex mosaic pattern dominated by many species. Dolomite and chert of the Malmani Subgroup (Transvaal Supergroup) supporting mostly shallow Mispah and Glenrosa soil are prominent and therefore the grassland is referred to as 'dolomite' grassland. This veld type is regarded as vulnerable (VU) since only a small extent is conserved in statutory reserves (Mucina and Rutherford 2006). According to SANBI the veld type has a threat status of Least Threatened (LT) or Least Concern (LC) but the biodiversity summary for the West Rand Municipality indicates that the veld type is not a threatened ecosystem (www.bgis.sanbi.org).

According to Flori Scientific Services (February 2020) there is no pristine vegetation within the study area of the bulk water and the bulk sewer pipeline servitude. Most of the grassland areas are either transformed (where the pipeline runs through suburbs and along road reserves) or badly degraded due to years of activities in the area such as mining, urbanisation and related anthropogenic impacts. During site investigations no Red Data Listed (RDL) species were observed in the study area (pipeline servitude). Only a few scattered plants of two Gauteng Orange Data Listed (ODL) Species were observed, namely *Hypoxis hemerocallidea* (African potato) and *Boophone disticha*

(Gifbol, sore-eye flower), both of which have a threat status of 'Declining'. It is recommended that just prior to the commencement of the construction phase any observed African potato and gifbol plants in the construction zone be lifted by means of forks and replanted nearby in a similar habitat. Due to the seasonal nature of the wetlands and streams in the area only a few aquatic species were observed which include Bulrushes, Common reeds and knotweeds. Most of the wetland areas had terrestrial grasses present, with a few additional common species that tend to thrive in a wetter environment.

During field investigations no priority faunal species (RDL or ODL) were observed (Flori Scientific Services, February 2020). Much of the grassland in the area has been degraded to various degrees due to impacts such as mining, urbanisation and related anthropogenic impacts. The most ideal habitats for the presence of wild faunal species are the Middelvleispruit (The Finsbury sewer pipeline servitude runs along this stream) and the large permanent open bodies of water such as the Donaldson Dam and smaller dams along the Wonderfonteinspruit (Stream) to the south. These habitats will be supported to an extent by the open grassland areas on the outskirts of the township/urban areas. It is also possible that occasionally some priority species may traverse the area, but unlikely that they will have a long-term, permanent presence due to lack of ideal habitat and continued close by anthropogenic pressures.

No RDL or ODL aquatic species are present on the study site and none are expected to occur, with the possible exception of Giant bullfrog (African bullfrog). The bullfrog is likely to occur in the area of Donaldson Dam (which is outside of the study site) and the wetland areas and dams in the Wonderfonteinspruit.

Activities causing potential impacts:

The following activities are activities that could cause potential impacts if not managed properly or if no mitigation measure is implemented, these activities are discussed in more detail in Section E of this report:

- Removal of vegetation;
- Establishment of the construction site camp;
- Movement of machinery/heavy vehicles/equipment on site;
- Hydrocarbon spills/ leakages;
- Poor waste management and littering;
- Dumping of material/waste;
- Stockpiling of soil and material;
- Poor management of ablution facilities.



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

Kindly note that:

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

DEPARTMENTAL DETAILS

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

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

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

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(For official use only)

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

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

Not Applicable, the report was submitted within the timeframes

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.

A Closure Plan is not required for this application.

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

If no, state reasons for not attaching the list.

Not applicable, a list is attached.

Have State Departments including the competent authority commented?

No

If no, why?

This is the draft report and therefore State Departments must still submit their comments

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Upgrading and implementation of the bulk water pipeline and sewer pipeline between Randfontein and Westonaria

Select the appropriate box

The application is for an upgrade of an existing development

The application is for a new development

Other, specify

X

The application includes the upgrade of existing infrastructure as well as the implementation/ construction of new infrastructure

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

YES	<input type="checkbox"/>
X	<input checked="" type="checkbox"/>

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

The pipelines will cross over a watercourse and therefore an application for a water use license was submitted to the Department of Water and Sanitation – Section 21 c and i.

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

YES	<input type="checkbox"/>
X	<input checked="" type="checkbox"/>
<input type="checkbox"/>	NO
<input type="checkbox"/>	X

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

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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:	Administering authority:	Promulgation Date:
National Environmental Management Act 107 of 1998	DEFF & GDARD	27 November 1998
NEMA: Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017	DEFF & GDARD	4 December 2014
Constitution of the Republic of South Africa, Act 108 of 1996	DEFF & GDARD	18 December 1996
National Environmental Management Biodiversity Act 10 of 2004	DEFF & GDARD	7 June 2004
National Environmental Management Protected Areas Act 57 of 2003	DEFF & GDARD	18 February 2003
National Environmental Management: Air Quality Act 39 of 2004	DEFF & GDARD	11 September 2004
National Water Act No. 36 of 1998	DWS	26 August 1998
National Environmental Management: Waste Act 59 of 2008	DEFF & GDARD	10 March 2008
Conservation of Agricultural Resources Act 43 of 1983	DEFF & GDARD	21 April 1983
Occupational Health and Safety Act No 85 of 1993	Department of Labour	23 June 1993
Hazardous Substances Act No 5 of 1973	Department of Health	1973

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Gauteng Sustainability Development Guideline	GDARD	April 2017
Gauteng Conservation Plan – Version 3.3	GDARD	October 2011
Gauteng Pollution Buffer Zones	GDARD	March 2017
West Rand District Municipality Environmental Management Framework – Revision 2	WRDM/ GDARD	March 2013
West Rand District Municipality Wetland Report	WRDM/ GDARD	2017

Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy or guideline	Description of compliance
National Environmental Management Act 107 of 1998 (NEMA)	NEMA forms the overarching framework for Environmental Legislation. In terms of NEMA: EIA Regulations 2014, as amended on 7 April 2017, an Environmental Authorisation (EA) must be obtained for the construction of the proposed infrastructure.
NEMA: Environmental Impact Assessment Regulations 2014, as amended on 7 April 2017	The Basic Assessment Report (BAR) and the Environmental Management Programme (EMPr) complies with the format as provided in the NEMA: EIA Regulations 2014, as amended on 7 April 2017, Appendix 1 and 4. Activities as listed in GN R 983 and R 985 have been applied for.
Constitution of the Republic of South Africa, Act 108 of 1996	The Project focus on the minimization of environmental impacts that might result from the construction and the operation of the proposed project in order to comply with the requirements as per Section 24 of the Constitution.
National Environmental Management Biodiversity Act 10 of 2004 NEMBA	NEMBA provides for the management and conservation of the biodiversity of South Africa. The proposed project falls within the Critical Biodiversity Area (CBA) and Ecological Support Area (ESA), as per GDARD's C-Plan, and therefore the EMPr addresses additional management measures to protect these areas.
National Environmental Management Protected Areas Act 57 of 2003 NEMPA	NEMPA allows for the protection and conservation of ecological viable areas within South Africa. The proposed project is not located within a Protected Area as defined by NEMPA.
National Environmental Management: Air Quality Act 39 of 2004 NEMAQA	According to GNR 893, NEMAQA (Act 39 of 2004) the proposed project triggers none of the listed activities. The EMPr addresses the minimise of any emissions that could have an impact on the air quality of the area during the construction phase of the project.
Gauteng Noise Control Regulations	These Regulations are there to ensure that noise impact is avoided or kept to a minimum. The EMPr sets out management measures in order to minimise the impact of noise during the construction phase of the project.
National Water Act No. 36 of 1998 NWA	The NWA (Act 36 of 1998), regulates the use of/ and impacts on natural watercourses within South Africa. The proposed project will traverse streams and will be located within the 500m Regulated

	Buffer and will therefore require a Water Use License for Section 21-c and Section 21-I Activities was submitted to DWA.
National Environmental Management: Waste Act 59 of 2008 NEMWA	NEMWA (Act 59 of 2008) provides for the management of waste. No waste management license will be required for the proposed project. The EMPr addresses the management of waste on site during construction and operational phases of the proposed project.
Occupational Health and Safety Act No 85 of 1993	The Act provides for health and safety of persons at work. The EMPr addresses management and mitigation measures that must be implemented during the construction phase to ensure that all persons working on site are safe.
Hazardous Substances Act No 5 of 1973	This Act addresses the handling and management of hazardous substances. The EMPr allows for the mitigation and management of hazardous substances on site during the construction phase of the proposed project.
Gauteng Conservation Plan – Version 3.3	Complying with the suggested CBA and ESA and appointing a specialist to determine the extent of these areas and management/ mitigation measures.
Gauteng Pollution Buffer Zones	This document was used in order to determine whether the project needs to abide to any pollution buffer zones.
West Rand District Municipality Environmental Management Framework – Revision 2	This report was used to ensure that the proposed project falls within the requirements of the Environmental Framework and doesn't impose on the environmental sensitive areas as identified by the Framework.
West Rand District Municipality Wetland Report	This report was used to ensure that the wetland identified in the report as well as the wetlands, as identified by the specialist, were taken into consideration.

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

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Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal	<p>The bulk water pipeline will include the upgrade of existing water pipelines as well as the construction of new lines in order to transport water to the newly developed areas of Randfontein. The bulk water pipeline will also include the construction of additional water towers, reservoirs and associated pump stations. The bulk water pipeline consists of three sections;</p> <p><u>Section 1: Mohlakeng Pipeline Route Alignment</u></p> <p>This section of the alignment runs in a north south direction from Randfontein, through Toekomsrus and along the R28 towards Mohlakeng. This section of the pipeline will be constructed within the road reserve and is approximately 11.5km in length. There is however a small section of the line that requires authorization since the road runs along a wetland area and through a CBD area, this section is approximately 1.5km in length.</p> <p><u>Section 2: Randfontein Pipeline Route Alignment</u></p> <p>The second section of the bulk water pipeline project is the Randfontein Water Pipeline that runs east west from Randfontein towards Wheatland Agricultural Holdings along the R41 till it intersects Road 6. From this point the pipeline runs along Road 6, in a southerly direction where it connects with the new Dan Tloome Reservoir and further south to connect to the new Montrose Reservoir. This is the preferred route alignment for the Randfontein Water pipeline since it is not within a wetland area or CBA and there is property available for the construction of the Dan Tloome Reservoir along this route.</p> <p>The pipeline alignment/ route is approximately 12.6km with only a section of the pipeline that will require an environmental authorization of approximately 2.5km, this is indicated on the maps.</p>

		<p>The two alternatives, as discussed below (Alternative A_1 and Alternative A_2), are the route alignments that were suggested before we received the input from the wetland specialist.</p> <p><u>Section 3: The Westonaria Water Pipelines</u></p> <p>The Westonaria Water Pipelines are a combination of a few pipelines that will mainly connect the existing bulk water line with the proposed reservoirs. This section includes the following alignments:</p> <ul style="list-style-type: none">• Wagterskop Reservoir and pipeline: The new reservoir will be constructed next to the existing reservoir and the pipeline will follow the Mointain View Estate's boundary in a northern direction until it meets with the existing bulk water line along the N12. Although the pipeline will not require an environmental authorization the reservoir will be constructed on the ridge and within a CBA.• Waterpan Reservoir and the Simunye_Thusanang pipeline: The Simunye_Thusanang pipeline will provide water for both Simunye and Thusanang. The reservoir will be constructed on the ridge, next to the exiting reservoir and will therefore provide water to both sides of the ridge (north and south). The route alignment and the reservoir will need an environmental authorization since it will be located on the ridge and will cross a CBA;• West Rand Reservoir and pipeline: The reservoir and pipeline will be constructed within the West Rand Agricultural Holdings and will not require an Environmental Authorisation since none of the Activities according to the National Environmental Management Act 107 of 1998 (NEMA), Environmental Impact Assessment Regulations 2014, as amended on 7 April
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		<p>2017, will be triggered.</p> <ul style="list-style-type: none">• Bekkersdal Reservoir and pipeline: The reservoir will be constructed just south of Bekkersdal. The pipeline will run in a southern direction where it will connect with the bulk water pipeline along the N12. The reservoir and a section of the pipeline is located within a CBA and will therefore require environmental authorization. <p>The following reservoirs, water towers and associated pump stations are therefore included as part of the bulk water pipeline:</p> <ul style="list-style-type: none">• Westergloor Reservoir site;• Droogheuwel Reservoir site;• Dan Tloome Reservoir site;• Finsbury Reservoir site;• Montrose Reservoir site;• Waterpan Reservoir site;• Wagterskop Reservoir site;• Bekkersdal Reservoir site; and• West Rand AH Reservoir site. <p>The <u>bulk sewer line</u> will include both upgrade of existing systems but also the construction of new pipelines in order to cater for the demand created by the proposed new residential development. The bulk sewer line has four sections:</p> <p><u>Section 1: R28 Bulk Sewer Line</u> This leg follows the R28 and will be constructed within the road reserve, this section is approximately 6.5km in length and does not require an environmental authorization.</p> <p><u>Section 2: Toekomsrus Bulk Sewer</u> The second leg runs from the north of Toekomsrus, through the Toekomsrus Residential Area in a southerly direction, it connects with the R559 (the pipeline will run underneath the R559) and from there</p>
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		<p>the pipeline will run along the southern boundary of Mohlakeng (in a westerly direction) until it meets with the existing infrastructure along the R28. This route is the preferred route alignment since it will not cross the wetland/river area but will run through a section of the CBA and ECA. This section of the pipeline is approximately 8.5km in length.</p> <p><u>Section 3: Dan Tloome Bulk Sewer</u></p> <p>The third leg of the bulk sewer line is located to the west of the R28 and stretches from Middelvlei Agricultural Holdings in a south-eastern direction towards the R28, this section is approximately 10km in length. This pipeline will have approximately three wetland/river crossings.</p> <p><u>Section 4: Finsbury Bulk Sewer</u></p> <p>The fourth leg of the bulk sewer line stretches from the Finsbury Agricultural holdings in a southern direction where it connects with the Dan Tloome Bulk Sewer. The pipeline will follow the Middelvleispruit and most of the pipeline will be within the 32m regulated area of that watercourse. The pipeline is approximately 6km in length.</p>
2	Alternative A_1	<p><u>The Randfontein Pipeline Route Alignment – Alternative A_1 (pink line on maps)</u></p> <p>This alignment was the original alignment suggested (shortest route) by the engineers but on closer inspection it was noted that this alternative will cross a wetland and CBA. This alternative runs east west from Randfontein towards Wheatland Agricultural Holdings along the R41 towards the Droogheuwel Reservoir, from there it runs south towards Middelvlei Agricultural Holdings where it connects with the Finsbury Reservoir and the Montrose Reservoir.</p>
3	Alternative A_2	<p><u>The Randfontein Water Pipeline Route Alignment – Alternative A_2 (green line on maps)</u></p> <p>This is a second alternative that was considered for the section of the Randfontein Pipeline Route</p>

		between the Wheatland Agricultural Holdings and the Middelvie Agricultural Holdings. This alternative follows the same alignment as the Randfontein Pipeline Route but instead of crossing over the wetland areas (Lazar Avenue south) it takes a detour along the Wheatland Agricultural Holdings and follows Road 7 and Road 6 in a southern direction until it meets up with the original Randfontein Pipeline Route Alignment on 1 st Road and ends at the Montrose Reservoir. This alternative also avoids the wetland area and the CBA but there is a concern regarding the availability of property for the construction of the Dan Tloome Reservoir along this route.
4	Alternative B	<u>Toekomsrus Bulk Sewer – Alternative B (orange line on maps)</u> This alternative is the original line that was suggested by the engineers. The pipeline runs from the north of Toekomsrus, along the eastern boundary and southern boundary of Mohlakeng and connects to the R28. This section of the pipeline has one crossing over a wetland/river area and runs through a CBA and ECA and will therefore require environmental authorisation.
5	Alternative location for the Finsbury Reservoir	The alternative location for the Finsbury Reservoir is across the road (Tafleberg Road) from the existing reservoir site. This site has more than enough space for the reservoir and was previously used for agricultural activities.

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

N/A

4. PHYSICAL SIZE OF THE ACTIVITY

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

Proposed activity (**Total environmental (landscaping, parking, etc.) and the building footprint**)

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)

Size of the activity:

[Redacted]

[Redacted]

Ha/ m²

or, for linear activities:

Proposed activity:
Bulk Water Pipeline
Mohlakeng Pipeline
Section of the Mohlakeng Pipeline that Requires Authorisation
Randfontein Pipeline
Section of the Randfontein Pipeline that Requires Authorisation
Alternative A
Section of the Randfontein Pipeline Alternative A that Requires Authorisation

Length of the activity:

	7.41km
	0.2km
	15.63km
	5.07km
	14.63km
	6.08km
	8.32km
	11.81km
	6.57km
	4.2km
	m/km

Bulk Sewer Pipeline
Toekomsrus Bulk Sewer Line
Dan Tloome Bulk sewer Line
Finsbury Bulk Sewer Line
Alternative B

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

Proposed activity
Bulk Water Pipeline
Mohlakeng Pipeline
Randfontein Pipeline
Alternative A

Size of the site/servitude:

	3m servitude
	600m ²
	15 210m ²
	18 240m ²
	3m servitude
	24 960m ²
	35 430m ²
	19 710m ²
	1 260m ²
	Ha/m ²

Bulk Sewer Pipeline
Toekomsrus Bulk Sewer Line
Dan Tloome Bulk sewer Line
Finsbury Bulk Sewer Line
Alternative B

5. SITE ACCESS

Proposal

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

YES
X

If NO, what is the distance over which a new access road will be built
Describe the type of access road planned:

[Redacted]

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 A

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

YES
X

If NO, what is the distance over which a new access road will be built
Describe the type of access road planned:

[Redacted]

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 B

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

YES
X

If NO, what is the distance over which a new access road will be built
Describe the type of access road planned:

[Redacted]

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

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

Section A 6-8 has been duplicated

0

Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

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

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

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

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

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 the route times

Instructions for completion of Section B for location/route alternatives

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

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

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)

BULK WATER LINE SECTION 1: MOHLAKENG PIPELINE

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This section of the bulk water line runs from Toekomsrus to the Mohlakeng area and is located along the R28 and R559.
The Westergloor Reservoir site is located along the Mohlakeng Pipe line alignment.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 13' 24.72"	27° 42' 49.91"
26° 12' 28.97"	27° 41' 39.42"
26° 13' 52.48"	27° 41' 08.09"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil

	NO
YES	
YES	
	NO

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Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = %	Natural veld with scattered aliens % = %	Natural veld with heavy alien infestation % = %	Veld dominated by alien species % = 30%	Landscaped (vegetation) % = %
Sport field % = %	Cultivated land % = %	Paved surface (hard landscaping) % = 30%	Building or other structure % = %	Bare soil % = 40%

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:

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**

If YES, specify and explain:

Was a specialist consulted to assist with completing this section **YES**

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If yes complete specialist details

Name of the specialist:	Johannes Maree – Flori Scientific Services			
Qualification(s) of the specialist:	Pri Sci Nat			
Postal address:	PO Box 7222, Modimolle			
Postal code:	0510			
Telephone:	N/A	Cell:	082 564 1211	
E-mail:	johannes@flori.co.za	Fax:	N/A	
Are any further specialist studies recommended by the specialist?				NO
If YES, specify:	N/A			
If YES, is such a report(s) attached?				NO
If YES list the specialist reports attached below	N/A			

Signature of specialist: _____ Date: _____

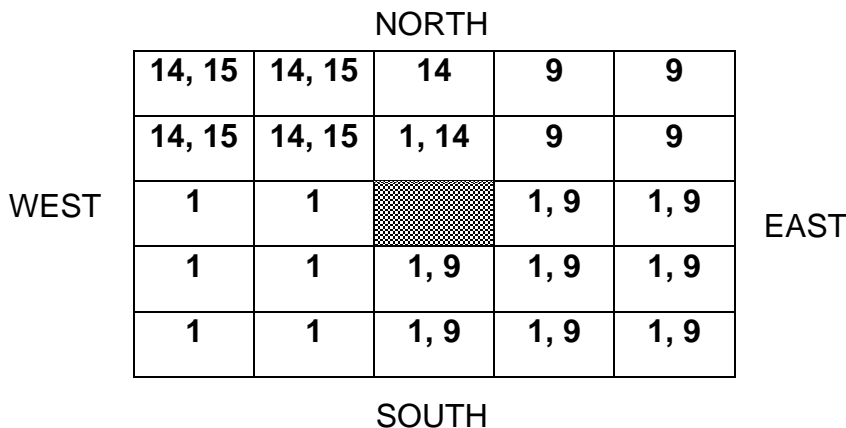
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

9. SOCIO-ECONOMIC CONTEXT

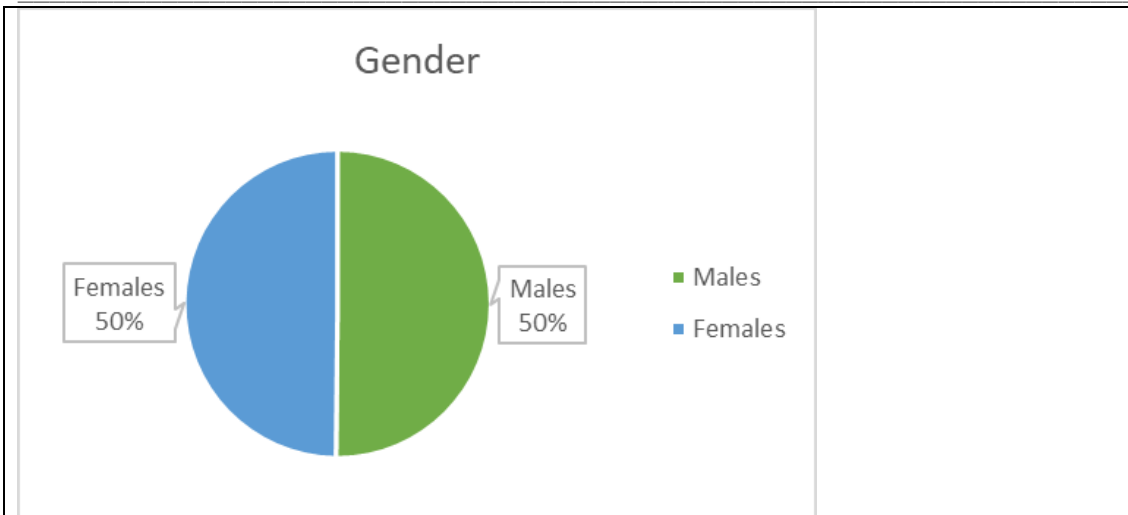
Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

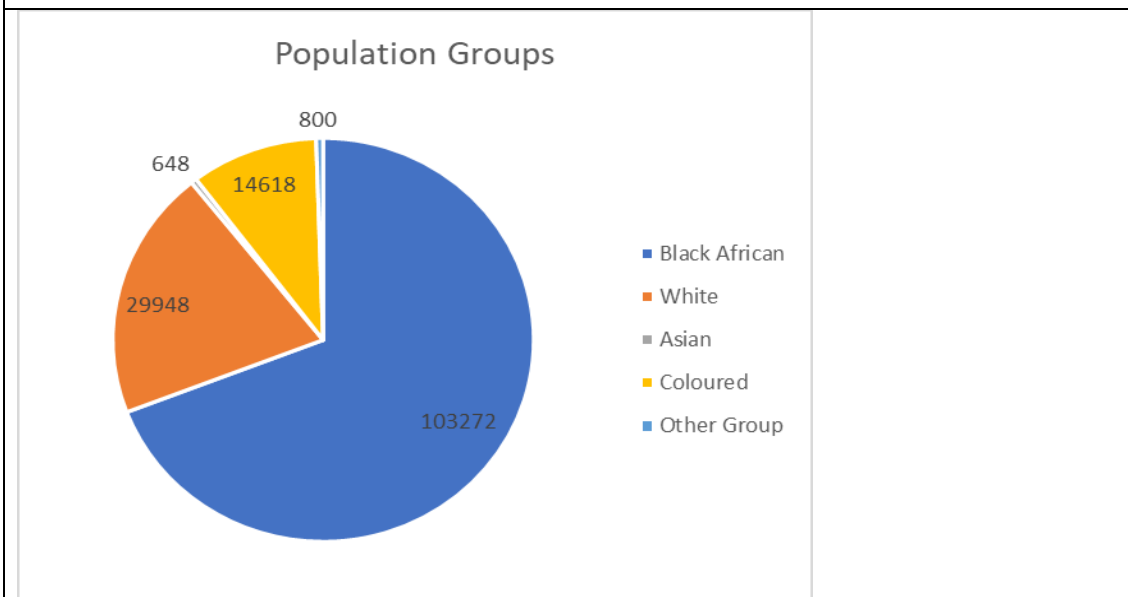
According to the Census Data (2011), Randfontein has a population of approximately 149 286. The majority of the population is Black African with approximately 39% of the population with some primary education and 33 % of the population with some secondary education. Approximately 50% of the population is employed but the majority of the population earns an income of R150 000 or less per year. The population of Randfontein is reliant on the local municipality to provide water and a proper sewer system, there is only a handful of the population that either has a borehole or their own sewer system. Proper services provided by the municipality is therefore essential. The population data are comprised of the following and presented in the graphs below; Gender, Population Group, Education, Household Income, Water Source and Sewer System (Toilet Facilities).

Please note that this section is the same for the entire project and will therefore not be repeated for each section of the route.

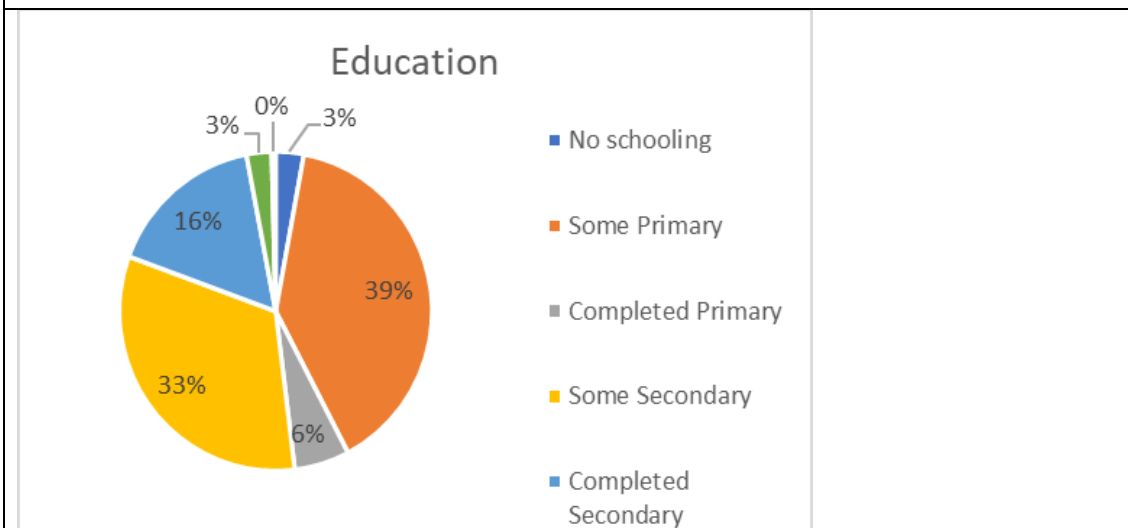
The Mohlakeng Section of the pipeline runs from Randfontein along the eastern boundary (R559) and western boundary (R28) of Mohlakeng. The Mohlakeng residential area is a formal residential township with smaller patches that are still informal township. The residential areas are mostly medium to lower income areas and currently the majority of the area is serviced with both bulk water and sewer lines.



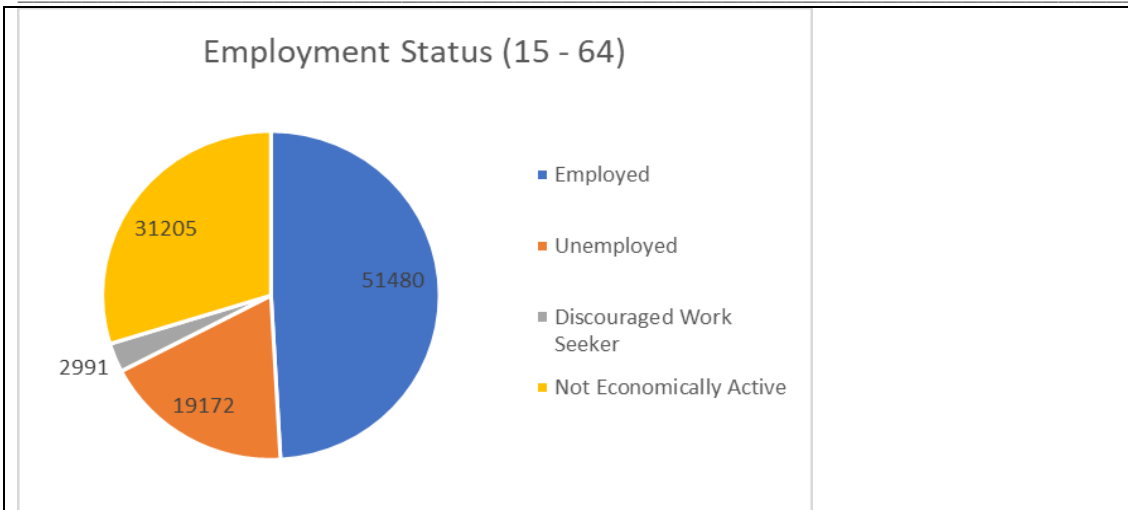
Graph 1: Gender combination for Randfontein (2011)



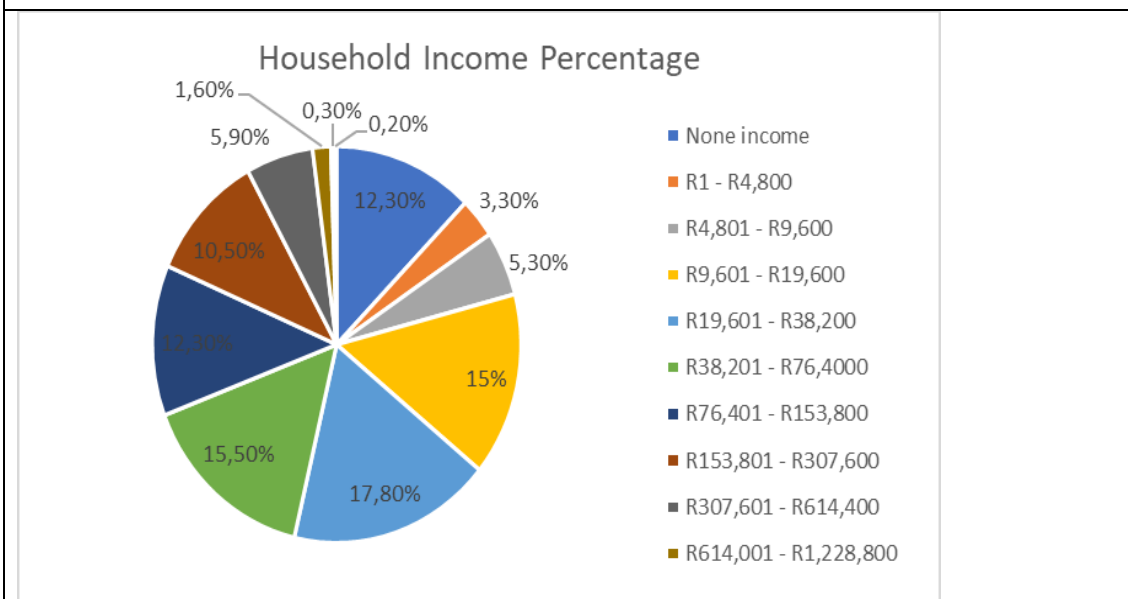
Graph 2: Population Group for Randfontein (2011)



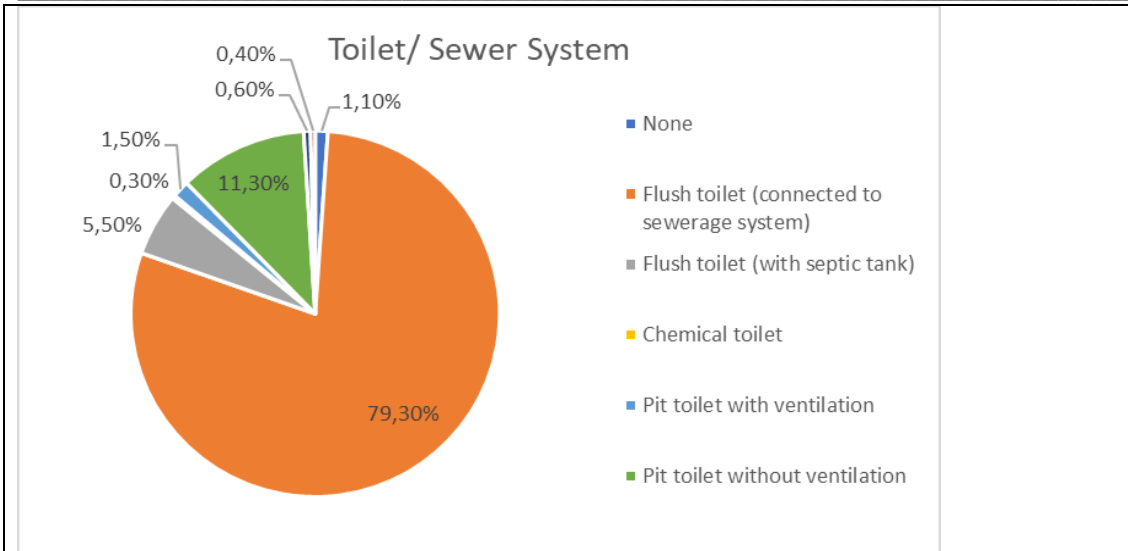
Graph 3: Level of Education for Randfontein (2011)



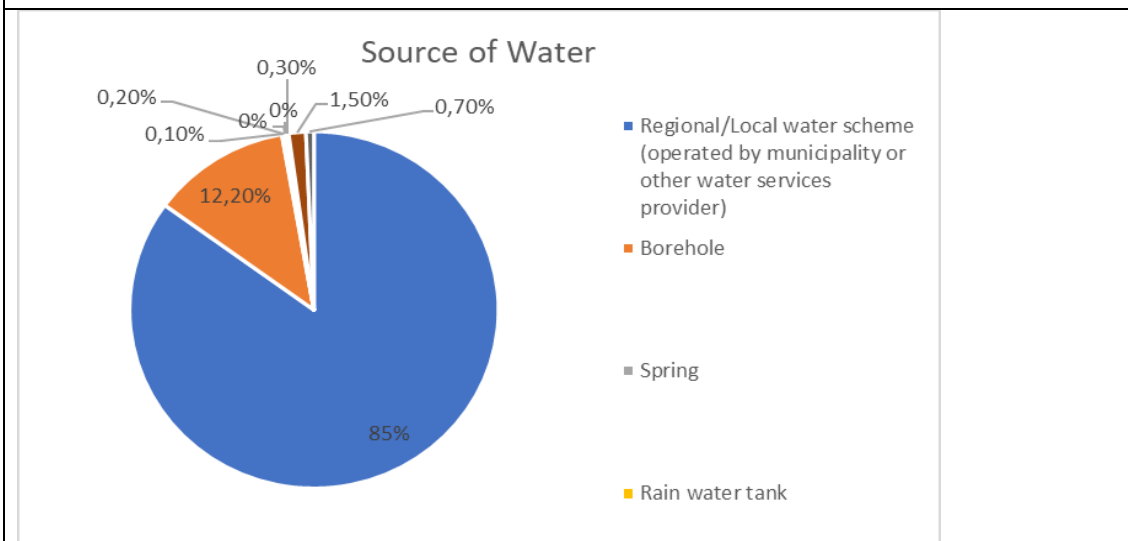
Graph 4: Employment Status for Randfontein (2011)



Graph 5: Household Income for Randfontein (2011)



Graph 6: Toilet/ Sewer System for Randfontein (2011)



Graph 7: Water Source for Randfontein (2011)

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 categorised as-

- (a) the construction of a road, wall, powerline, 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

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(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
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If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
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Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO
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If yes, please attached the comments from SAHRA in the appropriate Appendix

BULK WATER LINE SECTION 2: RANDFONTEIN PIPELINE

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This section of the bulk water line runs from Randfontein, along the R41 towards Wheatlands and from there in a southern direction towards Middelvlei Agricultural Holdings.
This section of the pipeline also includes the construction of the pump stations and the following reservoirs and associated water towers:

- Droogheuwel Reservoir site;
- Dan Tloome Reservoir site;
- Finsbury Reservoir site; and
- Montrose Reservoir site

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 10' 46.21"	27° 42' 29.63"
26° 10' 23.80"	27° 39' 14.70"
26° 13' 34.18"	27° 38' 06.49"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

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

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = %	Natural veld with scattered aliens % = 30%	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 10%	Building or other structure % =	Bare soil % = 60%

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:

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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
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If YES, specify and explain:

N/A

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

YES	
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If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route.
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Was a specialist consulted to assist with completing this section

YES	
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If yes complete specialist details

Name of the specialist:

Johannes Maree – Flori Scientific Services
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Qualification(s) of the specialist:

Pri Sci Nat

Postal address:

PO Box 7222, Modimolle

Postal code:

0510

Telephone:

N/A

Cell: 082 564 1211

E-mail:

johannes@flori.co.za
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Fax: N/A

Are any further specialist studies recommended by the specialist?

	NO
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If YES, specify: N/A

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

	NO
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If YES list the specialist reports attached below

N/A

Signature of specialist: _____ Date: _____

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

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

NORTH						
	34	34	14	8, 9	8, 9	
	34	34	1, 14	8, 9	8, 9, 14	
WEST	1	1		8, 9	8, 9, 33	EAST
	1	1, 2	1, 2	1, 2, 14	14, 33	
	34	34	1, 8, 34	14	1, 14	
SOUTH						

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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

The Randfontein route alignment runs through various communities starting within the town of Randfontein and running along one of the main access roads, the R41. This section is characterized by commercial and industrial activities as well as residential areas. The pipeline leaves Randfontein and runs through agricultural holdings which varies from well maintained residential areas to areas that are characterized by informal settlers, commercial activities and shows some degradation. A section of the pipeline traverses an open field that is also characterized by a watercourse (pan) located more or less in the middle of this space.

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 categorised as-

(a) the construction of a road, wall, powerline, 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

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

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

	NO
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If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
	NO

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

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

BULK WATER LINE SECTION 2: RANDFONTEIN PIPELINE – Alternative A_1

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This alignment was the original alignment suggested (shortest route) by the engineers but on closer inspection it was noted that this alternative will cross a wetland and CBA. This alternative runs east west from Randfontein towards Wheatland Agricultural Holdings along the R41 towards the Droogheuwel Reservoir, from there it runs south towards Middelvlei Agricultural Holdings where it connects with the Finsbury Reservoir and the Montrose Reservoir.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 10' 25.39"	27° 39' 15.92"
26° 10' 28.83"	27° 37' 48.66"
26° 12' 56.71"	27° 38' 17.10"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

- a) Is the site located on any of the following?

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Shallow water table (less than 1.5m deep)	<input type="checkbox"/>	NO
Dolomite, sinkhole or doline areas	YES	<input type="checkbox"/>
Seasonally wet soils (often close to water bodies)	<input type="checkbox"/>	NO
Unstable rocky slopes or steep slopes with loose soil	<input type="checkbox"/>	NO
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

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 % =	Bare soil % = 80%

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:

N/A

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**

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If YES, specify and explain:

N/A

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

YES

If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route.

Was a specialist consulted to assist with completing this section

YES

If yes complete specialist details

Name of the specialist:

Johannes Maree – Flori Scientific Services

Qualification(s) of the specialist:

Pri Sci Nat

Postal address:

PO Box 7222, Modimolle

Postal code:

0510

Telephone:

N/A

Cell:

082 564 1211

E-mail:

johannes@flori.co.za

Fax:

N/A

Are any further specialist studies recommended by the specialist?

NO

If YES, specify: N/A

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

NO

If YES list the specialist reports attached below

N/A

Signature of specialist: _____

Date: _____

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

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

					NORTH									
					1, 34	1, 34	34	34	1					
					1, 34	1, 34	34	34	1					
WEST					1, 34	1, 34		1, 34	1, 34	EAST				
					1, 2	1, 2	1, 34	1, 2	1, 2					

34	34	34	34	34
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SOUTH

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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

The Randfontein route alignment runs through various communities starting within the town of Randfontein and running along one of the main access roads, the R41. This section is characterized by commercial and industrial activities as well as residential areas. The pipeline leaves Randfontein and runs through agricultural holdings which varies from well-maintained residential areas to areas that are characterized by informal settlers, commercial activities and shows some degradation.

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 categorised as-

- (a) the construction of a road, wall, powerline, 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

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(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
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If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
	NO

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

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

BULK WATER LINE SECTION 2: RANDFONTEIN PIPELINE – Alternative A_2

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This is a second alternative that was considered for the section of the Randfontein Pipeline Route between the Wheatland Agricultural Holdings and the Middelvlei Agricultural Holdings. This alternative follows the same alignment as the Randfontein Pipeline Route but instead of crossing over the wetland areas (Lazar Avenue south) it takes a detour along the Wheatland Agricultural Holdings and follows Road 7 and Road 6 in a southern direction until it meets up with the original Randfontein Pipeline Route Alignment on 1st Road and ends at the Montrose Reservoir.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 11' 02.83"	27° 38' 49.62"
26° 14' 42.42"	27° 38' 04.02"
26° 12' 08.83"	27° 38' 29.64"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

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a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

	NO
YES	
YES	
	NO
	NO
	NO
	NO
YES	

(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

6. AGRICULTURE

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

YES	
-----	--

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

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 % =	Bare soil % = 80%

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:

N/A

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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:

N/A

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

	YES
--	------------

If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route.
--

Was a specialist consulted to assist with completing this section

	YES
--	------------

If yes complete specialist details

Name of the specialist:	Johannes Maree – Flori Scientific Services		
Qualification(s) of the specialist:	Pri Sci Nat		
Postal address:	PO Box 7222, Modimolle		
Postal code:	0510		
Telephone:	N/A	Cell:	082 564 1211
E-mail:	johannes@flori.co.za	Fax:	N/A

Are any further specialist studies recommended by the specialist?

	NO
--	-----------

If YES, specify:

N/A

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

	NO
--	-----------

If YES list the specialist reports attached below

N/A

Signature of specialist: _____ Date: _____


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

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

NORTH					
	1, 34	1, 34	34	34	1
	1, 34	1, 34	34	34	1
WEST	1, 2	1, 2		1, 2	1, 2
	1, 2	1, 2	1	1, 2	1, 2
	34	34	34	34	34
SOUTH					
	EAST				

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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

The Randfontein route alignment runs through various communities starting within the town of Randfontein and running along one of the main access roads, the R41. This section is characterized by commercial and industrial activities as well as residential areas. The pipeline leaves Randfontein and runs through agricultural holdings which varies from well-maintained residential areas to areas that are characterized by informal settlers, commercial activities and shows some degradation.

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 categorised as-

- (a) the construction of a road, wall, powerline, 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

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(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
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If YES, explain:

N/A

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 Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
	NO

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

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

BULK WATER LINE: WAGTERSROP RESERVOIR AND PIPE LINE

1. PROPERTY DESCRIPTION

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

The proposed project is located south of Westonaria in the Wagterskop Agricultural Holdings. The pipeline starts at the existing Wagterskop Reservoir and connects with the existing pipeline along the N12. The new Wagterskop Reservoir will be constructed next to the existing reservoir and on the same property.

Properties:

- Erven 1 - Portion 43 of the Farm Elandsfontein 346 IQ
- Portion 7 of the Farm Elandsfontein 346 IQ

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26°21' 15.12"	27°38' 05.07"
26°21' 30.18"	27°38' 07.58"
26°21' 45.14"	27°38' 09.24"

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 co-ordinates attached

N/A

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

	NO
YES	
	NO

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- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

	NO
	NO
	NO
	NO
YES	

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = 70%	Natural veld with scattered aliens % = 30%	Natural veld with heavy alien infestation % = %	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = %	Building or other structure % =	Bare soil % = %

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:

N/A

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:

N/A

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

If YES, specify and explain:

The route alignment runs along the ridge/ mountain up to the existing reservoir site.

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Was a specialist consulted to assist with completing this section **YES**

If yes complete specialist details

Name of the specialist:	Johannes Maree – Flori Scientific Services			
Qualification(s) of the specialist:	Pri Sci Nat			
Postal address:	PO Box 7222, Modimolle			
Postal code:	0510			
Telephone:	N/A	Cell:	082 564 1211	
E-mail:	johannes@flori.co.za	Fax:	N/A	
Are any further specialist studies recommended by the specialist?				NO
If YES, specify:	N/A			
If YES, is such a report(s) attached?				NO
If YES list the specialist reports attached below	N/A			

Signature of specialist: _____ Date: _____

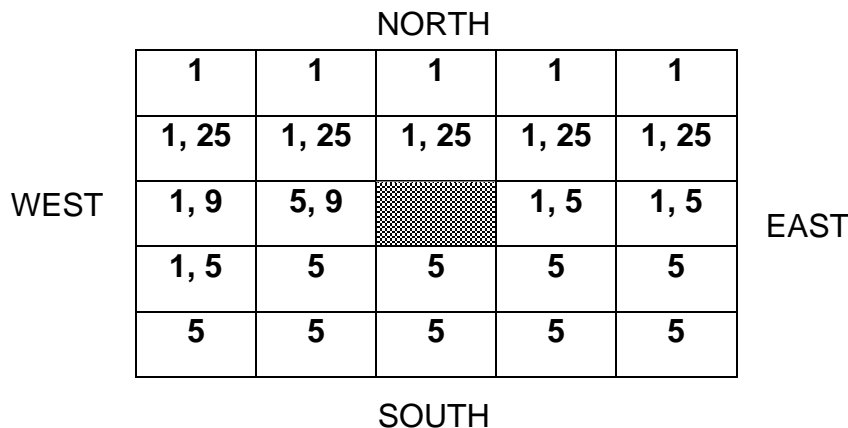
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

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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	
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If yes indicate the type of reports below

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

This section of the pipeline and the reservoir is located in an area that is dominated by natural features such as the ridge/ mountain and open grassland. The pipe line runs along the eastern boundary of Mountain View Estate which is a low to medium density residential area.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
 - (i) exceeding 5 000 m2 in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

	NO
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If YES, explain:

N/A

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:

No archaeological findings

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

	NO
	NO

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

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

BULK WATER LINE: WATERPAN RESERVOIR & THUSANANG_SIMUNYE PIPE LINE

1. PROPERTY DESCRIPTION

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

The proposed project is located south-east of Westonaria in the Waterpan area. There are three parts to the pipeline, the first part is a supply pipeline from the Rand Water Pipeline along N12 to the reservoir on the hill (existing Waterpan Reservoir), the second part is a distribution pipeline from the new Waterpan reservoir to Simunye and the third part is a distribution pipeline from the new Waterpan reservoir to Thusanang. The new Waterpan reservoir will be constructed next to the existing reservoir and will fall on the same property.

Refer to the list attached for the properties.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26°19' 57.33"	27°42' 05.78"
26°22' 15.52"	27°42' 12.46"
26°24' 25.64"	27°42' 15.71"

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 co-ordinates attached

N/A

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

	NO
YES	

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Seasonally wet soils (often close to water bodies)	<input type="checkbox"/>	NO
Unstable rocky slopes or steep slopes with loose soil	<input type="checkbox"/>	NO
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	<input type="checkbox"/>	NO
	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

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

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:

N/A

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:

N/A

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

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If YES, specify and explain:

The route alignment runs along the ridge/ mountain up to the existing reservoir site and again down the ridge/ mountain.

Was a specialist consulted to assist with completing this section YES

If yes complete specialist details

Name of the specialist: Johannes Maree – Flori Scientific Services

Qualification(s) of the specialist: Pri Sci Nat

Postal address: PO Box 7222, Modimolle

Postal code: 0510

Telephone: N/A Cell: 082 564 1211

E-mail: johannes@flori.co.za Fax: N/A

Are any further specialist studies recommended by the specialist? NO

If YES, specify: N/A

If YES, is such a report(s) attached? NO

If YES list the specialist reports attached below

N/A

Signature of specialist: _____ Date: _____

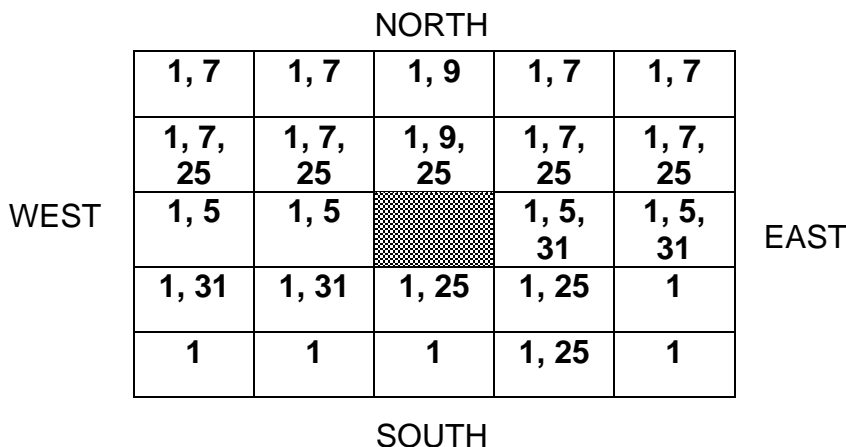
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

This section of the pipeline and the reservoir is located in an area that is dominated by agricultural activities and mining.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
--	-----------

If YES, explain:

N/A

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:

No archaeological findings

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

	NO
--	-----------

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

	NO
--	-----------

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

BULK WATER LINE: BEKKERSDAL RESERVOIR AND PIPE LINE

1. PROPERTY DESCRIPTION

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

The proposed project is located south-east of Westonaria in the Bekkersdal area. The pipeline starts just south of Bekkersdal at the new Bekkersdal Reservoir and runs in a southerly direction towards the N12 where it connects with the existing pipeline along the N12.

Remainder Portion 6 of the farm Gemsbokfontein 290 IQ.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26°17' 16.56"	27°43' 16.44"
26°18' 15.01"	27°43' 07.10"
26°19' 35.74"	27°43' 13.51"

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 co-ordinates attached

N/A

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

- a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature

	NO
YES	
	NO
	NO
	NO
	NO
	NO

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An area sensitive to erosion

YES	
-----	--

(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

6. AGRICULTURE

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

YES	
-----	--

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

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

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:

N/A

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:

N/A

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

YES	
-----	--

If YES, specify and explain:

The route alignment runs along the ridge/ mountain up to the existing reservoir site and again down the ridge/ mountain.
--

Was a specialist consulted to assist with completing this section

YES	
-----	--

If yes complete specialist details

Name of the specialist:	Johannes Maree – Flori Scientific Services
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Qualification(s) of the specialist:	Pri Sci Nat			
Postal address:	PO Box 7222, Modimolle			
Postal code:	0510			
Telephone:	N/A	Cell:	082 564 1211	
E-mail:	johannes@flori.co.za	Fax:	N/A	
Are any further specialist studies recommended by the specialist?				NO
If YES, specify:	N/A			
If YES, is such a report(s) attached?				NO
If YES list the specialist reports attached below	N/A			

Signature of specialist: _____ Date: _____

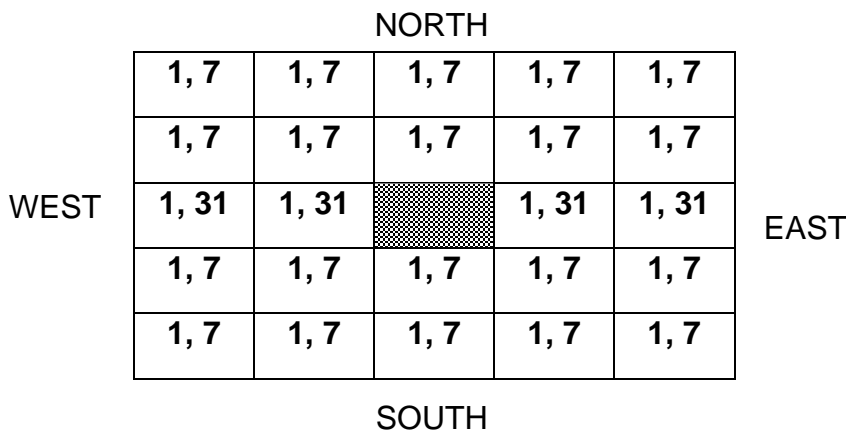
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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.

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Have specialist reports been attached	YES	
If yes indicate the type of reports below		
Biodiversity & Aquatic Assessment		
Heritage Impact Assessment		

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

This section of the pipeline and the reservoir is located in an area that is dominated by agricultural activities and mining. The site is located just south of the Bekkersdal high density residential area.

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 categorised as-
- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
 - (b) the construction of a bridge or similar structure exceeding 50m in length;
 - (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
--	-----------

If YES, explain:

N/A

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:

No archaeological findings

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

	NO
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Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO
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If yes, please attached the comments from SAHRA in the appropriate Appendix

BULK WATER LINE: WEST RAND AH RESERVOIR AND PIPE LINE

1. PROPERTY DESCRIPTION

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

The proposed project is located south-east of Westonaria in the West Rand Agricultural Area.

The following two properties are included as part of this section of the line and the construction of the new West Rand Reservoir:

- Portion 32 of the Farms Waterpan 292 IQ.
- Portion 20 of the Farms Panvlakte 291 IQ

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26°19' 54.08"	27°44' 24.34"
26°19' 29.98"	27°44' 22.73"
26°19' 15.09"	27°44' 24.53"

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 co-ordinates attached

N/A

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

	NO
YES	
	NO

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- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

	NO
	NO
	NO
	NO
YES	

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = %	Natural veld with scattered aliens % = %	Natural veld with heavy alien infestation % = %	Veld dominated by alien species % = %	Landscaped (vegetation) % = %
Sport field % =	Cultivated land % = 70%	Paved surface (hard landscaping) % = %	Building or other structure % = %	Bare soil % = 30%

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:

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? **NO**

If YES, specify and explain:

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Was a specialist consulted to assist with completing this section **YES**

If yes complete specialist details

Name of the specialist: Johannes Maree – Flori Scientific Services

Qualification(s) of the specialist: Pri Sci Nat

Postal address: PO Box 7222, Modimolle

Postal code: 0510

Telephone: N/A Cell: 082 564 1211

E-mail: johannes@flori.co.za Fax: N/A

Are any further specialist studies recommended by the specialist? **NO**

If YES, specify: N/A

If YES, is such a report(s) attached? **NO**

If YES list the specialist reports attached below

N/A

Signature of specialist: _____ Date: _____

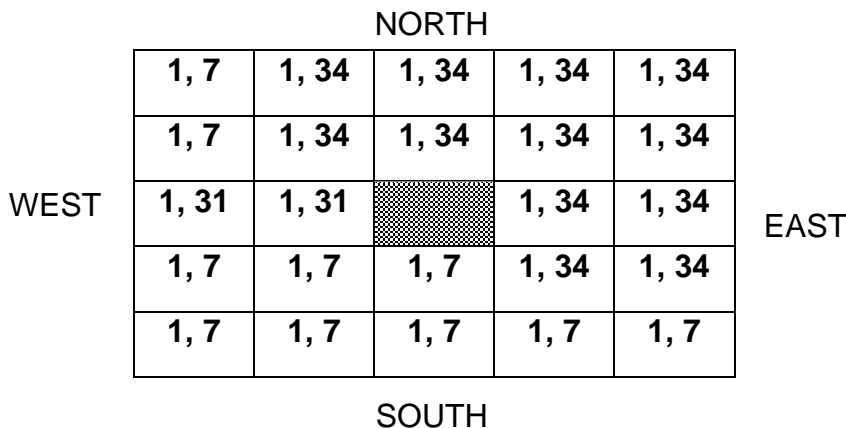
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

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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

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

This section of the pipeline and the reservoir is located in an area that is dominated by agricultural activities and the residential component is agricultural holdings, low density residential.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
 - (i) exceeding 5 000 m2 in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

	NO
--	----

If YES, explain:

N/A

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:

No archaeological findings

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

	NO
--	----

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

	NO
--	----

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

SEWER LINE SECTION 1: TOEKOMSRUS PIPELINE

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This section of the bulk sewer line runs through the Toekomsrus area and connects with the existing bulk sewer line along the R28.

This is the preferred route since this alignment of the Toekomsrus sewer pipeline doesn't cross a wetland/watercourse area.

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.

**In the case of linear activities:
Alternative:**

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

Latitude (S):	Longitude (E):
26° 12' 9.73"	27° 43' 2.76"
26° 13' 59.27"	27° 43' 22.71"
26° 15' 0.95"	27° 41' 3.84"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

- a) Is the site located on any of the following?

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Shallow water table (less than 1.5m deep)	<input type="checkbox"/>	NO
Dolomite, sinkhole or doline areas	YES	<input type="checkbox"/>
Seasonally wet soils (often close to water bodies)	YES	<input type="checkbox"/>
Unstable rocky slopes or steep slopes with loose soil	<input type="checkbox"/>	NO
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = 20%	Natural veld with scattered aliens % = 70%	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 5%	Building or other structure % =	Bare soil % = 5%

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:

N/A

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:

N/A

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

If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route.

Was a specialist consulted to assist with completing this section YES

If yes complete specialist details

Name of the specialist: Johannes Maree – Flori Scientific Services

Qualification(s) of the specialist: Pri Sci Nat

Postal address: PO Box 7222, Modimolle

Postal code: 0510

Telephone: N/A Cell: 082 564 1211

E-mail: johannes@flori.co.za Fax: N/A

Are any further specialist studies recommended by the specialist? NO

If YES, specify: N/A

If YES, is such a report(s) attached? NO

If YES list the specialist reports attached below

N/A

Signature of specialist: _____ Date: _____

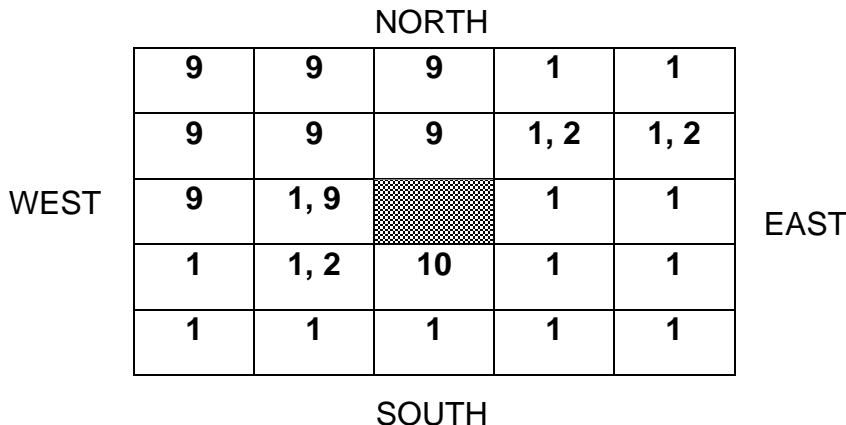
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

The Toekomsrus Section of the pipeline runs along the eastern boundary of Toekomsrus and the Mohlakeng area. These residential areas are formal residential townships with smaller patches that are still informal township. The residential areas are mostly medium to lower income areas and currently the majority of the area is services with both bulk water and sewer lines. The pipeline traverses an agricultural area that is mainly used for grazing and small patches of crop production.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
--	----

If YES, explain:

N/A

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:

No archaeological findings

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

	NO
	NO

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

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

SEWER LINE SECTION 1: TOEKOMSRUS PIPELINE – Alternative B

1. PROPERTY DESCRIPTION

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

The proposed alternative route runs parallel to the preferred Toekomsrus alignment but will cross a wetland area and crosses over a City of Johannesburg property – refer to the list attached in Appendix D

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 12' 9.67"	27° 43' 2.82"
26° 12' 54.74"	27° 42' 48.21"
26° 14' 0.14"	27° 43' 21.83"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)

	NO
YES	
YES	
	NO
	NO
	NO

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Any other unstable soil or geological feature
An area sensitive to erosion

	NO
YES	

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = 20%	Natural veld with scattered aliens % = 70%	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landsaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 5%	Building or other structure % =	Bare soil % = 5%

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:

N/A

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:

N/A

Are there any special or sensitive habitats or other natural features present on the site? [**YES**] []

If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route.

Was a specialist consulted to assist with completing this section [**YES**] []

If yes complete specialist details

Name of the specialist: Johannes Maree – Flori Scientific Services

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Qualification(s) of the specialist:	Pri Sci Nat			
Postal address:	PO Box 7222, Modimolle			
Postal code:	0510			
Telephone:	N/A	Cell:	082 564 1211	
E-mail:	johannes@flori.co.za	Fax:	N/A	
Are any further specialist studies recommended by the specialist?				NO
If YES, specify:	N/A			
If YES, is such a report(s) attached?				NO
If YES list the specialist reports attached below	N/A			

Signature of specialist: _____ Date: _____

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

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

NORTH

	9	9	9	1	1	
	9	9	9	1, 2	1, 2	
WEST	9	1, 9		1	1	EAST
	1	1, 2	10	1	1	
	1	1	1	1	1	
			SOUTH			

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

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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

Biodiversity & Aquatic Assessment

Heritage Impact Assessment

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 socio-economic description is mainly based on the Randfontein Census 2011 data (<http://www.statssa.gov.za/>).

The Toekomsrus Section of the pipeline runs along the eastern boundary of Toekomsrus and the Mohlakeng area. These residential areas are formal residential townships with smaller patches that are still informal township. The residential areas are mostly medium to lower income areas and currently the majority of the area is services with both bulk water and sewer lines. The pipeline traverses an agricultural area that is mainly used for grazing and small patches of crop production.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
 - (i) exceeding 5 000 m2 in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

NO

If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

NO

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

NO

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

SEWER LINE SECTION 2: DAN TLOOME PIPELINE

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This section of the bulk sewer line runs through the Middelvlei Agricultural Holdings in a south-easterly direction until it connects with the existing bulk sewer line along the R28.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 12' 14.7"	27° 37' 56.14"
26° 13' 50.73"	27° 40' 11.95"
26° 15' 44.77"	27° 40' 54.30"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil

YES	
YES	
YES	
	NO

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Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = 15%	Natural veld with scattered aliens % = 15%	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 35%	Building or other structure % =	Bare soil % = 35%

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:

N/A

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:

N/A

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

If YES, specify and explain:

A drainage area/ wetland was identified along this section of the route. The route cross over the Middelvlei Spruit.

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Was a specialist consulted to assist with completing this section	YES	
If yes complete specialist details		
Name of the specialist:	Johannes Maree – Flori Scientific Services	
Qualification(s) of the specialist:	Pri Sci Nat	
Postal address:	PO Box 7222, Modimolle	
Postal code:	0510	
Telephone:	N/A	Cell: 082 564 1211
E-mail:	johannes@flori.co.za	Fax: N/A
Are any further specialist studies recommended by the specialist?	<input type="checkbox"/>	NO
If YES, specify:	N/A	
If YES, is such a report(s) attached?	<input type="checkbox"/>	NO
If YES list the specialist reports attached below		
N/A		

Signature of specialist: _____ Date: _____

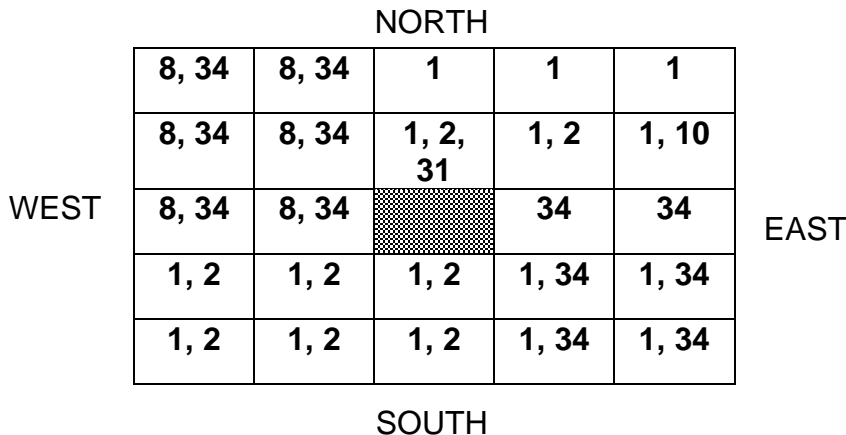
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

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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

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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 Dan Tloome Section of the pipeline runs through two residential areas the Middelvlei Agricultural Holdings and the Randfontein South Agricultural Holdings. The income class of this area varies from low to medium income. The areas are serviced but there are small informal areas along the route that is not yet serviced. Since the area is mainly agricultural there are no schools or large business/ commercial areas. There is however an open pit mining area located along the route.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
--	----

If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
--	----

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

	NO
--	----

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

SEWER LINE SECTION 3: FINSBURY PIPELINE

1. PROPERTY DESCRIPTION

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

The proposed project is located between Randfontein and Westonaria and since it is a linear activity there are several properties – refer to the list attached in Appendix D
This section of the bulk sewer line runs along the Middelvllei Spruit which is located between the Middelvllei Agricultural Holdings and the R28. The pipeline connects with the Dan Tloome bulk sewer line.

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.

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):
26° 12' 7.99"	27° 39' 39.47"
26° 13' 1.63"	27° 40' 28.56"
26° 13' 51.82"	27° 40' 11.96"

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 co-ordinates attached

Yes

The 21 digit Surveyor General code of each cadastral land parcel

Refer to the list of properties and the SG codes, attached in Appendix D

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

a) Is the site located on any of the following?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil

YES	
YES	
YES	
	NO

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Dispersive soils (soils that dissolve in water)	<input type="checkbox"/>	NO
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/>	NO
Any other unstable soil or geological feature	<input type="checkbox"/>	NO
An area sensitive to erosion	YES	<input type="checkbox"/>

(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

6. AGRICULTURE

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

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

Natural veld - good condition % = 60%	Natural veld with scattered aliens % = 40%	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 35%	Building or other structure % =	Bare soil % = 35%

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:

N/A

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:

N/A

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

If YES, specify and explain:

The route runs along the Middelvlei Spruit.

Was a specialist consulted to assist with completing this section **YES**

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If yes complete specialist details

Name of the specialist:	Johannes Maree – Flori Scientific Services			
Qualification(s) of the specialist:	Pri Sci Nat			
Postal address:	PO Box 7222, Modimolle			
Postal code:	0510			
Telephone:	N/A	Cell:	082 564 1211	
E-mail:	johannes@flori.co.za	Fax:	N/A	
Are any further specialist studies recommended by the specialist?				NO
If YES, specify:	N/A			
If YES, is such a report(s) attached?				NO
If YES list the specialist reports attached below	N/A			

Signature of specialist: _____ Date: _____

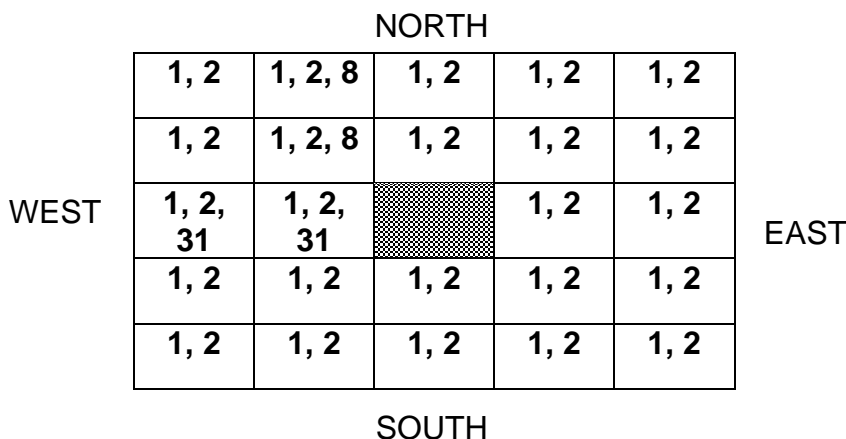
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

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

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



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

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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

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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 Finsbury Section of the pipeline runs along the Middelvlei Spruit and is located between the residential area of Middelvlei Agricultural Holdings and the R28. The income class of this area varies from low to medium income. The areas are serviced but there are small informal areas along the route that is not yet serviced. Since the area is mainly agricultural there are no schools or large business/ commercial areas. There is however an open pit mining area located along the route.

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 categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

	NO
--	----

If YES, explain:

N/A

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:

The Heritage Impact Assessment was conducted by Leonie Marais Heritage Practitioner (September 2020) and according to the findings there are no heritage sites located in the development area.

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

	NO
	NO

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

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

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

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

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

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

A meeting was held with the Environmental Management Division of Rand West City Local Municipality and comments received during the meeting has been incorporated into the report. The comments included:

- Biodiversity and Aquatic Assessments must be done
- The BAR must be submitted to the Municipality's Environmental Health Division
- The information gathered must be made available as shapefiles

The following comments were received from Environmental Management Division of Rand West City Local Municipality on the draft BAR:

- All infrastructure and construction must comply with "The Guidelines for Consultants: Appropriate Development of Infrastructure on Dolomite" from the Department of Public Works
- The development should comply with the Bio-Regional Plan for the West Rand, in all cases where land is depicted as Critical Biodiversity Areas or Ecological Support Areas.
- The activities should be in line with the proposals as contained in the IDP, SDF and EMF of RWCLM
- In the event of actions that may result in significant environmental damage, an emergency response and contingency plan must be in place to limit the extent of the environmental damage.
- Ensure compliance with Section 19 of the National Water Act (Act 36 of 1998) requires that all reasonable measures be taken to prevent any water pollution from occurring, continuing and recurring.
- The developer should comply with the National Dust Regulations.
- The GIS files must be shared with the RWCLM GIS Section.

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

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	<input type="checkbox"/>
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If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

The following comments were received from I&APs:

- There is a big problem with water pressure within the Bekkersdal area (Ward 32). Will the new reservoir and pipeline assist with this?
- Will the water be shut down during construction of the reservoir and pipeline?
- A local company wanted to know what they must do to take part in this project because they supply and install pipes, reducers and bends.
- The colours of the different pipelines are confusing and it was recommended that the same colour is used for the water pipelines and another colour for the sewer pipelines.
- The specialist studies and the EMPr must be included with the Final BAR.
- The Finsbury Sewer Line should be relocated outside the 30/32m buffer area, whichever of the two is the greatest.

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 authorisation it may have issued if it becomes apparent that the public participation process was flawed.

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

Section D has been duplicated for alternatives times (complete only when appropriate)

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

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

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

YES	
	5m ³

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

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

The construction waste generated for this project will refer to section of road or pavement that will be removed and not re-used, pipeline that might get damage and will therefore not be used, vegetation cover and in some circumstances there might be soil that is not used to fill the trenches. The construction waste will be about 80% recyclable High Density Polyethylene (HDPE) pipes.

The non-recyclable material will be disposed of at the Rand West City Local Municipality Solid Waste Disposal site by the works contractor and the HDPE pipes will be taken to a recycling plant within the Rand West City Local Municipality.

The waste will be separated since it will be taken to two separate facilities. Proper bins will be provided or designated areas will be identified for the temporary storage of the waste.

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

The non-recyclable material will be disposed of at the Rand West City Local Municipality Solid Waste Disposal site by the works contractor and the HDPE pipes will be taken to a recycling plant within the Rand West City Local Municipality. These facilities will still be confirmed.

Will the activity produce solid waste during its operational phase?

	NO
	m ³

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

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

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

	NO
--	-----------

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

The recyclable waste will be taken to a recycling facility but there is currently no alternative for the rest of the solid waste generated during the construction period. The engineer is currently awaiting the approval from Rand West City Local Municipality to dispose the solid waste at one of their facilities.

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

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

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:

The solid waste (HDPE) will be taken to a recycling facility.

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

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

	m ³
--	----------------

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

	NO
--	-----------

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

	NO
--	-----------

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

	m ³
--	----------------

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

If yes, provide the particulars of the facility:
Facility name:

--

Contact person:

--

Postal address:

--

Postal code:

--

Telephone:

--

 Cell:

--

E-mail:

--

 Fax:

--

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

N/A

Liquid effluent (domestic sewage)
Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?

YES	NO
------------	-----------

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

	m ³
--	----------------

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

	NO
--	-----------

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

	NO
--	-----------

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

N/A

The effluent, as refer to above, is the effluent associated with the construction activity and will therefore include the domestic sewage from the portable/ chemical toilets. These toilets are cleaned by the sub-contractor responsible for the toilets. The disposal of the sewage will be as per their normal operating procedures and will not be the contractor's responsibility.

Emissions into the atmosphere
Will the activity release emissions into the atmosphere?

YES	
------------	--

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

	NO
--	-----------

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

The emissions will be from the construction vehicles and dust created during the construction phase.
--

2. WATER USE

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

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

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

N/A

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

Yes, a water use permit will be required in terms of Section 21 i and Section 21 c. This is mainly due to the proximity of the water and sewer line to the wetlands that were identified. There is also a stream crossing.
 (c) impeding or diverting the flow of water in a watercourse;
 (i) altering the bed, banks, course or characteristics of a watercourse;

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

YES	
	NO

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

3. POWER SUPPLY

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

During the construction phase a generator will be provided in order to weld the pipes.

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

During the construction phase a generator will be provided in order to weld the pipes.

4. ENERGY EFFICIENCY

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

N/A

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

N/A

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

Summarise the issues raised by interested and affected parties.

The following issues were raised during the circulation of the draft BAR:

- All infrastructure and construction must comply with "The Guidelines for Consultants: Appropriate Development of Infrastructure on Dolomite" from the Department of Public Works
- The development should comply with the Bio-Regional Plan for the West Rand, in all cases where land is depicted as Critical Biodiversity Areas or Ecological Support Areas.
- The activities should be in line with the proposals as contained in the IDP, SDF and EMF of RWCLM
- In the event of actions that may result in significant environmental damage, an emergency response and contingency plan must be in place to limit the extent of the environmental damage.
- Ensure compliance with Section 19 of the National Water Act (Act 36 of 1998) requires that all reasonable measures be taken to prevent any water pollution from occurring, continuing and recurring.
- The developer should comply with the National Dust Regulations.
- The GIS files must be shared with the RWCLM GIS Section.
- There is a big problem with water pressure within the Bekkersdal area (Ward 32) and the Councillor wanted to know whether the reservoir will alleviate this and whether there will be water interruptions during the construction period.
- The colours of the different pipelines are confusing and it was recommended that the same colour is used for the water pipelines and another colour for the sewer pipelines.
- The specialist studies and the EMPr must be included with the Final BAR.
- The Finsbury Sewer Line should be relocated outside the 30/32m buffer area, whichever of the two is the greatest.

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

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

The following responses were given by the engineer and the EAP:

- All the guidelines, bio-regional plans, IDP, SDF, EMF and policies of the Municipality and on a National level was taken into consideration and incorporated in the Impact Assessment as well as the mitigation measures that were suggested as part of the EMPr.
- The Emergency Response and Contingency Plan of the RWCLM will be used for this project.
- A water use license application is under way as per the National Water Act (Act 36 of 1998) recommendations.
- The requirements for dust control are captured as part of the EMPr.
- All GIS information was submitted to RWCLM as part of the submission of the draft BAR and will be submitted as part of the 2nd round of Draft BAR circulation and the Final BAR.
- The proposed Bekkersdal Reservoir and water pipeline will alleviate the pressure that is currently experienced in Bekkersdal. During construction the water will not be closed but will be shut down for a short period when the pipes are tested and the new pipe is connected with the existing pipeline.
- The maps were changed as per the requirements from GDARD
- The EMPr and the specialist studies were submitted to GDARD as part of the BAR.
- The Finsbury Sewer Pipeline was re-aligned to run outside the buffer area.

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

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

In order to discuss the significance of the Project impacts the intensity, duration, extent and probability for each impact will be determined. The following criteria will be used:

Nature of Impact	Negative or Positive
Extent of Impact	Site Local Regional National Global
Duration of Impact	Construction period only Short term Medium term Long term Permanent
Intensity / Severity (Negative or Positive)	High Moderate – High Moderate Low- Moderate Low
Probability	Improbable Unlikely Probable Highly Probable Definite
Significance	None Low Moderate High Fatally Flawed

Proposal - Bulk Water Pipeline and associated Infrastructure (reservoirs, water towers and pump stations)

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of habitat due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance	8	4	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Vegetation will be removed in order to establish a site camp, access the site and excavate install the new pipeline.	7	3,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Destruction, further loss and fragmentation of the vegetation community classified as CBA or ESA.	12	9	Construction activities in CBA or ESA must be kept to the minimum footprint and must be rehabilitated after construction.	Moderate
	Dumping of waste outside the designated area.	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Storing of construction material and soil stockpiles outside the designated areas	7	5,25	A designated area at the construction camp site must be identified for the stockpiling of material and soil	Moderate
FAUNA & AVIFAUNA - Loss of species	Removal of the plant species	7	3,5	A Rehabilitation Plan, as per the specialists' report, must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Injury / death to fauna and avifauna due to	8	4	No poaching allowed on site. Staff members/	Low

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	poaching			contractors must be educated.	
	Dumping of waste and construction material outside the designated area	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Fires	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and excavation.	11	8,25	The ECO must walk the site before construction starts to identify any breeding areas. A Rehabilitation Plan, as per the specialist reports, must be followed after the completion of the project.	
	Movement of construction vehicles in order to access the site but also while working on site.	7	5,25	Access roads must be clearly identified and trucks must stick to the designated areas.	High
WATERCOURSES (WETLAND & STREAMS) - Damage or loss of watercourse due to construction of the Simunye_ Thusanang pipeline (stream crossings) and section of the Mohlakeng	Weeds and alien species will be introduced and seeds will spread due to disturbance.	12	9	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Some of the vegetation within the watercourse and buffer area will be removed in order to excavate and install the pipeline.	11	5,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Staff members/ Contractors might create new pathways within the watercourse areas and buffer zones.	7	3,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	10	5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	12	6	No fires allowed on site. Staff members/	Low

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pipeline along the wetland area.				contractors must be educated.	
	Construction vehicles driving through the watercourse and damaging vegetation.	11	5,5	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Dumping of construction material within the watercourse or buffer area	11	5,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Erosion and siltation will result in destruction of the remaining vegetation	7	5,25	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
SURFACE WATER - Pollution or loss of surface water	Spillage/leak of hydrocarbon or other hazardous material	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during	Moderate

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			construction trucks must be checked to avoid any cement spilling.	
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray. Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site. Moderate
	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible. Moderate
	Washing up (bathing, hand washing an washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area. Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues. Moderate
SURFACE WATER - Pollution or loss of surface water	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area. Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface. Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling. Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling. Moderate

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	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Washing up (bathing, hand washing and washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area.	Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues.	Moderate
GROUNDWATER - Pollution of the ground water system	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance	Moderate

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				and fixing of vehicles must be done on an impervious surface or with a drip tray.	
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Ablution facilities risk leakage	8	4	Ablution facilities must be maintained and cleaned. No ablution facility within the watercourse or the buffer.	Moderate
	Washing up (bathing, hand washing and washing of dishes / containers)	6	3	All washing must be done in a designated area.	Low
SOIL - Pollution and Compaction	Removal of vegetation	11	3	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance	Moderate

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				and fixing of vehicles must be done on an impervious surface or with a drip tray.	
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Erosion of soil	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Unnecessary loss of soils due to site preparation	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
	Compaction of the soil due to construction activities and movement of vehicles / machinery	6	4,5	Construction areas must be rehabilitated according to the recommendations made by the specialist	Moderate
	Washing away of soil from stockpiles	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
AIR QUALITY - Polluting or decreasing the quality of the air	Fires on site	7	3,5	No fires allowed on site. Staff members/ contractors must be educated. A fire extinguisher must be available on site in order to extinguish a fire.	Low
	Emissions from construction vehicles	7	5,25	Construction vehicles must be maintained.	Moderate
	Waste flying through the air.	7	3,5	Waste must be contained in a bin that can close. During very windy conditions the skips must be covered to avoid waste from flying through the air.	Moderate
	Cement bags / particles flying through the air	7	3,5	A designated bin or container, that can close properly, must be provided for the cement bags.	Moderate
	Particulate matter and dust flying off moving vehicles	7	5,25	Construction vehicles must be covered when transporting soil or alternatively the top layer of soil must be watered.	Low
	Particulate matter may be lifted from the site and pose a health threat	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the	Low

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				ECO/ OHS Officer.	
VISUAL IMPACT - Change in the sense of place or decreasing the aesthetic value	Site clearance / removal of vegetation	7	5,25	The site must be rehabilitated according to the recommendations by the specialist.	High
	Dust created during the construction activities	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
	Waste on site	6	4,5	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
	Visibility of the reservoirs, water towers and pump stations	9	6,75	The area around the reservoirs must be rehabilitated. If possible, plant a vegetation screen around the reservoir fence/boundary in order to screen views towards the reservoirs.	Moderate
HEALTH - Spreading of deceases/ degradation in health	Using the feld for ablution instead of toilets	6	4,5	Enough toilets must be provided. The toilets must be located in close proximity to the working area and at least two toilets must be provided at the site camp. Staff members/ contractors must be educated.	Low
	Dust created during construction	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
	Dumping of waste on site	6	3	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
	Workers not using / wearing PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
	Burning of material / hazardous waste on site	11	2,2	No fires or burning of material on site. A fire extinguisher must be provided on site.	Low
	Spreading of diseases such as COVID-19	13	6,5	Staff members/ contractors must be educated regarding the spreading of diseases and the	Low

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				correct PPE and measures must be implemented to prevent spreading.	
	Inappropriate hygiene (not covering when coughing and sneezing, not washing hands)	12	6	Staff members/ contractors must be educated regarding the spreading of diseases.	Low
	Dehydration due to a lack of drinking water	10	2	Drinking water must be provided for workers. Staff members/ Contractor must also be informed/ educated regarding this issue.	Low
NOISE	Noise from construction related activities	5	3,75	Noise must be kept to a minimum and construction activities must be kept to the normal working hours.	Low
TRAFFIC - disturbance to the flow of traffic	Increase in construction vehicles	5	3,75	Daily traffic hours must be taken into consideration when construction vehicles move from and to the site.	Moderate
	Traffic congestions due to the construction activities	5	3,75	Traffic must be regulated to avoid congestions, especially during the peak traffic hours.	Low
SAFETY & SECURITY	Theft of construction material and equipment	6	3	Security guards must be appointed to control or guard the construction camp site at night.	Low
	The site is unsafe for locals, especially kids playing on construction site or residents passing through the site	10	2	Strict measures must be implemented to demarcate the site, especially the deep excavations. The local community must be educated regarding the safety of the construction sites.	Low
	Home owner security at risk due to influx of workers into area	11	5,5	Contractors must control the influx of workers in the area. No staff members/ contractors are allowed to sleepover at the construction site.	Moderate
	Construction vehicles at risk of theft or vandalism	6	1,2	Construction vehicles must be locked in the evenings and a security must patrol the area.	Low
	Unfair treatment of staff member can lead to dispute or strikes	11	8,25	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate

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	Using inappropriate working methods or equipment	10	5	Staff members/ Contractors must be educated on how to use specific equipment or material.	Low
	Workers not wearing the correct PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
SOCIO-ECONOMIC	Risk of ground subsidence affecting other public services or landowner activities	7	3,5	Storm water management on site must be done according to the engineers specification. Construction activities that result in ground subsidence must be halted and the area rehabilitated as soon as possible.	Low
	Disruption arising during the construction activities	10	5	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate

Alternative A_1 - Alternative for the Randfontein Bulk Water Pipeline

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of habitat due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance	8	6	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Vegetation will be removed in order to establish a site camp, access the site and excavate install the new pipeline.	7	5,25	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Destruction, further loss and fragmentation of the vegetation community classified as CBA or ESA.	12	9	Construction activities in CBA or ESA must be kept to the minimum footprint and must be rehabilitated after construction.	High

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	Destruction of protected plant species	12	6	All protected plant species, as identified by the specialist must be removed before construction starts.	Low
	Staff members/ Contractors might create new pathways across the natural vegetation.	9	4,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles damaging vegetation when driving around the site or accessing the site.	8	6	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Storing of construction material and soil stockpiles outside the designated areas	7	5,25	A designated area at the construction camp site must be identified for the stockpiling of material and soil	Moderate
FAUNA & AVIFAUNA - Loss of species	Removal of the plant species	7	5,25	A Rehabilitation Plan, as per the specialists' report, must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Injury / death to fauna and avifauna due to poaching	8	4	No poaching allowed on site. Staff members/ contractors must be educated.	Low
	Dumping of waste and construction material outside the designated area	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Fires	8	4	No fires allowed on site. Staff members/	Low

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				contractors must be educated.	
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and excavation.	11	8,25	The ECO must walk the site before construction starts to identify any breeding areas. A Rehabilitation Plan, as per the specialist reports, must be followed after the completion of the project.	Moderate
	Movement of construction vehicles in order to access the site but also while working on site.	7	5,25	Access roads must be clearly identified and trucks must stick to the designated areas.	High
WATERCOURSES (WETLAND & STREAMS) - Damage or loss of wetland due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance, especially along the wetland system.	12	9	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Some of the vegetation within the watercourse and buffer area will be removed in order to excavate and install the pipeline.	11	5,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Staff members/ Contractors might create new pathways within the watercourse areas and buffer zones.	7	3,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	10	5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	12	6	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles driving through the watercourse and damaging vegetation.	11	5,5	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Dumping of construction material within the watercourse or buffer area	11	5,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for	Low

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				waste and a skip must be provided for the construction waste.	
	Erosion and siltation will result in destruction of the remaining vegetation	7	5,25	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Spillage/leak of hydrocarbon or other hazardous material	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
SURFACE WATER - Pollution or loss of surface water	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate

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	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Washing up (bathing, hand washing and washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area.	Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues.	Moderate
GROUNDWATER - Pollution of the ground water system	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Ablution facilities risk leakage	8	4	Ablution facilities must be maintained and	Moderate

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				cleaned. No ablution facility within the watercourse or the buffer.	
	Washing up (bathing, hand washing an washing of dishes / containers)	6	3	All washing must be done in a designated area.	Low
SOIL - Pollution and Compaction	Removal of vegetation	11	3	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Erosion of soil	7	3,5	Erosion measures must be in place, refer to the	Moderate

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				EMPr for details. The exposed soil must be vegetated as soon as possible.	
	Unnecessary loss of soils due to site preparation	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
	Compaction of the soil due to construction activities and movement of vehicles / machinery	6	4,5	Construction areas must be rehabilitated according to the recommendations made by the specialist	Moderate
	Washing away of soil from stockpiles	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
AIR QUALITY - Polluting or decreasing the quality of the air	Fires on site	7	3,5	No fires allowed on site. Staff members/ contractors must be educated. A fire extinguisher must be available on site in order to extinguish a fire.	Low
	Emissions from construction vehicles	7	5,25	Construction vehicles must be maintained.	Moderate
	Waste flying through the air.	7	3,5	Waste must be contained in a bin that can close. During very windy conditions the skips must be covered to avoid waste from flying through the air.	Moderate
	Cement bags / particles flying through the air	7	3,5	A designated bin or container, that can close properly, must be provided for the cement bags.	Moderate
	Particulate matter and dust flying off moving vehicles	7	5,25	Construction vehicles must be covered when transporting soil or alternatively the top layer of soil must be watered.	Low
	Particulate matter may be lifted from the site and pose a health threat	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
VISUAL IMPACT - Change in the	Site clearance / removal of vegetation	7	5,25	The site must be rehabilitated according to the recommendations by the specialist.	High
	Dust created during the construction activities	7	5,25	Dust suppression must take place during very	Low

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sense of place or decreasing the aesthetic value				windy conditions or as per the instructions of the ECO/ OHS Officer.	
	Waste on site	6	4,5	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
HEALTH - Spreading of deceases/ degradation in health	Using the feld for ablution instead of toilets	6	4,5	Enough toilets must be provided. The toilets must be located in close proximity to the working area and at least two toilets must be provided at the site camp. Staff members/ contractors must be educated.	Low
	Dust created during construction	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
	Dumping of waste on site	6	3	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
	Workers not using / wearing PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
	Burning of material / hazardous waste on site	11	2,2	No fires or burning of material on site. A fire extinguisher must be provided on site.	Low
	Spreading of diseases such as COVID-19	13	6,5	Staff members/ contractors must be educated regarding the spreading of diseases and the correct PPE and measures must be implemented to prevent spreading.	Low
	Inappropriate hygiene (not covering when coughing and sneezing, not washing hands)	12	6	Staff members/ contractors must be educated regarding the spreading of diseases.	Low
	Dehydration due to a lack of drinking water	10	2	Drinking water must be provided for workers. Staff members/ Contractor must also be informed/ educated regarding this issue.	Low
NOISE	Noise from construction related activities	5	3,75	Noise must be kept to a minimum and	Low

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				construction activities must be kept to the normal working hours.	
TRAFFIC - disturbance to the flow of traffic	Increase in construction vehicles	5	3,75	Daily traffic hours must be taken into consideration when construction vehicles move from and to the site.	Moderate
	Traffic congestions due to the construction activities	5	3,75	Traffic must be regulated to avoid congestions, especially during the peak traffic hours.	Low
SAFETY & SECURITY	Theft of construction material and equipment	6	3	Security guards must be appointed to control or guard the construction camp site at night.	Low
	The site is unsafe for locals, especially kids playing on construction site or residents passing through the site	10	2	Strict measures must be implemented to demarcate the site, especially the deep excavations. The local community must be educated regarding the safety of the construction sites.	Low
	Home owner security at risk due to influx of workers into area	11	5,5	Contractors must control the influx of workers in the area. No staff members/ contractors are allowed to sleepover at the construction site.	Moderate
	Construction vehicles at risk of theft or vandalism	6	1,2	Construction vehicles must be locked in the evenings and a security must patrol the area.	Low
	Unfair treatment of staff member can lead to dispute or strikes	11	8,25	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate
	Using inappropriate working methods or equipment	10	5	Staff members/ Contractors must be educated on how to use specific equipment or material.	Low
	Workers not wearing the correct PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
SOCIO-ECONOMIC	Risk of ground subsidence affecting other public services or landowner activities	7	3,5	Storm water management on site must be done according to the engineer's specification. Construction activities that result in ground	Low

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				subsidence must be halted and the area rehabilitated as soon as possible.	
	Disruption arising during the construction activities	10	5	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate

Alternative A_2 - Alternative for the Randfontein Bulk Water Pipeline

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of habitat due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance	8	4	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Vegetation will be removed in order to establish a site camp, access the site and excavate install the new pipeline.	7	3,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Destruction, further loss and fragmentation of the vegetation community classified as CBA or ESA.	12	9	Construction activities in CBA or ESA must be kept to the minimum footprint and must be rehabilitated after construction.	Moderate
	Destruction of protected plant species	12	6	All protected plant species, as identified by the specialist must be removed before construction starts.	Low
	Staff members/ Contractors might create new pathways across the natural vegetation.	9	4,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where	Low

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				waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	
	Burning of vegetation on site.	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles damaging vegetation when driving around the site or accessing the site.	8	6	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Storing of construction material and soil stockpiles outside the designated areas	7	5,25	A designated area at the construction camp site must be identified for the stockpiling of material and soil	Moderate
FAUNA & AVIFAUNA - Loss of species	Removal of the plant species	7	3,5	A Rehabilitation Plan, as per the specialists' report, must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Injury / death to fauna and avifauna due to poaching	8	4	No poaching allowed on site. Staff members/ contractors must be educated.	Low
	Dumping of waste and construction material outside the designated area	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Fires	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and excavation.	11	8,25	The ECO must walk the site before construction starts to identify any breeding areas. A Rehabilitation Plan, as per the specialist reports, must be followed after the completion of the project.	
	Movement of construction vehicles in order to access the site but also while working on site.	7	5,25	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	WATERCOURS	Weeds and alien species will be introduced and	12	6	Implementation of an Alien Invasive and Weed

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E (WETLAND & STREAMS) - Damage or loss of wetland due to construction activities	seeds will spread due to disturbance, especially along the wetland system.			Eradication Plan	
	Staff members/ Contractors might create new pathways within the watercourse buffer zones.	7	3,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	10	5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	12	6	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles driving through the watercourse buffer and damaging vegetation.	11	5,5	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Dumping of construction material within the watercourse or buffer area	11	5,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Erosion and siltation will result in destruction of the remaining vegetation	7	5,25	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Spillage/leak of hydrocarbon or other hazardous material	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate
SURFACE WATER - Pollution or	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an	Moderate

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loss of surface water				impervious surface. Hydrocarbon must be stored within a bunded area.	
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Washing up (bathing, hand washing a washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area.	Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues.	Moderate
GROUNDWATER - Pollution of the ground water system					
Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate	

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	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Ablution facilities risk leakage	8	4	Ablution facilities must be maintained and cleaned. No ablution facility within the watercourse or the buffer.	Moderate
	Washing up (bathing, hand washing a washing of dishes / containers)	6	3	All washing must be done in a designated area.	Low
SOIL - Pollution and Compaction	Removal of vegetation	11	3	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbon must be stored within a bunded area.	Moderate

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	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Erosion of soil	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Unnecessary loss of soils due to site preparation	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
	Compaction of the soil due to construction activities and movement of vehicles / machinery	6	4,5	Construction areas must be rehabilitated according to the recommendations made by the specialist	Moderate
	Washing away of soil from stockpiles	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
AIR QUALITY - Polluting or	Fires on site	7	3,5	No fires allowed on site. Staff members/ contractors must be educated. A fire extinguisher	Low

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decreasing the quality of the air				must be available on site in order to extinguish a fire.	
	Emissions from construction vehicles	7	5,25	Construction vehicles must be maintained.	Moderate
	Waste flying through the air.	7	3,5	Waste must be contained in a bin that can close. During very windy conditions the skips must be covered to avoid waste from flying through the air.	Moderate
	Cement bags / particles flying through the air	7	3,5	A designated bin or container, that can close properly, must be provided for the cement bags.	Moderate
	Particulate matter and dust flying off moving vehicles	7	5,25	Construction vehicles must be covered when transporting soil or alternatively the top layer of soil must be watered.	Low
	Particulate matter may be lifted from the site and pose a health threat	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
VISUAL IMPACT - Change in the sense of place or decreasing the aesthetic value	Site clearance / removal of vegetation	7	5,25	The site must be rehabilitated according to the recommendations by the specialist.	High
	Dust created during the construction activities	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
	Waste on site	6	4,5	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
HEALTH - Spreading of deceases/ degradation in health	Using the feld for ablution instead of toilets	6	4,5	Enough toilets must be provided. The toilets must be located in close proximity to the working area and at least two toilets must be provided at the site camp. Staff members/ contractors must be educated.	Low
	Dust created during construction	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low

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	Dumping of waste on site	6	3	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
	Workers not using / wearing PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
	Burning of material / hazardous waste on site	11	2,2	No fires or burning of material on site. A fire extinguisher must be provided on site.	Low
	Spreading of diseases such as COVID-19	13	6,5	Staff members/ contractors must be educated regarding the spreading of diseases and the correct PPE and measures must be implemented to prevent spreading.	Low
	Inappropriate hygiene (not covering when coughing and sneezing, not washing hands)	12	6	Staff members/ contractors must be educated regarding the spreading of diseases.	Low
	Dehydration due to a lack of drinking water	10	2	Drinking water must be provided for workers. Staff members/ Contractor must also be informed/ educated regarding this issue.	Low
NOISE	Noise from construction related activities	5	3,75	Noise must be kept to a minimum and construction activities must be kept to the normal working hours.	Low
TRAFFIC - disturbance to the flow of traffic	Increase in construction vehicles	5	3,75	Daily traffic hours must be taken into consideration when construction vehicles move from and to the site.	Moderate
	Traffic congestions due to the construction activities	5	3,75	Traffic must be regulated to avoid congestions, especially during the peak traffic hours.	Low
SAFETY & SECURITY	Theft of construction material and equipment	6	3	Security guards must be appointed to control or guard the construction camp site at night.	Low
	The site is unsafe for locals, especially kids playing on construction site or residents passing through the site	10	2	Strict measures must be implemented to demarcate the site, especially the deep excavations. The local community must be educated regarding the safety of the construction	Low

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			sites.	
	Home owner security at risk due to influx of workers into area	11	5,5	Contractors must control the influx of workers in the area. No staff members/ contractors are allowed to sleepover at the construction site. Moderate
	Construction vehicles at risk of theft or vandalism	6	1,2	Construction vehicles must be locked in the evenings and a security must patrol the area. Low
	Unfair treatment of staff member can lead to dispute or strikes	11	8,25	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges. Moderate
	Using inappropriate working methods or equipment	10	5	Staff members/ Contractors must be educated on how to use specific equipment or material. Low
	Workers not wearing the correct PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer. Low
SOCIO-ECONOMIC	Risk of ground subsidence affecting other public services or landowner activities	7	3,5	Storm water management on site must be done according to the engineer's specification. Construction activities that result in ground subsidence must be halted and the area rehabilitated as soon as possible. Low
	Disruption arising during the construction activities	10	5	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges. Moderate

Proposal – Bulk Sewer Pipeline

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of habitat due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance	8	4	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Vegetation will be removed in order to establish a site camp, access the site and excavate to install the new pipeline.	7	3,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Destruction, further loss and fragmentation of the vegetation community classified as CBA or ESA.	12	9	Construction activities in CBA or ESA must be kept to the minimum footprint and must be rehabilitated after construction.	Moderate
	Destruction of protected plant species	12	6	All protected plant species, as identified by the specialist must be removed before construction starts.	Low
	Staff members/ Contractors might create new pathways across the natural vegetation.	9	4,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low

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	Burning of vegetation on site.	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles damaging vegetation when driving around the site or accessing the site.	8	6	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Storing of construction material and soil stockpiles outside the designated areas	7	5,25	A designated area at the construction camp site must be identified for the stockpiling of material and soil	Moderate
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
FAUNA & AVIFAUNA - Loss of species	Removal of the plant species	7	3,5	A Rehabilitation Plan, as per the specialists' report, must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Injury / death to fauna and avifauna due to poaching	8	4	No poaching allowed on site. Staff members/ contractors must be educated.	Low
	Dumping of waste and construction material outside the designated area	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Fires	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and excavation.	11	8,25	The ECO must walk the site before construction starts to identify any breeding areas. A Rehabilitation Plan, as per the specialist reports, must be	

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				followed after the completion of the project.	
	Movement of construction vehicles in order to access the site but also while working on site.	7	5,25	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
WATERCOURSES (WETLAND & STREAMS) - Damage or loss of wetland due to construction of the bridge and stream crossings.	Weeds and alien species will be introduced and seeds will spread due to disturbance within the watercourse.	8	6	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Some of the vegetation within the watercourse and buffer area will be removed in order to excavate and install the pipeline and bridge.	7	3,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Staff members/ Contractors might create new pathways within the watercourse areas and buffer zones.	7	3,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
	Dumping of waste outside the designated area.	10	5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Burning of vegetation on site.	12	6	No fires allowed on site. Staff members/ contractors must be educated.	Low
	Construction vehicles driving through the watercourse and damaging vegetation.	11	5,5	Access roads must be clearly identified and trucks must stick to the designated areas.	High

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	Dumping of construction material within the watercourse or buffer area	11	5,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
	Erosion and siltation will result in destruction of the remaining vegetation	7	5,25	Erosion measures must be in place, refer to the EMP for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Spillage/leak of hydrocarbon or other hazardous material	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
SURFACE WATER - Pollution or loss of surface water	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during	Moderate

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			construction trucks must be checked to avoid any cement spilling.		
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Washing up (bathing, hand washing a washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area.	Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues.	Moderate
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
GROUNDWATER - Pollution of the ground water system	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a	Moderate

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			bunded area.	
Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
Ablution facilities risk leakage	8	4	Ablution facilities must be maintained and cleaned. No ablution facility within the watercourse or the buffer.	Moderate
Washing up (bathing, hand washing a washing of dishes / containers)	6	3	All washing must be done in a designated area.	Low
Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
SOIL - Pollution and				
Removal of vegetation	11	3	A Rehabilitation Plan, as per the specialists' recommendations must be	High

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Compaction				implemented after the excavated areas has been filled and the construction camp site has been removed.	
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate
	Erosion of soil	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The	Moderate

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			exposed soil must be vegetated as soon as possible.		
	Unnecessary loss of soils due to site preparation	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
	Compaction of the soil due to construction activities and movement of vehicles / machinery	6	4,5	Construction areas must be rehabilitated according to the recommendations made by the specialist	Moderate
	Washing away of soil from stockpiles	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
	Spillage/leak of sewer pipeline during the operational phase	11	5,5	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
AIR QUALITY - Polluting or decreasing the quality of the air	Fires on site	7	3,5	No fires allowed on site. Staff members/ contractors must be educated. A fire extinguisher must be available on site in order to extinguish a fire.	Low
	Emissions from construction vehicles	7	5,25	Construction vehicles must be maintained.	Moderate
	Waste flying through the air.	7	3,5	Waste must be contained in a bin that can close. During very windy conditions the skips must be covered to avoid waste from flying through the air.	Moderate
	Cement bags / particles flying through the air	7	3,5	A designated bin or container, that can close properly, must be provided for the cement bags.	Moderate
	Particulate matter and dust flying off moving vehicles	7	5,25	Construction vehicles must be covered	Low

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			when transporting soil or alternatively the top layer of soil must be watered.	
	Particulate matter may be lifted from the site and pose a health threat	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer. Low
VISUAL IMPACT - Change in the sense of place or decreasing the aesthetic value	Site clearance / removal of vegetation	7	5,25	The site must be rehabilitated according to the recommendations by the specialist. High
	Dust created during the construction activities	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer. Low
	Waste on site	6	4,5	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided. Low
HEALTH - Spreading of diseases/ degradation in health due to the site camp/office and construction activities	Using the field for ablution instead of toilets	6	4,5	Enough toilets must be provided. The toilets must be located in close proximity to the working area and at least two toilets must be provided at the site camp. Staff members/ contractors must be educated. Low
	Dust created during construction	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer. Low
	Dumping of waste on site	6	3	Bins must be provided for the west on site. The bins must be able to close properly and enough bins must be provided. Low

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	Workers not using / wearing PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
	Burning of material / hazardous waste on site	11	2,2	No fires or burning of material on site. A fire extinguisher must be provided on site.	Low
	Spreading of diseases such as COVID-19	13	6,5	Staff members/ contractors must be educated regarding the spreading of diseases and the correct PPE and measures must be implemented to prevent spreading.	Low
	Inappropriate hygiene (not covering when coughing and sneezing, not washing hands)	12	6	Staff members/ contractors must be educated regarding the spreading of diseases.	Low
	Dehydration due to a lack of drinking water	10	2	Drinking water must be provided for workers. Staff members/ Contractor must also be informed/ educated regarding this issue.	Low
NOISE	Noise from construction related activities	5	3,75	Noise must be kept to a minimum and construction activities must be kept to the normal working hours.	Low
TRAFFIC - disturbance to the flow of traffic	Increase in construction vehicles	5	3,75	Daily traffic hours must be taken into consideration when construction vehicles move from and to the site.	Moderate
	Traffic congestions due to the construction activities	5	3,75	Traffic must be regulated to avoid congestions, especially during the peak traffic hours.	Low
SAFETY & SECURITY	Theft of construction material and equipment	6	3	Security guards must be appointed to control or guard the construction camp site at night.	Low
	The site is unsafe for locals, especially kids playing on	12	2,4	Strict measures must be implemented	Low

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	construction site or residents passing through the site			to demarcate the site, especially the deep excavations. The local community must be educated regarding the safety of the construction sites.	
	Home owner security at risk due to influx of workers into area	11	5,5	Contractors must control the influx of workers in the area. No staff members/ contractors are allowed to sleepover at the construction site.	Moderate
	Construction vehicles at risk of theft or vandalism	6	1,2	Construction vehicles must be locked in the evenings and a security must patrol the area.	Low
	Unfair treatment of staff member can lead to dispute or strikes	11	8,25	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate
	Using inappropriate working methods or equipment	10	5	Staff members/ Contractors must be educated on how to use specific equipment or material.	Low
	Workers not wearing the correct PPE	12	2,4	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
SOCIO-ECONOMIC	Risk of ground subsidence affecting other public services or landowner activities	7	3,5	Storm water management on site must be done according to the engineer's specification. Construction activities that result in ground subsidence must be halted and the area rehabilitated as soon as possible.	Low
	Disruption arising during the construction activities	10	5	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries,	Moderate

				ablution facilities, lunch times and other privileges.	
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Alternative B - Alternative for the Toekomsrus Bulk Sewer Pipeline

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of habitat due to construction activities	Weeds and alien species will be introduced and seeds will spread due to disturbance	8	4	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Vegetation will be removed in order to establish a site camp, access the site and excavate install the new pipeline.	7	3,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Destruction, further loss and fragmentation of the vegetation community classified as CBA or ESA.	12	9	Construction activities in CBA or ESA must be kept to the minimum footprint and must be rehabilitated after construction.	Moderate

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Staff members/ Contractors might create new pathways across the natural vegetation.	9	4,5	Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.	Moderate
Dumping of waste outside the designated area.	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
Burning of vegetation on site.	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low
Construction vehicles damaging vegetation when driving around the site or accessing the site.	8	6	Access roads must be clearly identified and trucks must stick to the designated areas.	High
Storing of construction material and soil stockpiles outside the designated areas	7	5,25	A designated area at the construction camp site must be identified for the stockpiling of material and soil	Moderate

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	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
FAUNA & AVIFAUNA - Loss of species	Removal of the plant species	7	3,5	A Rehabilitation Plan, as per the specialists' report, must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Injury / death to fauna and avifauna due to poaching	8	4	No poaching allowed on site. Staff members/ contractors must be educated.	Low
	Dumping of waste and construction material outside the designated area	6	4,5	Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.	Low
	Fires	8	4	No fires allowed on site. Staff members/ contractors must be educated.	Low

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	Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and excavation.	11	8,25	The ECO must walk the site before construction starts to identify any breeding areas. A Rehabilitation Plan, as per the specialist reports, must be followed after the completion of the project.	
	Movement of construction vehicles in order to access the site but also while working on site.	7	5,25	Access roads must be clearly identified and trucks must stick to the designated areas.	High
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
WATERCOURSES (WETLAND & STREAMS) - Damage or loss of wetland due to construction of the pipeline.	Weeds and alien species will be introduced and seeds will spread due to disturbance.	12	9	Implementation of an Alien Invasive and Weed Eradication Plan	High
	Some of the vegetation within the watercourse and buffer area will be removed in order to excavate and install the pipeline.	11	5,5	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High

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<p>Staff members/ Contractors might create new pathways within the watercourse areas and buffer zones.</p>	<p>7</p>	<p>3,5</p>	<p>Staff members/ Contractors must be informed/ educated regarding environmental issues, pathways created due to construction activities must be rehabilitated.</p>	<p>Moderate</p>
<p>Dumping of waste outside the designated area.</p>	<p>10</p>	<p>5</p>	<p>Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.</p>	<p>Low</p>
<p>Burning of vegetation on site.</p>	<p>12</p>	<p>6</p>	<p>No fires allowed on site. Staff members/ contractors must be educated.</p>	<p>Low</p>
<p>Construction vehicles driving through the watercourse and damaging vegetation.</p>	<p>11</p>	<p>5,5</p>	<p>Access roads must be clearly identified and trucks must stick to the designated areas.</p>	<p>High</p>
<p>Dumping of construction material within the watercourse or buffer area</p>	<p>11</p>	<p>5,5</p>	<p>Staff members/ contractors must be educated. Clear signs must be erected indicating where waste can be disposed. Bins must be provided for waste and a skip must be provided for the construction waste.</p>	<p>Low</p>

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	Erosion and siltation will result in destruction of the remaining vegetation	7	5,25	Erosion measures must be in place, refer to the EMP for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Spillage/leak of hydrocarbon or other hazardous material	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
SURFACE WATER - Pollution or loss of surface water	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate

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Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low
Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate

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	Siltation and Erosion	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
	Washing up (bathing, hand washing a washing of dishes / containers or clothes)	6	3	All washing must be done in a designated area.	Low
	Excessive water usage	4	3	Staff members/ Contractors must be informed/ educated regarding environmental issues.	Moderate
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
GROUNDWATER - Pollution of the ground water system	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low

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Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate

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	Ablution facilities risk leakage	8	4	Ablution facilities must be maintained and cleaned. No ablution facility within the watercourse or the buffer.	Moderate
	Washing up (bathing, hand washing a washing of dishes / containers)	6	3	All washing must be done in a designated area.	Low
	Spillage/leak of sewer pipeline during the operational phase	12	6	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High
SOIL - Pollution and Compaction	Removal of vegetation	11	3	A Rehabilitation Plan, as per the specialists' recommendations must be implemented after the excavated areas has been filled and the construction camp site has been removed.	High
	Spillage of fuel / oil from construction vehicles or containers	8	4	Trucks and machinery must be checked regularly to avoid any leaks. Hazardous material must be stored in a lockable container and on an impervious surface. Hydrocarbons must be stored within a bunded area.	Moderate
	Spillage of chemicals	8	4	Chemicals must be stored in a lockable container and on an impervious surface.	Low

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	Spillage of cement	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Mixing of cement on soil surface	8	4	Cement must be mixed on an impervious surface such as a mixing tray, a wheelbarrow or a bunded area. Should cement trucks be used during construction trucks must be checked to avoid any cement spilling.	Moderate
	Maintenance or fixing of vehicles / machinery on site	8	4	No maintenance or fixing of vehicles on site. Should there be an emergency the maintenance and fixing of vehicles must be done on an impervious surface or with a drip tray.	Moderate
	Washing of vehicles / machinery on site	7	3,5	No washing of vehicles on site.	Moderate

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Erosion of soil	7	3,5	Erosion measures must be in place, refer to the EMPr for details. The exposed soil must be vegetated as soon as possible.	Moderate
Unnecessary loss of soils due to site preparation	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
Compaction of the soil due to construction activities and movement of vehicles / machinery	6	4,5	Construction areas must be rehabilitated according to the recommendations made by the specialist	Moderate
Washing away of soil from stockpiles	6	4,5	Soil must be stockpiled correctly and measured implemented to prevent soil from washing away during rainy seasons.	Moderate
Spillage/leak of sewer pipeline during the operational phase	11	5,5	Maintenance of the sewer pipeline will be essential to avoid any spills or possible leaks.	High

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AIR QUALITY - Polluting or decreasing the quality of the air	Fires on site	7	3,5	No fires allowed on site. Staff members/ contractors must be educated. A fire extinguisher must be available on site in order to extinguish a fire.	Low
	Emissions from construction vehicles	7	5,25	Construction vehicles must be maintained.	Moderate
	Waste flying through the air.	7	3,5	Waste must be contained in a bin that can close. During very windy conditions the skips must be covered to avoid waste from flying through the air.	Moderate
	Cement bags / particles flying through the air	7	3,5	A designated bin or container, that can close properly, must be provided for the cement bags.	Moderate
	Particulate matter and dust flying off moving vehicles	7	5,25	Construction vehicles must be covered when transporting soil or alternatively the top layer of soil must be watered.	Low
	Particulate matter may be lifted from the site and pose a health threat	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low

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VISUAL IMPACT - Change in the sense of place or decreasing the aesthetic value	Site clearance / removal of vegetation	7	5,25	The site must be rehabilitated according to the recommendations by the specialist.	High
	Dust created during the construction activities	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low
	Waste on site	6	4,5	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
HEALTH - Spreading of deceases/ degradation in health	Using the feld for ablution instead of toilets	6	4,5	Enough toilets must be provided. The toilets must be located in close proximity to the working area and at least two toilets must be provided at the site camp. Staff members/ contractors must be educated.	Low
	Dust created during construction	7	5,25	Dust suppression must take place during very windy conditions or as per the instructions of the ECO/ OHS Officer.	Low

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Dumping of waste on site	6	3	Bins must be provided for the waste on site. The bins must be able to close properly and enough bins must be provided.	Low
Workers not using / wearing PPE	10	2	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low
Burning of material / hazardous waste on site	11	2,2	No fires or burning of material on site. A fire extinguisher must be provided on site.	Low
Spreading of diseases such as COVID-19	13	6,5	Staff members/ contractors must be educated regarding the spreading of diseases and the correct PPE and measures must be implemented to prevent spreading.	Low
Inappropriate hygiene (not covering when coughing and sneezing, not washing hands)	12	6	Staff members/ contractors must be educated regarding the spreading of diseases.	Low
Dehydration due to a lack of drinking water	10	2	Drinking water must be provided for workers. Staff members/ Contractor must also be informed/ educated regarding this issue.	Low

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NOISE	Noise from construction related activities	5	3,75	Noise must be kept to a minimum and construction activities must be kept to the normal working hours.	Low
TRAFFIC - disturbance to the flow of traffic	Increase in construction vehicles	5	3,75	Daily traffic hours must be taken into consideration when construction vehicles move from and to the site.	Moderate
	Traffic congestions due to the construction activities	5	3,75	Traffic must be regulated to avoid congestions, especially during the peak traffic hours.	Low
SAFETY & SECURITY	Theft of construction material and equipment	6	3	Security guards must be appointed to control or guard the construction camp site at night.	Low
	The site is unsafe for locals, especially kids playing on construction site or residents passing through the site	12	2,4	Strict measures must be implemented to demarcate the site, especially the deep excavations. The local community must be educated regarding the safety of the construction sites.	Low

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Home owner security at risk due to influx of workers into area	11	5,5	Contractors must control the influx of workers in the area. No staff members/ contractors are allowed to sleepover at the construction site.	Moderate
Construction vehicles at risk of theft or vandalism	6	1,2	Construction vehicles must be locked in the evenings and a security must patrol the area.	Low
Unfair treatment of staff member can lead to dispute or strikes	11	8,25	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate
Using inappropriate working methods or equipment	10	5	Staff members/ Contractors must be educated on how to use specific equipment or material.	Low
Workers not wearing the correct PPE	12	2,4	Staff members/ contractors must be educated regarding PPE. Daily checks must be done by the OHS Officer.	Low

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SOCIO-ECONOMIC	Risk of ground subsidence affecting other public services or landowner activities	7	3,5	Storm water management on site must be done according to the engineer's specification. Construction activities that result in ground subsidence must be halted and the area rehabilitated as soon as possible.	Low
	Disruption arising during the construction activities	10	5	The project manager and contractor must ensure that workers are treated fairly, this includes payment of salaries, ablution facilities, lunch times and other privileges.	Moderate

No-Go Alternative

Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
FLORA - Damage or loss of existing vegetation	Loss of vegetation due to sewer spills or damage to existing infrastructure, current sewer system unable to cope with demand.	High	Moderate	Maintenance of the existing systems	High
FAUNA & AVIFAUNA -	Loss of fauna & flora due to sewer spills or damage to existing infrastructure, current	High	Moderate	Maintenance of the existing systems	High

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Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
Loss in species due to the decommissioning of the depots	sewer system unable to cope with demand.				
SURFACE WATER - Pollution/ Contamination of surface water (storm water/ runoff)	Pollution due to sewer spills or damage to existing infrastructure, current sewer system unable to cope with demand.	High	Moderate	Maintenance of the existing systems	High
WATERCOURSE - Pollution/ Contamination of wetlands and streams	Pollution due to sewer spills or damage to existing infrastructure, current sewer system unable to cope with demand.	High	Moderate	Maintenance of the existing systems	High
SOIL - Pollution/ Contamination of Soil	Pollution due to sewer spills or damage to existing infrastructure, current sewer system unable to cope with demand.	High	Moderate	Maintenance of the existing systems	High
HEALTH - Spreading of diseases/ degradation in health	Unhealthy conditions due to sewer spills or damage to existing infrastructure, current sewer system unable to cope with demand.	High	High	Maintenance of the existing systems	High
SOCIO-ECONOMIC	Restriction in development due to the necessary infrastructure such as bulk water	High	High		

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Aspect and Description		Impact Rating (before mitigation)	Impact Rating (after mitigation)	Mitigation Measures	Risk of the impact and mitigation not being implemented
Aspect	Description	Significance	Significance		
	and bulk sewer lines not being constructed				

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

Biodiversity & Aquatic Assessment
Heritage Impact Assessment

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

The environmental assessment was done based on the information provided by the Project Team. Refer to the specialist reports for any gaps or assumptions made by the specialist.

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

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

There is currently no decommissioning and closure phase for the proposed project.

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

N/A

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

N/A

4. CUMULATIVE IMPACTS

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

The proposed project is mainly implemented/ constructed within already developed areas or areas that has been degraded due to human activities such as informal settlements, pathways, veld fires, illegal dumping in open veld, erosion and invasion of alien invasive species. Cumulative impacts that could therefore result due to the proposed project activities are:

- Pollution due to littering or waste along the route alignments;
As mentioned above there is already a problem with littering and illegal dumping along sections of the route alignment for both the water and sewer line. If waste is not managed properly during the construction period there will be an increase in waste along the road and within the open veld areas.
- Increase of alien invasive species along the route alignment and especially along the watercourse areas;
Most of the study area has been invaded by alien invasive species, especially the sections along the road reserve and the watercourse. If the construction site is not managed properly it could lead to an increase and spreading of alien invasive species along the route alignments. Sites that haven't really been exposed to alien invasive species could be exposed to the infestation of these species.
- Loss of Habitat;
Some of the reservoirs will be constructed next to existing reservoirs which are located within areas that are marked as CBA and ESA. The removal of the additional vegetation to accommodate a second reservoir will lead to the loss of habitat within those CBA and ESA areas.

- Erosion;
Sections along the Middelvlei Spruit is already eroded and if the construction activities along the section of Middelvlei Spruit is not managed properly it will only increase the erosion along the Spruit.
- Dust is currently a problem, especially along the road reserve. Dust management must be implemented to avoid the cumulative effect of dust in the area. It is also essential that areas that were excavated are rehabilitated successfully.

5. ENVIRONMENTAL IMPACT STATEMENT

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

Proposal

After the successful implementation of mitigation measures the impact of the proposed project will be low to moderate. During construction the impacts will include general activities associated with constructions such as spillages, erosion, weeds and invasive plant species, litter and construction waste, dust, noise and traffic congestions. These impacts are however for a short term and can be mitigated and managed in order to keep the community safe, happy and protect the environment.

Medium to long term impacts would result if the area is not properly rehabilitated and will include impacts such as soil erosion, open or bare areas which could result in dust and compaction of the soil, invasion of alien invasive species and therefore a loss in indigenous flora and fauna species, loss of habitat.

The bulk sewer line will run along the Middelvlei Spruit, most of the impacts will be short term (construction period) but may result in medium to long term if not addressed properly through rehabilitation. The impacts will mainly have a moderate to high significance that will be reduced to moderate low if the mitigation measures are implemented successfully. This is also valid for the sections of the bulk water pipeline that runs through or along the identified watercourses (wetlands/ pans). The reservoirs that are located within the CBA and ESA areas will result in a loss of habitat and will have a high impact if not mitigated properly or rehabilitated after construction of the reservoirs.

During the operational phase the only concern would be leaks from the bulk sewer line which can be avoided/ mitigated if proper maintenance take place.

Alternative A_1 - Alternative for the Randfontein Bulk Water Pipeline

This alternative was the original route alignment suggested by the engineers and was done without considering the environmental aspects of the area. The alignment was done according to the shortest route possible and therefore crossed a watercourse (wetland). The impact associated with this section of the route alignment will therefore be more since it will cross a wetland area.

During construction the impacts will include general activities associated with constructions such as spillages, erosion, weeds and invasive plant species, litter and construction waste, dust, noise and traffic congestions. These impacts during construction are for a short term and can be mitigated and managed in order to keep the community safe, happy and protect the environment.

Medium to long term impacts would result if the area is not properly rehabilitated and will include impacts such as soil erosion, open or bare areas which could result in dust and compaction of the soil, invasion of alien invasive species and therefore a loss in indigenous flora and fauna species.

After the successful implementation of mitigation measures during construction the impact of the proposed project will still be high since the activity will result in the loss of habitat and a significant portion of the wetland.

Alternative A_2 - Alternative for the Randfontein Bulk Water Pipeline

This alternative was chosen since it was directed around the watercourse (wetland) and therefore didn't run through the watercourse areas. The alignment follows the boundary of the vacant property but is still within 100m of the identified watercourse area. The impact associated with this section of the route alignment will be less than Alternative A_1 but will be more than the proposed route alignment since construction will still be close to the watercourse.

After the successful implementation of mitigation measures the impact of the proposed project will be low to moderate. During construction the impacts will include general activities associated with constructions such as spillages, erosion, weeds and invasive plant species, litter and construction waste, dust, noise and traffic congestions. These impacts are however for a short term and can be mitigated and managed in order to keep the community safe, happy and protect the environment.

Medium to long term impacts would result if the area is not properly rehabilitated and will include impacts such as soil erosion, open or bare areas which could result in dust and compaction of the soil, invasion of alien invasive species and therefore a loss in indigenous flora and fauna species. This could result in a negative impact on the watercourse, especially if the impacts spread to the watercourse.

Alternative B - Alternative for the Toekomsrus Bulk Sewer Pipeline

The impact associated with this alternative route alignment will be more than the proposed route since this section of the route alignment will cross a wetland area.

After the successful implementation of mitigation measures the impact of the proposed project will be moderate. During construction the impacts will include general activities associated with constructions such as spillages, erosion, weeds and invasive plant species, litter and construction waste, dust, noise and traffic congestions. These impacts are however for a short term and can be mitigated and managed in order to keep the community safe, happy and protect the environment.

Medium to long term impacts would result if the area is not properly rehabilitated and will include impacts such as soil erosion, open or bare areas which could result in dust and compaction of the soil, invasion of alien invasive species and therefore a loss in indigenous flora and fauna species, contamination/pollution of the watercourse, loss of habitat due to contamination/pollution.

During the operational phase the biggest concern would be leaks from the bulk sewer line

which can be avoided/ mitigated if proper maintenance take place.

No-go Option

The impact associated with the No-Go option is most socio-economic and health related issues. Should the project not be implemented there is a higher risk that the current system will not be able to cope with the current demands and result in a system failure – leaks, pipes bursting or pump stations not working. This could result in health concerns but will also overflow in to the surrounding environments which will result in the pollution of open veld or watercourses.

The future development of Randfontein and Westonaria is also depended on the implementation or the construction of the bulk services. Should this not take place it will mean that future development will not get approved and constructed.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

As mentioned above the overall project will have a low to moderate impact on the environment should all the mitigation measures be implemented successfully. Without mitigation the impact can result in moderate to high impacts and further degradation of the surrounding environment. The proposed sewer pipeline can also have a negative impact during operation should the pipeline not be maintained or if the pipeline is over-used.

For alternative:

Alternative A_1 - Alternative for the Randfontein Bulk Water Pipeline-

The Alternative A_1 alignment for the Randfontein Bulk Water Line is through a wetland/pan area, this will mean that construction of the pipeline will be straight through the watercourse. The impact will be significant since soil and vegetation will be removed from this sensitive environment. The movement of trucks and people along this section will also result in the degradation or loss of biodiversity.

Alternative A_2 - Alternative for the Randfontein Bulk Water Pipeline

This alternative was considered as an alternative since it is directed around the watercourse (wetland) that was identified along this section of the route. The impact associated with this section of the route alignment will therefore be less than Alternative A_1 since it will not traverse the wetland/ pan area but if the impacts are not mitigated properly it could still have a negative impact on the watercourse.

Alternative B - Alternative for the Toekomsrus Bulk Sewer Pipeline

The proposed alignment of Alternative_B Toekomsrus Bulk Sewer Line is through a wetland area; this will mean that construction of the pipeline will be within a watercourse. The impact will be significant since soil and vegetation will be removed from this sensitive environment. The movement of trucks along this section will also result in the degradation or loss of biodiversity not just within the footprint area but also the immediate area. The additional impact is during operational phase which will result in pollution of the watercourse should there be any leaks.

7. SPATIAL DEVELOPMENT TOOLS

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

Gauteng Conservation Plan: C-Plan ver 3.3

Geographic Information Systems were used in determining the status quo of the receiving environment. The Gauteng Conservation Plan (C-Plan ver 3.3) was used to determine whether there are any sensitive surrounding environments. It was established that the proposed development falls within CBA and ESA areas.

Gauteng Environmental Management Framework (2014)

The Gauteng Environmental Management Framework (EMF) was used to determine in which zone the proposed project falls and if the project could be exempted.

In addition to the information the following information was received, although not as shapefiles it was still based on spatial development tool protocols:

- Council for Geoscience provided a map with information of boreholes and sinkholes within the vicinity of the pipelines.
- Rand West City Local Municipality provided maps of environmental sensitive areas located along the pipeline routes.

8. RECOMMENDATION OF THE PRACTITIONER

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

YES

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

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

- Adhere to the Environment Management Programme (EMPr).
- The area should be kept clear of litter and construction rubble.
- Proper site management must be undertaken.
- Appointment of an Environmental Control Officer
- An alien invasive plant species eradication plan must be implemented to protect the indigenous plant species but also to protect the avifauna habitat.
- Rehabilitation after construction must be done according to the recommendations made by the specialist.
- Construction camp to be erected where it will have the least environmental impact.
- Only indigenous vegetation should be utilised during rehabilitation.
- Disposal of waste at a registered waste disposal site.
- Proper site safety is essential to avoid any accidents.
- Proper traffic control must be implemented.

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

The West Rand City Local Municipality is quickly expanding with multiple applications for new residential areas. Unfortunately, the infrastructure can't accommodate the fast-growing area and will therefore have to be upgraded as soon as is possible in order to cater for the growth. This includes the construction of new waste water treatment works (WWTW), the upgrade of existing WWTW and the upgrade or construction of associated infrastructure such as the bulk water pipelines and bulk sewer lines. A lot of the new developments within the Municipality is located towards the south of Randfontein since there is space for expansion. This has motivated for the construction of a new WWTW as well as the construction and upgrade of the bulk water and bulk sewer line within the area.

The upgrade and construction of the bulk sewer and bulk sewer infrastructure will benefit the local community by providing decent services, especially to the communities where the services don't necessarily function effectively and will allow for further expansion of the area. During the construction period there will be several job opportunities but also opportunities to learn, especially for the local labourers. The purchase of material and hiring of equipment will support the economy and will hopefully boost the local economy.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED
(CONSIDER WHEN THE ACITIVITY IS EXPECTED TO BE CONCLUDED)

The implementation/ construction of the bulk services is essential for future development of Randfontein and Westonaria. Some of the pipelines are a necessity since the current infrastructure can't cope with the demand. The implementation of the project is therefore urgent and it is suggested that a 5-year period be granted for the Environmental Authorisation.

11. 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

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 B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

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

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

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

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