



City of Ekurhuleni

**Draft Basic Assessment Report – Dal
Fouche and Impala Mine Outfall Sewer**

Report date: 29 November 2019

Reference: GAUT002/19-20/E0190

SHANGONI
Management Services (Pty) Ltd



DRAFT BASIC ASSESSMENT REPORT

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).

Name of Applicant: City of Ekurhuleni
Project: Dal Fouche and Impala Mine Outfall Sewer
Document: Draft Basic Assessment Report
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Reference No: GAUT002/19-20/E0190

Important notice

1. This Basic Assessment Report is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.
4. A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.



6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.
10. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

Departmental details					
Gauteng Department of Agriculture and Rural Development Attention: Administrative Unit of the of the Environmental Affairs Branch P.O. Box 8769 Johannesburg 2000 Administrative Unit of the of the Environmental Affairs Branch Ground floor Diamond Building 11 Diagonal Street, Johannesburg Administrative Unit telephone number: (011) 240 3377 Department central telephone number: (011) 240 2500					
(For official use only)					
NEAS Reference Number:					
File Reference Number:					
Application Number:					
Date Received:					



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

The draft Basic Assessment Report ("BAR") will be submitted to Gauteng Department of Agriculture and Rural Development ("GDARD") within 90 days of receipt of the application.

Closure plan

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

~~Yes~~

No

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

The proposed project forms part of the City of Ekurhuleni's master plan. The proposed project will involve the construction and replacement of permanent infrastructure and will not require a closure plan.

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?

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

Yes

~~No~~

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

~~Yes~~

No

If no, why?

No comments have yet been received as this is the draft BAR. This report will be circulated for a period of 30 days (28 November 2019 to 17 January 2020) to all Interested and Affected Parties ("I&APs") including organs of state. All comments received as part of this process will be recorded and addressed as part of the final BAR to be submitted to GDARD.



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1 Activity information (Section A)

1.1 Proposal or development description

1.1.1 Project title

Dal Fouche and Impala Mine Outfall Sewer ("the Project").

1.1.2 Project description

The proposed sewage drainage system comprises of a 12 km of pipeline. The pipeline consists of 200 mm, 250 mm, 355 mm, 500 mm, 630 mm and 710 mm diameter pipelines. The existing concrete pipelines will no longer be in use but will remain underground and a new sewer pipeline will be constructed parallel to the existing sewer pipeline with high-density polyethylene ("HDPE") pipeline. HDPE pipelines were chosen due to their high life expectancy, durability and good resistance against the chemicals from the sewer sludge. The HDPE pipeline lasts longer regardless of the corrosion attacks.

The Dal Fouche portion of the Project includes the following:

- Decommissioning¹ of existing pump station and rising main. The pump station will not be demolished.
- Decommissioning of the existing gravity sewer (5.0 km). The existing gravity sewer will be left in the ground and will no longer be used.
- Construction of 5.0 km of new gravity sewer. The new gravity sewer will be constructed parallel to the existing sewer pipeline.

The Impala Mine portion of the Project includes the following:

- Decommissioning of the existing gravity sewer (7.305 km). The existing gravity sewer will be left in the ground and will no longer be used.
- Construction of a 7.305 km new gravity sewer. The new gravity sewer will be constructed parallel to the existing sewer pipeline.

1.1.3 Application details

Type of application		
The application is for an upgrade of an existing development	X	
The application is for a new development		
Other, specify		
Authorisation requirements		
Does the activity also require any authorisation other than NEMA EIA authorisation?	Yes	No
If yes, describe the legislation and the Competent Authority administering such legislation:		

¹ "decommissioning" means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned;



Type of application		
The Project requires a Water Use License ("WUL") in terms of National Water Act, Act No. 36 of 1998 ("NWA") as administered by the Department of Human Settlements, Water and Sanitation ("DHWS"). The WUL is required due to the close proximity of the Project to wetlands and the sewer pipeline crossing a wetland. Section 21 (c) and (i) water uses in terms of the NWA find application. A Water Use License Application ("WULA") is currently in progress.		
If yes, have you applied for the authorisation(s)?	Yes	No
If yes, have you received approval(s)? (attach in appropriate appendix)	Yes	No



1.2 Applicable legislation, policies and/or guidelines

A list of all applicable legislation, policies and guidelines as well as the applicability to the Project have been provided below:

Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
National Environmental Management Act, 1998 (Act No.107 of 1998 as amended).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	27 November 1998	The BAR has been compiled in terms of GN R.982, promulgated in terms of Sections 24(5), 24M and 44 of the National Environmental Management Act, Act No. 107 of 1998 ("NEMA").
Environmental Impact Assessment Regulations, as amended, GN R.982	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	07 April 2017	The BAR has been compiled according to Appendix 1 of the Environmental Impact Assessment ("EIA") Regulations, as amended.
Environmental Impact Assessment Regulations, as amended, GN 983 & GN 985- (Listing Notice 1 & 3).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	8 December 2014	The Project triggers activities listed under GN R. 983 and GN R. 985 and, therefore, a BAR process is being followed to obtain authorisation from the Gauteng Department of Agriculture and Rural Development ("GDARD").
National Water Act (Act No. 36 of 1998) as amended.	Department of Human Settlements, Water and Sanitation.	26 August 1998	As a result of the close proximity of the Project to the wetlands and the wetland crossing, water use activities as triggered include: a section 21 (c) - <i>impeding or diverting the flow of water in a watercourse</i> ; and section 21 (i) <i>altering the bed, banks, course or characteristics of a watercourse</i> . A water use licence application ("WULA") is currently in progress.



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
National Environmental Management: Air Quality Act (Act 39 of 2004).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	24 February 2005	During the construction phase, dust and the generation of noise can become a significant factor, especially to the surrounding landowners. However, if the Project is well planned and the mitigating measures proposed in the Environmental Management Programme ("EMPr") are successfully implemented, the proposed development's contribution to air pollution can become less significant.
South African Heritage Resource Act (Act No. 25 of 1999).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	28 April 1999	As this is an existing sewer pipeline, there are no known archaeological or historical sites affected by the construction of the new sewer pipeline and decommissioning of the old infrastructure. No heritage permits will, therefore, be required as part of the Project.
National Environmental Management: Biodiversity Act. (Act No. 10 of 2004).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	07 June 2004	According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche Mine to Impala Mine between Springs and Brakpan Gauteng Province</i> , dated October 2019 and compiled by Scientific Terrestrial Services: "one floral species of conservation concern ("SCC"), <i>Hypoxis hemerocallidea</i> , may inhabit the secondary grassland and freshwater habitat fringes. This species is listed as Least Concern with a



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
			declining population by the International Union for Conservation of Nature (IUCN, 2013)". Should the floral SCC be found, a biodiversity permit will need to be applied for.
The National Environmental Management: Protected Areas Act. (Act No 57 of 2003).	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	18 February 2004	The Project is not located within a protected area as defined by the National Environmental Management: Protected Areas Act. (Act No 57 of 2003).
Gauteng Environmental Management Framework.	Department of Environment, Forestry and Fisheries and the Gauteng Department of Agriculture and Rural Development.	2 March 2018	The Project is in Zone 1 of the Environmental Management Framework ("EMF") that aims to promote development infill, densification and concentration of urban development within the urban development zones as defined in the Gauteng Spatial Development Framework ("GSDF"). The Project is aligned with and is fully supportive of the objectives of the EMF.
Gauteng Conservation Plan Version 3.3 (C-Plan 3.3).	Gauteng Department of Agriculture and Rural Development.	01 October 2011	The Gauteng Conservation Plan was considered in ensuring the protection of the surrounding ecology by preventing the sterilisation of soils and biodiversity. The sewer pipeline transverses an Ecological Support Area ("ESA") and Critical Biodiversity Area ("CBA"). The proposed sewer pipeline will traverse two wetland systems, namely the Blesbokspruit Floodplain and a Channelled Valley Bottom and run adjacent to another Channelled Valley



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
			and Unchannelled Valley Bottom wetland.
Noise Control Regulations, 1999.	Gauteng Department of Agriculture and Rural Development.	20 August 1999	During the construction phase, the impact of noise could be problematic, but such impacts are generally short-term. One should note that practical mitigation measures for noise pollution are low, but certain measures can be implemented to mitigate the severity. These measures have been provided for in the EMP.
City of Ekurhuleni Regional Spatial Development Framework Region D.	City of Ekurhuleni.	July 2015	In terms of the Regional Spatial Development Framework ("RSDF") policy document, as adopted by the City of Ekurhuleni, Region D can be described as a multi-centred region as it has multiple locations of economic activity (business and industrial) and human settlements. Urban development in Region D is predominantly concentrated around Benoni, Brakpan and Springs Central Business District ("CBD"). However, the eastern, western, southern and central areas within Region D are more developed than the northern areas. The Project is located within region D of the City of Ekurhuleni RSDF.
Ekurhuleni Water Services By-Laws	City of Ekurhuleni.	06 March 2002	Applicable City of Ekurhuleni by-laws were reviewed and taken into consideration to ensure that the Project



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
			will be in adherence to the of Ekurhuleni Water Services by-law.
City of Ekurhuleni Solid Waste By-Laws.	City of Ekurhuleni.	06 March 2002	Applicable City of Ekurhuleni by-laws were reviewed and taken into consideration to ensure that the Project will be in adherence to the City of Ekurhuleni solid waste by-laws.
City of Ekurhuleni Environmental Policy.	City of Ekurhuleni.	14 December 2012	<p>The policy aims at ensuring a safe and healthy environment for those living and working within the City of Ekurhuleni and that infrastructure and development incorporate environmental considerations.</p> <p>The Project area is already disturbed as it is an existing sewer outfall, therefore, the new sewer pipeline will run parallel to the existing sewer pipeline within the servitude.</p>
Ekurhuleni Biodiversity and Open Space Strategy.	City of Ekurhuleni	01 May 2009	The Ekurhuleni Biodiversity and Open Space Strategy (“EBOS”) serves as a strategy for biodiversity and open space in the area and is supported by a range of implementation policies that are integral to the Spatial Development Frameworks. The new sewer pipeline will transverse the unnamed tributary of the Blesbokspruit River, which is situated 30 km upstream from the Blesbokspruit Ramsar site according to EBOS.



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
DEA Guideline on Need and Desirability, Department of Environmental Affairs	Department of Environment, Forestry and Fisheries.	January 2017	The consideration of the Project in context of the various spatial planning tools and policy applicable to the Project area have been assessed as part of this report. The “need and desirability” has been determined by considering the broader community’s needs and interests as reflected in the RSDF and EMF for the area.
DEA Public Participation guideline in terms of NEMA.	Department of Environment, Forestry and Fisheries.	January 2017	<p>According to Section (2)(4)(f) and (o) of NEMA: - the participation of all I&APs in environmental governance must be promoted and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured; and the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people’s common heritage.</p> <p>The Public Participation Process (“PPP”) conducted as part of the Basic Assessment process is in line with the above-mentioned principles. The PPP undertaken is compliant with any regulated procedure related to public consultation and information gathering through the PPP.</p>



Title of legislation, policy or guideline:	Administering authority:	Promulgation date	Compliance and response of the Project
Guideline 5: Assessment of Alternatives and Impacts in support of the environmental Impact Assessment Regulations.	Department of Environment, Forestry and Fisheries.	June 2006	This guideline was considered during the assessment of potential alternatives for the Project.



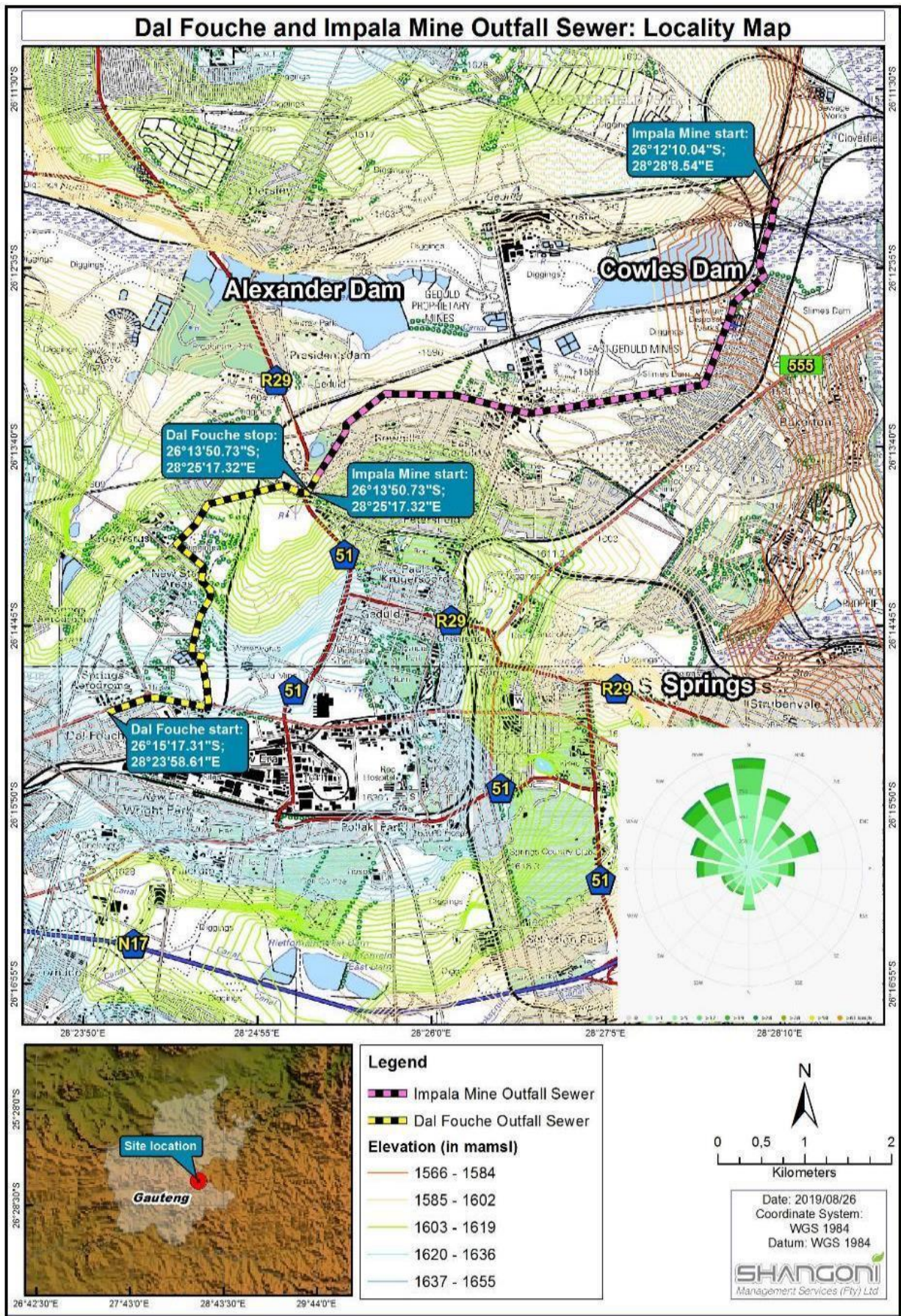


Figure 1: Locality Map

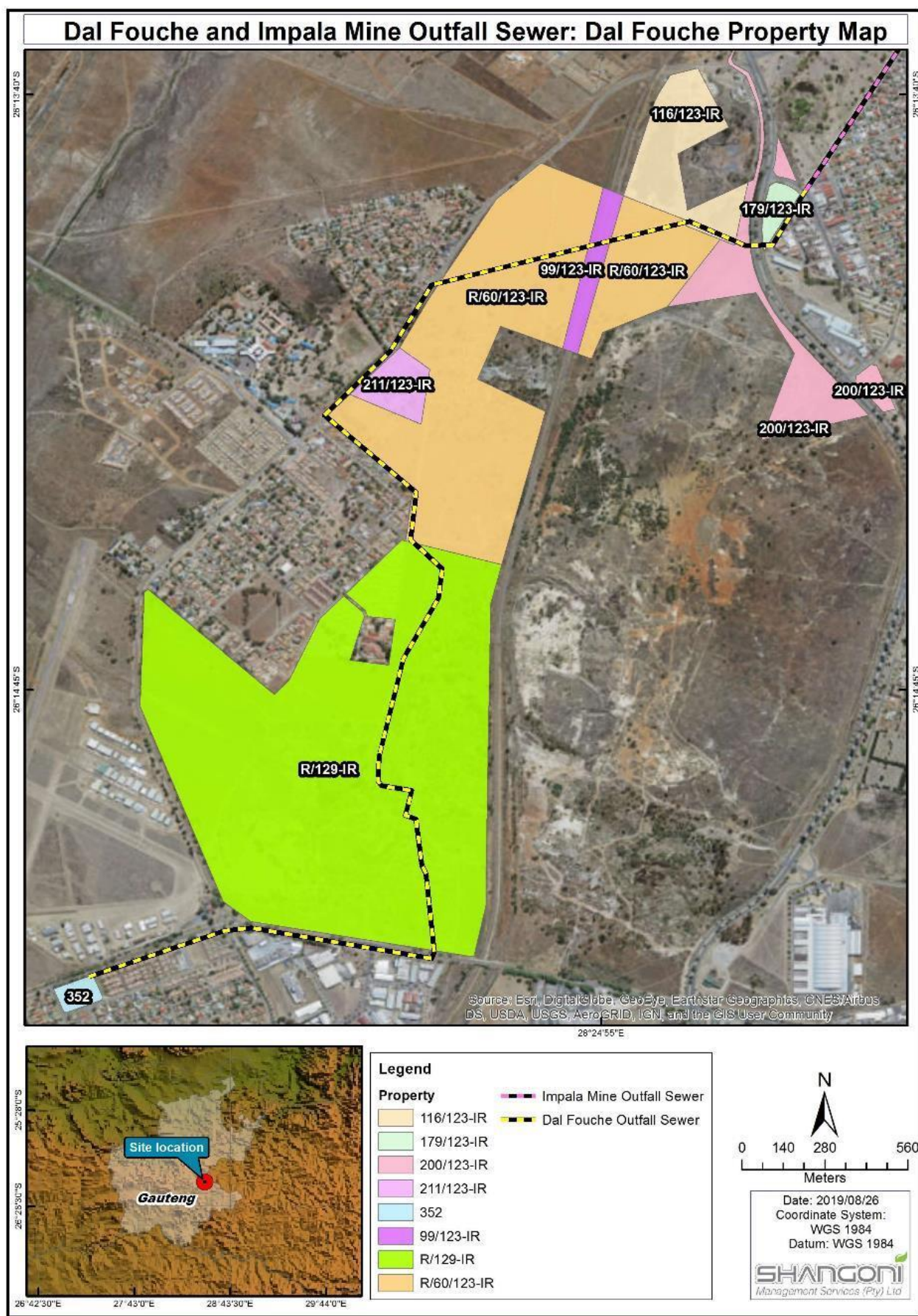


Figure 2:Affected properties map for Dal Fouche pipeline route

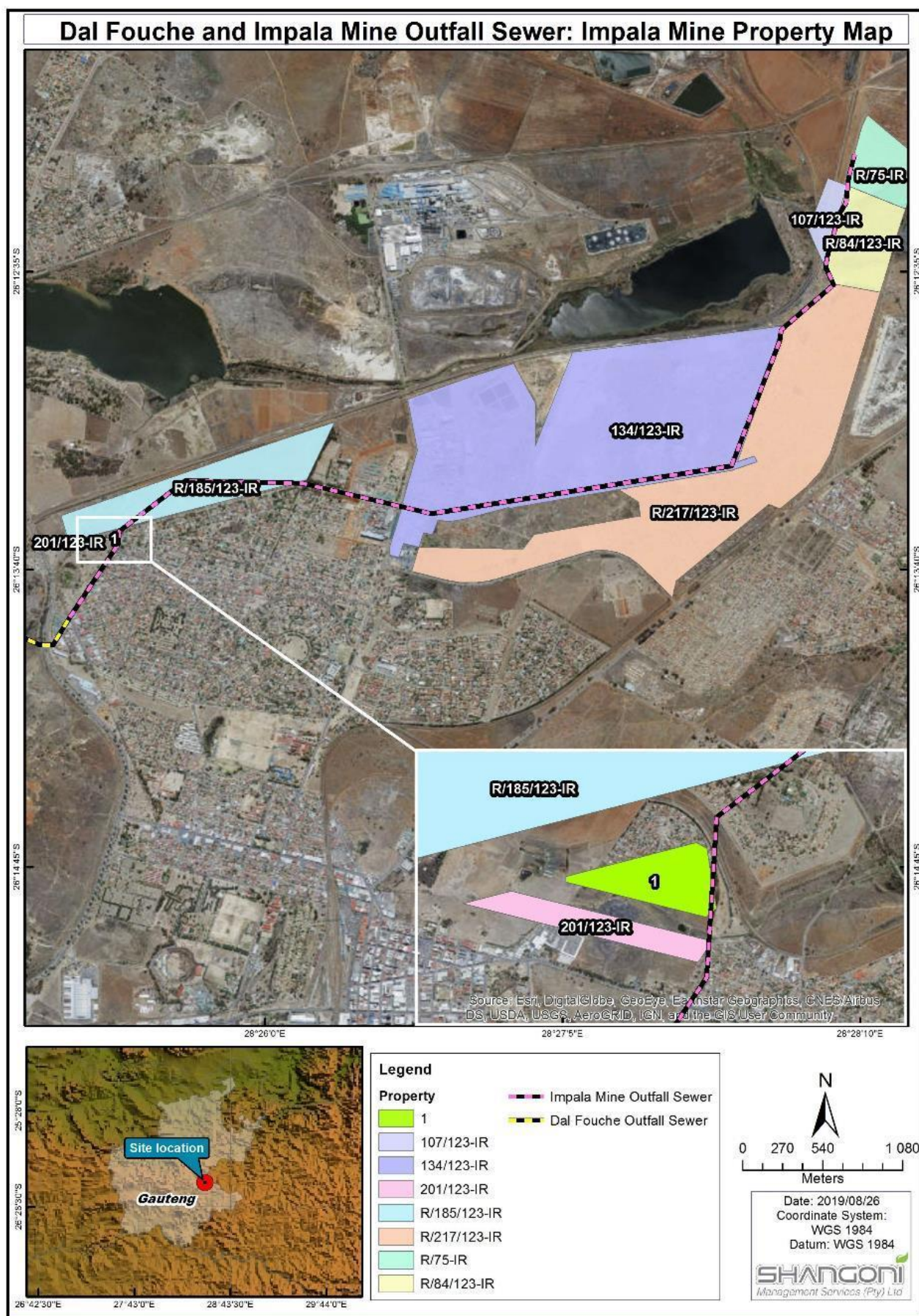


Figure 3: Affected properties map for Impala Mine

1.3 Alternatives

The alternatives for the Project have been assessed in terms of the *DEA Integrated Environmental Management Guideline Series: Guideline 5*. A description of the types of alternatives considered as well as the process followed to determine and assess each alternative have been provided in below.

Alternative assessment methodology
<p>The alternative assessment considers site, layout and technology and design alternatives. The alternative assessment was based on the following aspects:</p> <ul style="list-style-type: none"> • Environmental; • Technical/Engineering; • Economical and • Social. <p>A description of the alternatives considered will be describes in the section below.</p>

Description of alternatives considered:

Site alternatives	
Route following the existing sewage line footprint area (preferred).	<p>Environmental: Minimal surface disturbance as the pipeline will be located within the existing servitude that is already disturbed and allocated for such use.</p> <p>Technical/Engineering: Less earthworks required to construct the pipeline as previous earthworks were already undertaken for the installation of the exiting pipelines.</p> <p>Economical: No new servitude registration required.</p> <p>Social: The impacts on the community will be minimal as the activities will take place within the existing servitude allocated for such use.</p>
New route located outside of the existing sewage line footprint area (not considered).	No route alternatives have been identified by the City of Ekurhuleni and the preferred route is the only option considered for the Project.

Layout alternatives	
Place new pipeline and leave existing pipelines (preferred)	<p>Environmental: Low disturbance to environment with no waste generated from removal of old concrete pipelines.</p> <p>Technical/Engineering: Easy installation as new pipelines can be installed without having to remove the old pipelines.</p> <p>Economical: No capital expenditure for the removal of old existing concrete pipelines.</p> <p>Social: Installation can be done simultaneously while the existing pipeline is still in operation.</p>
Placement of new pipeline and removal of old pipeline.	Environmental: Additional disturbance of area due to removal of old concrete pipelines resulting in waste storage of concrete on site and disposal to landfill.



Layout alternatives	
	<p>Technical/Engineering: Old pipelines should be removed resulting in additional equipment required.</p> <p>Economical: Cost intensive as old pipelines require removal and transportation to a landfill site for disposal.</p> <p>Social: Additional construction time required as old pipelines will need to be removed and the duration of noise and dust pollution nuisances will prolong.</p>

Technology and design alternative	
Use of HDPE pipelines (preferred)	<p>Environmental: Less risk of sewage pollution into the environment due to good corrosion resistance.</p> <p>Technical/Engineering: Less equipment required for installation.</p> <p>Economical: Cost effective due to long life expectancy of HDPE pipeline and low capital expenditure for installation.</p> <p>Social: Less risk of sewage pollution resulting in health hazards due to good corrosion resistance.</p>
Use of concrete pipelines	<p>Environmental: Increase possibility of leaks from the sewer pipeline due to corrodibility of the concrete.</p> <p>Technical/Engineering: More equipment will be required to install concrete pipelines than HDPE.</p> <p>Economical: The capital expenditure to use concrete pipelines will be higher than HDPE.</p> <p>Social: Possibility of health hazard due to corrosion of concrete pipelines that may result in sewage pollution.</p>

Motivation for not providing an alternative for the proposed project.

Alternatives have been provided above, therefore; no motivation is required.

1.4 Physical size of the activity

The total physical size (footprint) of the Project is provided below. It must be noted that the footprint assessments indicated below are inclusive of all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas.

Proposed project	
Size of the activity in hectares (Ha)	4.8 ha
Size of the activity in square meters (m ²)	48 000 m ²
<i>Linear activities</i>	
Length of the activity (Linear activities)	12 000 m
Size of the site(s) or servitudes (within which the above footprints will occur).	4 m



1.5 Site access

The Dal Fouche sewer pipeline can be accessed on Olympia-, Main Reef-, Hospital- and Boundary Road. The Impala Mine sewer pipeline can be accessed on Boundary Road, and Cowles street. There are sections on both pipelines that do not have any access roads and temporary access roads will be created as part of the Project. These temporary access roads do not trigger a listed activity as the entire sewer pipeline is in an urban zone.

AS PER THE GDARD REQUIREMENTS POINTS 1.6 TO 1.8 OF SECTION A MUST BE DUPLICATED WHERE RELEVANT FOR ALTERNATIVES

Section A 1.6-1.8 finds application to all alternatives.

1.6 Layout or route plan

Refer to Appendix A for Layout Plan.

1.7 Site photographs

Refer to Appendix B for site photographs.

1.8 Facility illustrations

Refer to Appendix C for Facility Illustrations.



2 Description of receiving environment (Section B)

The proposed activity is a linear Project and Section B has been completed for each section of the proposed site that has a significantly different environment. Refer to Figure 4 for the sections of the sewer pipeline.

The number of times Section B has been duplicated for sections of the route

8

The proposed pipeline has been separated into 8 sections according to the environmental characteristics, as it is a linear activity. The sections follow the points as depicted in Figure 4.

The sections are as follows:

Dal Fouche:

- Section A – B,
- Section B – C,
- Section C – D,
- Section D – E.

Impala Mine:

- Section A – B.
- Section B – C.
- Section C – D.
- Section D – E.



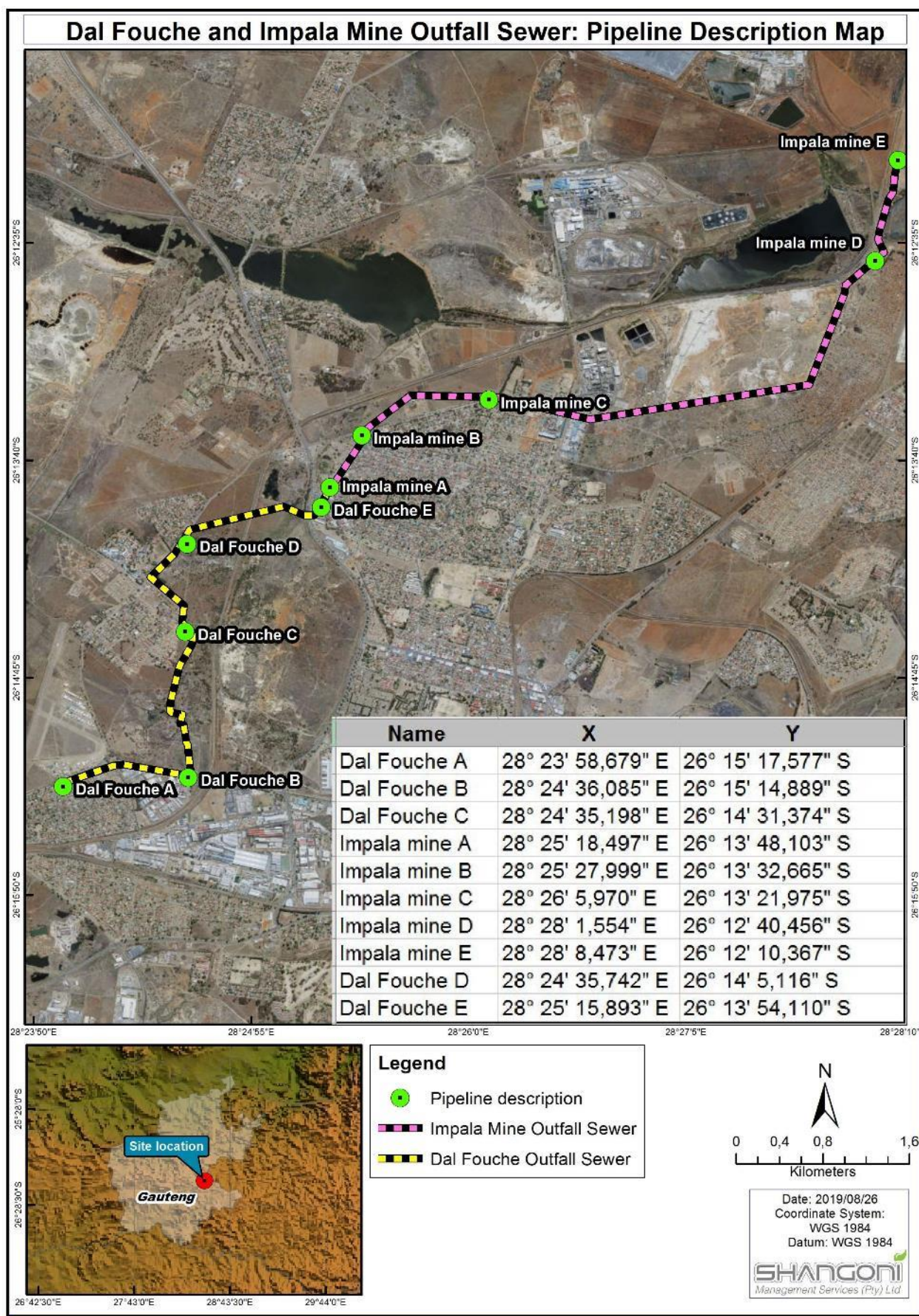


Figure 4: Proposed Dal Fouche and Impala Mine pipeline route sections A - E

2.1 Dal Fouche section A - B

2.1.1 Property description

Section A to B of the Dal Fouche route is located within the urban areas of Brenhurst in Olympia road. The surrounding land use is the residential Brenhurst and the adjacent New Era industrial area. Section A of the Dal Fouche route starts near the Dal Fouche pump station and runs along Olympia road where it joins Main reef road.

Section A – B of the proposed pipeline route will be located within an existing servitude and will affect the following properties:

- Farm Dal Fouche 352-IR, and
- Portion 53 of the farm Geduld 123-IR.

2.1.2 Activity position

The position of section A – B of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point A)	26° 15' 16.46"	28° 23' 58.98"
Middle point between point A and B	26° 15' 11.71"	28° 24' 15.33"
End point (Point B)	26° 15' 14.29"	28° 24' 36.33"
Section A to B of the proposed pipeline route is approximately 1045.00 m in length.		

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

farm Dal Fouche 352-IR and,																				
T	0	I	R	0	0	0	0	0	0	0	0	0	3	5	2	0	0	0	0	0
Portion 53 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	5	3

2.1.3 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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2.1.4 Location in landscape

Ridgeline	Plateau	Side—slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.1.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.1.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.1.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site.	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	70%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%
Landscaped (vegetation)	0%
Sport field	0%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	30%
Bare soil	0%



2.1.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.1.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
<p><u>If Yes, specify and explain:</u></p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i> dated October 2019 and compiled by Scientific Terrestrial Services section B of the proposed pipeline route is located within the Critically Endangered (“CR”) Soweto Highveld Grasslands eco-region as indicated in figure 3 and 4 of aforementioned report. Section B is located within a Critical Biodiversity Area (“CBA”) area as per the Gauteng C-Plan (Refer to figure 4 of Scientific Terrestrial Services, October 2019).</p> <p>No species of conservation concern (“SCC”) were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p> <p>According to figure 9 in the Biodiversity assessment compiled by Scientific Terrestrial Services, the terrestrial habitat sensitivity of section B of the pipeline is considered moderately low.</p>		


2.1.10 Specialist Information

Specialist input in the sections above.	Yes	No
<p>List of specialist studies used to assist with completing the above sections:</p> <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> 		



Specialists

Table 1: Ecological Specialist

Ecological Specialist Details				
Company	Scientific Terrestrial Services (STS)			
Name of the Report	<i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i>			
Name of the specialist:	C. Hooton			
Qualification(s) of the specialist:	BTech Nature Conservation (Tshwane University of Technology) National Diploma Nature Conservation (Tshwane University of Technology)			
Postal address:	P.O Box 751779 Gardenview			
Postal code:	2047			
Contact Details	Telephone	011 616 7893	Cell	
	Fax	086 724 3132	Email	admin@sasenvgroup.co.za
Are any further specialist studies recommended by the specialist?				Yes No
If Yes, specify:				
If Yes, is such a report(s) attached?				
If Yes list the specialist reports attached below:				
Signature of specialist:				

2.1.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open-cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A
34. Small Holdings	35. Other: Olympia and Main Reef road	

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 requested from the Department.	Yes	No
If Yes , have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).

Land Use Matrix: Section A - B

WEST	NORTH					EAST
	22	22	1	1	1	
	22	22	1	1	1	
	35	35			35	35
	9	9	9	9	9	9
	9	9	9	9	9	9



	SOUTH	
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This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.1.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project have been assessed and forms part of the socio-economic context description provided below.

The following information was sourced from the *2007 Environmental Management Framework for the City of Ekurhuleni and the Integrated Development Plan ("IDP") for City of Ekurhuleni 2017/18 to 2020/21*.

Population trends: The 2016 Community Survey shows that the City of Ekurhuleni has an estimated population of 3 379 104, an increase by 200 634 people from 3 178 470 in the 2011 census. The population growth rate has declined from 4% in 1996 and 2001 to 2.47% between 2001 and 2013. The population growth of in the City of Ekurhuleni is attributed to the net migration into the City, as together with Tshwane and Johannesburg, are the largest recipients of in-migration in the country. The population of the City of Ekurhuleni is rooted and typical of the South African population in general. The city is undergoing a demographic transition at the base of the pyramid driven largely by declining fertility, that is observable for the whole of South Africa. Furthermore, the effect of in-migration of typically the 25 - 64-year-old people due to the search for economic opportunities within the city.

Education: According to the IDP, the level of education within the City of Ekurhuleni is improving as the number of people without any schooling decreased from 2005 to 2015 with an average annual rate of -4.83%, while the number of people within the 'matric only' category, increased from 538,000 to 818,000. The overall level of people with 'matric' or higher education shows progress, as the number of people with 'matric and a certificate/diploma' increased with an average annual rate of 4.82%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 6.33%.

Economic analysis: The structure of the City of Ekurhuleni's economy is dominated by four sectors: manufacturing, finance and business services, community services and general government and to a lesser extent the trade and hospitality sector. Over the past 15 years, major structural shifts have occurred in the structure of the economy principally involving the decline of the dominance of the manufacturing sector that dropped from 30.3% in 2000 to 22.7% in 2015 and a comparable increase of the contribution of the finance and business services sector that increased its share from 14.8% in 2011 to 21.3% in 2015. The continuing decline of the manufacturing sector is a big challenge for the municipality and for that reason the revitalization of the manufacturing sector is a key strategic focus area for the municipality.

Employment: In 2015, the City of Ekurhuleni employed 1.19 million people which is 23.92% of the total employment in Gauteng (4.96 million), 7.71% of total employment in South Africa (15.4 million). Employment within the City of Ekurhuleni increased annually at an average rate of 2.54% from 2005 to 2015. The City of Ekurhuleni's average annual employment growth rate of 2.54% exceeds the average annual labour force growth rate of 2.33%.

The socio-economic context of the proposed pipeline route (Section A to B) is characterised by open undeveloped land to the east, the Springs Airfield to the north and residential areas to the south.

The Project involves the improvement of sanitation services by constructing a new sewer pipeline that will run parallel to the existing Dal Fouche and Impala Outfall Sewer Line. By constructing a new pipeline, it will ensure a longer life span, therefore, reducing the maintenance of the infrastructure.



2.1.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No
Presence 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 20 m) to the site?	Yes	No
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.2 Dal Fouche section B - C

2.2.1 Property description

Section B to C is located within the urban area of Krugersrus within a servitude located on portion 53 of the farm Geduld 129-IR.

2.2.2 Activity position

The position of section B to C of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point B)	26° 15' 14.29"	28° 24' 36.33"
Middle point (Point between points B and C)	26° 14' 51.64"	28° 24' 31.42"
End point (Point C)	26° 14' 29.69"	28° 24' 36.11"
Section B to C of the proposed pipeline route is approximately 1054.70 m in length.		

The 21-digit Surveyor General code of each cadastral land parcel.

On portion 53 of the farm Geduld 129-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	9	0	0	0	5	3



2.2.3 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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2.2.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.2.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.2.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.2.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site.	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	85%
Natural veld with heavy alien infestation	15%
Veld dominated by alien species	0%



Groundcover present on the site.	% Cover
Landscaped (vegetation)	0%
Sport field	0%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	0%
Bare soil	0%

2.2.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.2.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
<p>If Yes, specify and explain:</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i> dated October 2019 and compiled by Scientific Terrestrial Services section B to C of the proposed pipeline route transverses through sections of the CR Soweto Highveld Grasslands eco-region as indicated in figure 3 and 4 of aforementioned report. Sections between B and C is located within a CBA area as per the Gauteng C-Plan.</p> <p>No SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p> <p>According to figure 9 in the Biodiversity assessment compiled by Scientific Terrestrial Services, the terrestrial habitat sensitivity of section B of the pipeline is considered moderately low.</p>		

2.2.10 Specialist Information

Specialist input in the sections above.	Yes	No
List of specialist studies used to assist with completing the above sections:		



- Scientific Terrestrial Services, October 2019. *Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.*

Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Dal Fouche pipeline. Refer to Table 1 in section 2.1 above for the specialist details.

2.2.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam^A
34. Small Holdings	35. Other:	

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 looks 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 requested from the Department.	Yes	No
If Yes, have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section B to C

WEST	NORTH					EAST
	9	9	1	1	1	
	1	1	1	1	1	
	1	1	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <td>1</td> <td>1</td>	1	1	
	1	1	1	1	1	
	1	1	1	1	1	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.2.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project have been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section C of the proposed pipeline is associated with the socio-economic activities of medium to high residential properties.

2.2.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No



Presence 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 20 m) to the site?	Yes	No
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.3 Dal Fouche section C - D

2.3.1 Property description

Section C to D is located within the urban area of Krugersrus within the residential suburb of Brakpan.

Section C to D of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following properties:

- Portion 211 of the farm Geduld 123-IR,
- Remainder of portion 60 of the farm Geduld 123-IR.

2.3.2 Activity position

The position of section C to D of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point C)	26° 14' 29.69"	28° 24' 36.11"
Middle point (Point between C and D)	26° 14' 15.10"	28° 24' 25.34"
End point (Point D)	26° 14' 03.78"	28° 24' 34.91"
Section C to D pipeline route is approximately 1040 m in length.		

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

On portion 211 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	1	1
On the remainder of portion 60 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	6	0



2.3.3 Gradient of the site

Flat	1:50 – 1:20	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5
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2.3.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.3.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.3.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.3.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	25%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%



Groundcover present on the site	% Cover
Landscaped (vegetation)	0%
Sport field	5%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	75%
Bare soil	0%

2.3.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.3.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
<p>If Yes, specify and explain:</p> <p>Section C to D of the proposed pipeline is located within the urban area of Krugerus.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i>, a section of the pipeline is located within a CBA as per the Gauteng C-Plan illustrated in figure 4 of aforementioned report.</p> <p>No SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p>		

2.3.10 Specialist Information

Specialist input in the sections above.	Yes	No
List of specialist studies used to assist with completing the above sections:		



- Scientific Terrestrial Services, October 2019. *Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.*

Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Dal Fouche pipeline. Refer to Table 1 in section 2.1 above for the specialist details.

2.3.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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/pole 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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam^A
34. Small Holdings	35. Other:	

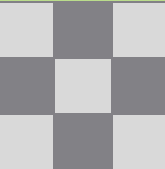
The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been requested from the Department.	Yes	No
If Yes , have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section C to D

WEST	NORTH					EAST
	9	1	1	9	9	
	9	1	1	1	1	
	9	1		1	1	
	9	1	1	1	1	
	9	1	1	1	1	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.3.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project have been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section C to D of the proposed pipeline is associated with the Krugersrus Residential Area. The Project will improve sanitation capacity and efficiency in the Greater Brakpan area.

2.3.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No
Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage	Yes	No



Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?		
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix		

2.4 Dal Fouche section D - E

2.4.1 Property description

Section D to E is located within the urban area of Krugersrus within the residential suburb of Brakpan. Section D to E of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following properties:

- Remainder of portion 60 of the farm Geduld 123-IR.
- Road servitude.

2.4.2 Activity position

The position of section D to E of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point D)	26° 14' 03.78"	28° 24' 34.91"
Middle point (Point between D and E)	26° 13' 56.89"	28° 24' 55.03"
End point (Point E)	26° 13' 52.54"	28° 25' 16.35"
Section C to D pipeline route is approximately 1040 m in length.		

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

On the remainder of portion 60 of the farm Geduld 123-IR.

T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	6	0
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2.4.3 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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2.4.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.4.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.4.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.4.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	75%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%
Landscaped (vegetation)	0%
Sport field	0%
Cultivated land	0%



Groundcover present on the site	% Cover
Paved surface (hard landscaping)	0%
Building or other structure	25%
Bare soil	0%

2.4.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.4.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
If Yes, specify and explain:		
<p>Section D to E of the proposed pipeline is located within the urban area of Krugerus.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i>, dated October 2019 and compiled by Scientific Terrestrial Services and illustrated figure 4 of aforementioned report, the entire section of the pipeline is located within a CBA as per the Gauteng C-Plan.</p> <p>No species of conservation concern SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p>		

2.4.10 Specialist Information

Specialist input in the sections above.	YES	No
<p>List of specialist studies used to assist with completing the above sections:</p> <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> 		



Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Dal Fouche pipeline. Refer to Table 1 in section 2.1 above for the specialist details.

2.4.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam^A
34. Small Holdings	35. Other:	

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 requested from the Department.	Yes	No
If Yes, have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section D to E

WEST	NORTH					EAST
	9	1	1	1	9	
	9	1	1	1	9	
	9	1	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <td>1</td> <td>1</td>	1	1	
	9	1	1	1	1	
	9	1	1	1	1	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.4.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project has been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section D to E of the proposed pipeline is associated with the Krugersrus Residential Area. The Project will improve sanitation capacity and efficiency in the Greater Brakpan area.

2.4.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No
Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage	Yes	No



Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?		
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.5 Impala Mine Section A - B

2.5.1 Property description

Section A to B is located within the urban area of Pietersfield within the residential suburb of Brakpan.

Section A to B of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following properties:

- Remainder of portion 185 of the farm Geduld 123-IR.
- Portion 201 of the farm Geduld 123-IR.

2.5.2 Activity position

The position of section A to B of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point A)	26° 13' 47.24"	28° 25' 19.18"
Middle point (Point between A and B)	26° 13' 40.62"	28° 25' 23.91"
End point (Point B)	26° 13' 31.12"	28° 25' 28.35"
Section A to B pipeline route is approximately 530 m in length.		

The 21-digit Surveyor General code of each cadastral land parcel.

On the remainder of portion 185 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	1	8	5
On portion 201 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	0	1



2.5.3 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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2.5.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.5.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
<u>If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)</u>		
Presence of caves within 300 m radius of the site(s)	Yes	No
<u>If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)</u>		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.5.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.5.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	50%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%



Groundcover present on the site	% Cover
Landscaped (vegetation)	0%
Sport field	5%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	50%
Bare soil	0%

2.5.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
<u>If YES, specify and explain</u>		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
<u>If YES, specify and explain</u>		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.5.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
<u>If Yes, specify and explain:</u>		
<p>Section A to B of the proposed pipeline is located within the urban area of Pietersfield within the residential suburb of Welgedacht.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i>, dated October 2019 and compiled by Scientific Terrestrial Services the entire section of the pipeline is located within a CBA as per the Gauteng C-Plan, as illustrated in figure 4 of aforementioned report. Figure 9 of aforementioned report illustrates the terrestrial habitat sensitivity of section B of the pipeline is considered moderately low as in the Biodiversity assessment compiled by Scientific Terrestrial Services.</p> <p>No SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p> <p>According to the <i>Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province</i> dated October 2019 compiled by Scientific Aquatic Services, figure 13 illustrates an unchanneled valley bottom wetland is located within 100 m of the proposed pipeline.</p>		



2.5.10 Specialist Information

Specialist input in the sections above.	Yes	No
<p>List of specialist studies used to assist with completing the above sections:</p> <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> Scientific Aquatic Services, October 2019. <i>Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province.</i> 		

Specialist

Table 1: Ecological Specialist


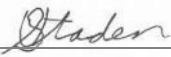
Ecological Specialist Details				
Company	Scientific Terrestrial Services (STS)			
Name of the Report	<i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i>			
Name of the specialist:	C Hooton			
Qualification(s) of the specialist:	BTech Nature Conservation (Tshwane University of Technology) National Diploma Nature Conservation (Tshwane University of Technology)			
Postal address:	P.O Box 751779 Gardenview			
Postal code:	2047			
Contact Details	Telephone	011 616 7893	Cell	
	Fax	086 724 3132	Email	admin@sasenvgroup.co.za
Are any further specialist studies recommended by the specialist?				Yes No
If Yes, specify:				
If Yes, is such a report(s) attached?				
If Yes list the specialist reports attached below:				
Signature of specialist:				

Table 2: Freshwater Specialist

Freshwater Specialist Details	
Company	Scientific Aquatic Services (SAS)



Freshwater Specialist Details				
Name of Report	<i>Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province.</i>			
Name of the specialist:	Stephen van Staden,			
Qualification(s) of the specialist:	MSc (Environmental Management) (University of Johannesburg) BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg) BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)			
Postal address:	PO Box 751779 Gardenview			
Postal code:	2047			
Contact Details	Telephone	011 616 7893	Cell	083 415 2356
	Fax	086 724 3132	Email	stephen@sasenvgroup.co.za
Are any further specialist studies recommended by the specialist?				No
If Yes, specify:				
If Yes, is such a report(s) attached?				
If Yes list the specialist reports attached below:				
Signature of specialist:				
Date:	October 2018			

2.5.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam^A
34. Small Holdings	35. Other:	

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 requested from the Department.	Yes	No
If Yes , have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).

Land Use Matrix: Section A to B

WEST	NORTH					EAST
	1	1	1	9	9	
	1	1	1	9	9	
	72	1		9	9	
	1	1	1	9	9	
	1	1	1	9	9	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.5.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project has been assessed and forms part of the socio-economic context description provided below.



Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section A to B of the proposed pipeline is associated with the Pietersfield residential area. The Project will improve sanitation capacity and efficiency in the Greater Brakpan area.

2.5.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No
Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	Yes	No
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.6 Impala Mine Section B - C

2.6.1 Property description

Section B to C is located north of the Rowhill urban area in the open veldt.
Section B to C of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following property:

- Remainder of portion 185 of the farm Geduld 123-IR.

2.6.2 Activity position

The position of section B to C of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point B)	26° 13' 31.12"	28° 25' 28.35"
Middle point (Point between B and C)	26° 13' 20.63"	28° 25' 42.61"
End point (Point C)	26° 13' 21.08"	28° 26' 06.57"
Section B to C pipeline route is approximately 1470 m in length.		



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

On the remainder of portion 185 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	1	8	5

2.6.3 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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2.6.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.6.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.6.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.6.7 Groundcover

The ground cover present is represented in the table below.



Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	95%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%
Landscaped (vegetation)	0%
Sport field	5%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	5%
Bare soil	0%

2.6.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.6.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
<p>If Yes, specify and explain:</p> <p>Section B to C of the proposed pipeline is located north of the Rowhill urban area in the open veldt.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i> dated October 2019 compiled by Scientific Terrestrial Services, a small section of the pipeline route is located within a CBA as per the Gauteng C-Plan as illustrated in figure 4 of aforementioned report.</p> <p>No SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p>		



2.6.10 Specialist Information

Specialist input in the sections above.	YES	No
List of specialist studies used to assist with completing the above sections: <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> 		

Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Impala Mine pipeline. Refer to Table 1 in section 2.5.10 above for the specialist details.

2.6.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam^A
34. Small Holdings	35. Other:	

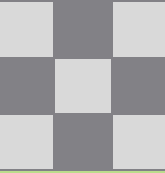
The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been requested from the Department.	Yes	No
If Yes, have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section B to C

WEST	NORTH					EAST
	1	1	34	1	1	
	1	1	1	1	1	
	1	1		1	1	
	1	1	1	1	1	
	9	9	9	9	9	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.6.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project has been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline. The socio-economic context of the proposed pipeline route (Section B to C) is characterised by open undeveloped land to the east and west, a small holding to north and residential areas to the south.

2.6.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No
Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage	Yes	No



Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?		
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.7 Impala Mine Section C - D

2.7.1 Property description

Section C to D is located south of the Impala Mine and north of the Gugulethu and Everest township. Section C to D of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following properties:

- Portion 134 of the farm Geduld 123-IR.
- Remainder of portion 217 of the farm Geduld 123-IR.

2.7.2 Activity position

The position of section C to D of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point C)	26° 13' 21.08"	28° 26' 06.57
Middle point (Point between C and D)	26° 13' 19.60"	28° 27' 31.39"
End point (Point D)	26° 12' 37.96"	28° 28' 03.33"
Section C to D pipeline route is approximately 4700 m in length.		

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

Portion 134 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	1	3	3
Remainder of portion 217 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	1	7

2.7.3 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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2.7.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.7.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.7.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.7.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	25%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%
Landscaped (vegetation)	0%
Sport field	5%
Cultivated land	0%



Groundcover present on the site	% Cover
Paved surface (hard landscaping)	0%
Building or other structure	25%
Bare soil	50%

2.7.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.7.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
If Yes, specify and explain:		
<p>Section C to D is located south of the Impala Mine and north of the Gugulethu and Everest township.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i>, dated October 2019 compiled by Scientific Terrestrial Services the section of the pipeline that is located south of the Impala Mine is located within a CBA as per the Gauteng C-Plan illustrated in figure 4 of aforementioned report.</p> <p>No SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for <i>Hypoxis hemerocallidea</i> exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.</p>		

2.7.10 Specialist Information

Specialist input in the sections above.	Yes	No
<p>List of specialist studies used to assist with completing the above sections:</p> <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> 		



Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Impala Mine pipeline. Refer to Table 1 in section 2.5.10 above for the specialist details.

2.7.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A
34. Small Holdings	35. Other:	

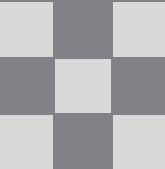
The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been requested from the Department.	Yes	No
If Yes, have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section C to D

WEST	NORTH					EAST
	31	31	31	31	31	
	31	31	31	31	31	
	31	31		31	31	
	15	10	10	10	10	
	15	9	10	10	10	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.7.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project has been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section C to D of the proposed pipeline is associated with the Impala Mine to the north and Gugulethu and Everest township to the south.

2.7.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No



Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	Yes	No
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		

2.8 Impala Mine Section D - E

2.8.1 Property description

Section D to E is located east of the Cowles dam (unchanneled valley bottom wetland) and north of Gugulethu and Everest township.

Section D to E of the proposed pipeline route will be placed within existing servitudes located within the road reserves and will affect the following properties:

- Remainder of portion 217 on the farm Geduld 123-IR.
- Remainder of portion 84 of the farm Geduld 123-IR.
- Portion 107 of the farm Geduld 123-IR.
- Remainder of the farm Cloverfield 75-IR.

2.8.2 Activity position

The position of section D to E of the proposed pipeline is as follows:

Location of the activity	Latitude (S):	Longitude (E):
Starting point (Point D)	26° 12' 37.96"	28° 28' 03.33"
Middle point (Point between D and E)	26° 12' 23.32"	28° 28' 05.34"
End point (Point E)	26° 12' 10.19"	28° 28' 08.61"
Section D to E pipeline route is approximately 940 m in length.		

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

Remainder of portion 217 on the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	1	7
Remainder of portion 84 of the farm Geduld 123-IR.																				



T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	8	4
Portion 107 of the farm Geduld 123-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	1	2	3	0	0	1	0	7
Remainder of the farm Cloverfield 75-IR.																				
T	0	I	R	0	0	0	0	0	0	0	0	0	7	5	0	0	0	0	0	0

2.8.3 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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2.8.4 Location in landscape

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.8.5 Groundwater, soil and geological stability of the site

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

Presence of caves on site	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of caves within 300 m radius of the site(s)	Yes	No
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.8.6 Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	Yes	No
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2.8.7 Groundcover

The ground cover present is represented in the table below.

Groundcover present on the site	% Cover
Natural veld - good condition	0%
Natural veld with scattered aliens	75%
Natural veld with heavy alien infestation	0%
Veld dominated by alien species	0%
Landscaped (vegetation)	0%
Sport field	5%
Cultivated land	0%
Paved surface (hard landscaping)	0%
Building or other structure	25%
Bare soil	0%

2.8.8 Presence of sensitive flora or fauna

Are there any rare or endangered flora or fauna species (including red list species) present on the site	Yes	No
If YES, specify and explain		
Are there any rare or endangered flora or fauna species (including red list species) present within a 200 m (if within urban area as defined in the Regulations) or within 600 m (if outside the urban area as defined in the Regulations) radius of the site.	Yes	No
If YES, specify and explain		
Presence of sinkholes within 300 m radius of the site(s)	Yes	No

2.8.9 Sensitive habitats

Are there any special or sensitive habitats or other natural features present on the site?	Yes	No
If Yes, specify and explain:		
<p>Section D to E is located east of the Cowles dam (unchanneled valley bottom wetland) and north of Gugulethu and Everest township.</p> <p>According to the <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province</i> dated October 2019 compiled by Scientific Terrestrial Services the entire section of the pipeline is located within a CBA and the end section of the pipeline is within ESA as per the Gauteng C-Plan illustrated in figure 4 of aforementioned report.</p>		



No species of conservation concern SCC were identified on site during the field assessment. Although not directly observed, it is likely that habitat for *Hypoxis hemerocallidea* exists within the Secondary grassland habitat unit. It is considered unlikely that any other SCC will be present within the proposed sewer pipeline due to the current (and ongoing) disturbances to the habitat. The highly fragmented nature of the site will likely restrict the dispersal of further seeds or propagules into more intact locations within the extend of the proposed sewer pipeline.

According to the *Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province* dated October 2019 compiled by Scientific Terrestrial Services, the floodplain wetland traversed by the north eastern portion of the Impala Mine pipeline is indicated to be both a Ramsar (Convention on Wetlands of International Importance Especially as Waterfowl Habitat) and National Freshwater Ecosystem Priority Areas (“NFEPA”) wetland. The wetland features within the investigation area are classified by the database as heavily to critically modified.

According to the NFEPA database, an unnamed tributary of the Blesbokspruit River is traversed by the proposed sewer pipeline. According to the Present Ecological State (“PES”) 1999 classification, the unnamed tributary is considered largely modified (Class D), whilst the (“NFEPA”) database classifies the river as “not intact” (Class Z). The Blesbokspruit River is situated approximately 1.09 kilometres east of the proposed sewer pipeline, and the river system is considered largely modified.

Portions of the proposed sewer pipeline traverse CBA considered important for Orange plant habitat and primary vegetation, whereas the NFEPA and Ramsar wetland identified by the NFEPA database located within the investigation area is classified as a CBA and is important in terms of red listed mammal and bird habitat as well as primary vegetation. CBA include natural and near-natural terrestrial and aquatic features that are required to meet targets for biodiversity patterns and ecological processes. Furthermore, CBA are an area considered important for the survival of threatened species and include valuable ecosystems such as wetlands, untransformed vegetation and ridges.

The northern portion of the proposed sewer pipeline falls within Ecological Support Areas (“ESA”). ESA are natural, near-natural, degraded or heavily modified areas required to be maintained in an ecologically functional state to support CBA and/or protected Areas.

According the Gauteng C-Plan the proposed sewer pipeline traverses a wetland and waterbody buffer. Furthermore, there are numerous wetland and waterbody buffers indicated by the Gauteng C-Plan within the investigation area. Additionally, a perennial river buffer (indicated around the Blesbokspruit River) is indicated by the Gauteng C-Plan to be traversed by the proposed sewer pipeline and a non- perennial river buffer is indicated within the investigation area.

2.8.10 Specialist Information

Specialist input in the sections above.	YES	No
<p>List of specialist studies used to assist with completing the above sections:</p> <ul style="list-style-type: none"> Scientific Terrestrial Services, October 2019. <i>Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.</i> Scientific Aquatic Services, October 2019. <i>Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province.</i> 		

Specialist

The specialist study mentioned above has been used for all 4 sections of the proposed Impala Mine pipeline. Refer to Table 1 and Table 2 in section 2.5.10 above for the specialist details.



2.8.11 Land use character of surrounding area

The table below represents the applicable land uses within a 500 m radius of 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-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. Archaeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A
34. Small Holdings	35. Other:	

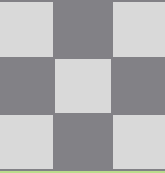
The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been requested from the Department.	Yes	No
If Yes, have the reports been attached.	Yes	No
If Yes, indicate the type of reports below.		

The land use matrix is a representation of the proposed activity in relation to the land uses identified within a 500 m radius of the site (as per the table above).



Land Use Matrix: Section D to E

WEST	NORTH					EAST
	2	1	1	1	2	
	2	1	1	1	2	
	2	1		1	2	
	2	1	1	1	2	
	2	1	1	1	10	
SOUTH						

This report is the draft BAR and no studies have been requested as an outcome of the land use character as represented in the Land Use matrix represented above.

2.8.12 Socio-economic context

A description of the existing social and economic characteristics of the area as well as the community conditions has been provided below. The potential social, economic and community impacts of the Project has been assessed and forms part of the socio-economic context description provided below.

Refer to Section 2.1.12 above for a description of the socio-economic context of the proposed pipeline.

Section D to E is located east of the Cowles dam (unchanneled valley bottom wetland) and north of Gugulethu and Everest township.

2.8.13 Cultural/historical features

Is section 38 of the National Heritage Resources Act 25 of 1999 applicable to the proposal or alternatives?	Yes	No
Has a written comment from SAHRA attached to the report?	Yes	No



Presence of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	Yes	No
If Yes, explain:		
Has there been specialist input to establish whether there is such a feature(s) present on or close to the site (as mentioned above).	Yes	No
Briefly explain the findings of the specialist if one was already appointed:		
Will any building or structure older than 60 years be affected in any way?	Yes	No
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	Yes	No
If yes, please attached the comments from SAHRA in the appropriate Appendix.		



3 Public participation-Section 41 (Section C)

3.1 Public Participation Process (PPP)

Shangoni Management Services (Pty) Ltd (“Shangoni”) has conducted the Public Participation Process in accordance with the requirements of the EIA Regulations, 2014 (as amended). A summary of the Public Participation Process followed has been provided below:

Public Participation Process	
Notification letters and Background Information Document (“BID”)	Notification letters were sent to all I&APs via email and hand delivery in the Project surrounding areas.
Draft BAR comment period	28 November 2019 to 17 January 2020
Availability of the draft BAR and supporting appendices	The draft BAR and supporting documents will be made available on the Shangoni website. Details of the comment period as well as the method thereto will be provided.

3.2 Local authority participation

The planning and the environmental sections of the local authority have been informed of the application, the local authority at least thirty (30) calendar days before the submission of the application to the competent authority. The local authority has been provided with an opportunity to comment on the draft BAR.

Was the draft report submitted to the local authority for comment?	Yes	No
If yes, has any comments been received from the local authority?	Yes	No
If “YES”, briefly describe the comment below (also attach any correspondence to and from the local authority to this application):		
Not applicable.		
If “NO” briefly explain why no comments have been received or why the report was not submitted if that is the case.		
This is the draft BAR and it will be submitted to the local authority for comment. All comments received will be documented and addressed as part of the Final BAR.		

3.3 Consultation with other stakeholders

All stakeholders and interested and affected have been identified and informed of the application. Thirty (30) calendar days has been provided to all stakeholders before the submission of the application to the competent authority. The local authority has been provided with an opportunity to comment on the draft BAR.

Has any comment been received from stakeholders?	Yes	No
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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):

If “NO” briefly explain why no comments have been received.

This is the draft BAR and it will be submitted to the all I&APs and stakeholders for comment. All comments received will be documented and addressed as part of the Final BAR.

3.4 General public participation requirements

The Public Participation Process undertaken by Shangoni is in accordance to the NEMA EIA regulations 2014 (as amended).

The PPP process conducted as part of the Basic Assessment process is in line with DEA Public Participation Guidelines (2017). The PPP undertaken by Shangoni is compliant with any regulated procedure related to public consultation and information gathering through the Public Participation Process.

Refer to Appendix E: Public Participation Process

All comments received will be addressed and documented in the comments report attached as Appendix E6 in the final BAR.

3.5 Appendices for Public Participation Process

Appendix E: Public Participation Process

Appendix E1	Proof of site notice
Appendix E2	Written notices issued as required in terms of the regulations
Appendix E3	Proof of newspaper advertisements
Appendix E4	Communications to and from interested and affected parties
Appendix E5	Minutes of any public and/or stakeholder meetings
Appendix E6	Comments and Responses Report
Appendix E7	Comments from I&APs on Basic AR
Appendix E8	Comments from I&APs on amendments to the BAR
Appendix E9	Copy of the register of I&APs



4 Resource use and process details (Section D)

Section D has not been duplicated for the alternatives, as the same information applies as presented below.

4.1 Waste, effluent, and emission management

4.1.1 Solid waste management

Construction Phase		
Will the activity produce solid construction waste during the construction/initiation phase?	Yes	No
If yes, what estimated quantity will be produced per month?	1 m ³	
<p><u>How will the solid waste be disposed of (describe)?</u></p> <p>There will be no large quantities of solid waste produced during the construction phase of the proposed activity. Construction waste that cannot be reused will be collected at the construction camp and on site within skips and bins, and all construction waste will be transported to a registered landfill site. Excavated material (uncontaminated material) that is not suitable to be backfilled into the excavations will be evenly spread across the adjacent environment. Material that cannot be reused will be disposed of at a registered landfill site.</p>		
<p><u>Where will the construction solid waste be disposed of (describe)?</u></p> <p>The construction waste will be disposed of at a suitably licensed/ registered disposal facility. During construction, wastes must be separated at source and disposed at a registered/licensed facility. Waste should be separated into recyclable and non-recyclable materials and distributed for recycling where applicable. To ensure optimal material reuse, construction waste will be used as fill material and as foundation for the proposed processes where possible. In such a case, reuse of construction waste materials will minimise the amount of waste that will need to be disposed of at registered municipal waste facilities. Only inert, non-hazardous construction material will be reused.</p>		

Operational Phase		
Will the activity produce solid waste during its operational phase?	Yes	No
If yes, what estimated quantity will be produced per month?	N/A	
<p><u>How will the solid waste be disposed of (describe)?</u></p>		
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?	Yes	No
<p><u>Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?</u></p>		
Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	Yes	No
If yes, has the competent authority been informed and a request for change to an application for scoping and EIA been submitted?	Yes	No
Is the activity that is being applied for a solid waste handling or treatment facility?	Yes	No



Operational Phase		
If yes, has the competent authority been contacted to determine whether it is necessary to change to an application for scoping and EIA.	Yes	No

Measure taken as part of the Project to ensure optimal reuse or recycling of Materials.

Waste management will follow the hierarchy of reduce, reuse and recycle. This will be implemented on site during construction, as a condition of the EMP. Waste that cannot be immediately reused or recycled during the construction phase will be removed and taken to a temporary waste storage area located within the construction camp. It will then be separated into appropriately marked receptacles.

4.1.2 Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	Yes	No
If yes, what estimated quantity will be produced per month?		
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	Yes	No
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	No
If yes, what estimated quantity will be produced per month?		
If yes describe the nature of the effluent and how it will be disposed	Yes	No
Will the activity produce effluent that will be treated and/or disposed of at another facility?	Yes	No
If yes, provide the particulars of the facility below: The Project is for the construction of sewerage infrastructure and the activity will involve the transportation of sewage as part of the Dal Fouche and Impala Mine Outfall Sewer.		
Facility name:		
Contact person:		
Postal address:		
Postal code:		
Contact Details	Telephone	Cell
	Fax	Email

Measure taken as part of the Project to ensure optimal reuse or recycling of wastewater, if any:

No wastewater will be produced for the Project.



4.2 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?	435,46 Ml per month	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	Yes	No
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	No
If yes describe how it will be treated and disposed of.		

4.3 Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	Yes	No
If yes, is it controlled by any legislation of any sphere of government	Yes	No
If yes, has the competent authority been consulted to determine whether it is necessary to change to the application to a scoping and EIA	Yes	No
<p>If no, describe the emissions in terms of type and concentration:</p> <p>During the construction phase, dust and vehicular emissions will be released resulting from the earth moving machinery and trucks transporting construction material. However, the emissions will have a short-term impact to the immediate surrounding areas that can be easily mitigated. Therefore, authorisation of such emissions will not be required.</p>		

4.4 Water use

The table below indicates the sources of water that will be used for the proposed activity.

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

Information regarding the extraction of water from groundwater, river, stream, dam, lake or any other natural feature (If applicable) will be provided below:

Will water be abstracted for the proposed activity	Yes	No
If YES:		
Volume that will be extracted per month:		
Has proof of assurance of water supply, e.g. yield of borehole been attached?		
Does the activity require a water use permit from the Department of Water Affairs?	Yes	No



If yes, list the permits required: Section 21 (c) and (i) water uses.		
If yes, have you applied for the water use permit(s)?	Yes	No
If yes, have you received approval(s)? (attached in appropriate appendix)	Yes	No

4.5 Power supply

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source Electricity will be supplied by Eskom.
<u>If power supply is not available, where will power be sourced from?</u> Use of generators.

4.6 Energy efficiency

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient: Not Applicable.
Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any: Due to insignificant use of energy, this was not considered.

5 Impact assessment (Section E)

The assessment of the impacts for the proposed activity is in line with the EIA Regulations, 2014 (as amended). The impact assessment has taken the DEA Integrated Environmental Management Guideline Series, Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations into account when the assessment of impacts for the alternative and the preferred was undertake. Other applicable guidelines outlined in Section 1.2 of this report have also been considered. The issues raised by interested and affected parties will be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

5.1 Issues raised by interested and affected parties

Issues raised by Interested and Affected Parties.

Will be included into the final BAR.

Response to issues raised by Interested and Affected Parties.

Will be included in the final BAR.



5.2 Impacts that may result from the construction and operational phase

5.2.1 Significance Rating Methodology

The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to rate the environmental risk.

Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication and evaluation;
- Specification of the impact identification techniques;
- Criteria to evaluate the significance of impacts;
- Design of mitigation measures to lessen impacts;
- Definition of the different types of impacts (indirect, direct or cumulative); and
- Specification of uncertainties.

In broad terms, the impact assessment for this Project will include the following:

- All potential impacts of the proposed activity will be identified and assessed;
- The nature, significance, consequence, extent, duration and probability of all impacts will be predicted; degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
- Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

The construction and operational phases of the Project will be considered whilst identifying impacts. A detailed understanding of the proposed activity will be obtained to ensure that all the potential impacts are identified. The following process will be followed to identify and assess the potential impacts of the proposed activity:

- The current environmental conditions will be determined in detail. This will act as a baseline against which impacts can be identified and measured;
- A detailed understanding of the activity will be obtained to fully understand its consequences; and
- The significant impacts that will occur as a result of the proposed activity will be identified (should the activity be authorised), as guided by various specialist assessments.

After all impacts have been identified, the nature of each impact can be predicted. The impact prediction will consider physical, biological, socio-economic and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined, and appropriate mitigation measures can be developed.



Table 3 and Table 4 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 5 provides the Risk Matrix that will be used to plot the Probability against the Magnitude in order to determine the Severity of the impact.

Table 3: Determination of Probability of Impact

Frequency of Aspect / Unwanted Event	Score	Frequency of Aspect / Unwanted Event	Score	Frequency of Aspect / Unwanted Event	Score
Never known to have happened but may happen.	1	A pathway to allow for the impact to occur is never available.	1	The receptor is never available.	1
Known to happen in industry.	2	A pathway to allow for the impact to occur is almost never available.	2	The receptor is almost never available.	2
< once a year.	3	A pathway to allow for the impact to occur is sometimes available.	3	The receptor is sometimes available.	3
Once per year to up to once per month.	4	A pathway to allow for the impact to occur is almost always available.	4	The receptor is almost always available.	4
Once a month – Continuous.	5	A pathway to allow for the impact to occur is always available.	5	The receptor is always available.	5

Step 1: Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.

Table 4: Determination of Magnitude of Impact- Source

Source					
Duration of impact	Score	Extent	Score	Volume / Quantity / Intensity	Score
Lasting days to a month	1	Effect limited to the site. (metres)	1	Very small quantities/volumes/ intensity (e.g. < 50 l or < 1 ha)	1
Lasting 1 month to 1 year	2	Effect limited to the activity and its immediate surroundings. (tens of metres)	2	Small quantities / volumes / intensity (e.g. 50 l to 210 l or 1 ha to 5 ha)	2



Source					
Lasting 1 – 5 years	3	Impacts on extended area beyond site boundary (hundreds of metres)	3	Moderate quantities / volumes / intensity (e.g. > 210 l < 5000 l or 5 – 8 ha)	3
Lasting 5 years to Life of Organisation	4	Impact on local scale / adjacent sites (km's)	4	Very large quantities / volumes / intensity (e.g. 5000 h – 10 000 h or 8 ha– 12 ha)	4
Beyond life of Organisation / Permanent impacts	5	Extends widely (nationally or globally)	5	Very large quantities / volumes / intensity (e.g. > 10 000 h or > 12ha)	5

Table 5: Determination of Magnitude of Impact - Source

Receptor					
Toxicity / Destruction Effect	Score	Reversibility	Score	Sensitivity of environmental component	Score
Non-toxic (e.g. water) / Very low potential to create damage or destruction to the environment	1	Bio-physical and/or social functions and/or processes will remain unaltered.	1	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity	1
Slightly toxic / Harmful (e.g. diluted brine) / Low potential to create damage or destruction to the environment	2	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	2	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.	2
Moderately toxic (e.g. slimes) Potential to create damage or destruction to the environment	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	3	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	3
Toxic (e.g. diesel & Sodium Hydroxide) Highly toxic (e.g. arsenic or TCE)	4	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	4	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered species / habitats etc.).	4
Highly toxic (e.g. arsenic or TCE)	5	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	5	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, wetlands, protected habitats etc.)	5



Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors above.

Environmental Impact Rating / Priority					
Magnitude					
Probability	1 Minor	2 Low	3 Medium	4 High	5 Major
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium



5.3 Impact assessment of the Project (Preferred)

The impacts assessment applies to the Project and the alternatives. Where information was informed by the specialist studies such has been indicated in the risk assessment.

5.3.1 Planning/pre-construction phase: Potential impacts, significance (pre- and post-mitigation) and mitigation measures.

Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
Legislative Requirements					
1.	Risk of non-compliance with legal requirements of national and provincial legislation in terms of the Project.	Medium (Negative)	<ul style="list-style-type: none"> Ensure that all environmental legal requirements are considered in the planning phase for the proposed activity in terms of section 1.2 of this report: Applicable Legislation, Policy and Guidelines. 	Low (Negative)	Low
Environmental					
1.	Harm to the environment	Medium (Negative)	<ul style="list-style-type: none"> During site preparation, topsoil and subsoil are stripped separately from each other and must be stored separately for use in the rehabilitation phase. It should be protected from wind and rain, as well as contamination from diesel, concrete or wastewater. Records of all environmental incidents must be maintained, and a copy of these records must be made available to authorities on request throughout the Project execution. Posters should be displayed on site to sensitise workers to fauna in the region. 	Low (Negative)	Low



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • No access is allowed in no-go areas without the permission of the Project Manager. • Contractor to develop method statements that must be approved by the Project Manager prior to construction taking place. The plan must show the following (as relevant), at a minimum: <ul style="list-style-type: none"> ○ Buildings and structures; ○ Site offices; ○ Roads and access routes; ○ Gates and fences; ○ Essential services (permanent and temporary water, electricity and sewage); ○ Rubble and waste rock storage and disposal sites; ○ Solid waste storage and disposal sites; ○ Site toilets and ablutions; ○ Topsoil stockpiles; ○ Sensitive environmental features; ○ Any other activities, facilities and structures deemed relevant; ○ Design to consider and incorporate environmental requirements; 		



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> Define and communicate roles and responsibilities for the implementation of the EMP. Develop and implement an environmental awareness plan. The appointment of an Environmental Control Officer ("ECO"). Records of compliance /non-compliance must always be kept on site and must be made available to Gauteng Department of Agriculture and Rural Development ("GDARD") on request. Records of all environmental incidents must be maintained, and a copy of these records be made available to GDARD on request throughout the Project execution. Prior to construction, fences/barricading should be used in such a manner to prevent access to adjacent grassland areas that are not part of the pipeline servitude. 		
Social					
1.	Poor communication and lack of transparency of project information that may lead to conflict.	Medium (Negative)	<ul style="list-style-type: none"> A complaints register should be kept on site. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed. 	Low (Negative)	Low



5.3.2 Construction phase: Potential impacts, significance (pre- and post-mitigation) and mitigation measures

Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
Legislative requirements					
1	Non-compliance with legal requirements of the EA and WUL	Medium (Negative)	<ul style="list-style-type: none"> All conditions outline in the EA and WUL must be followed, as further need to be communicated to all contractors and staff. 	Low (Negative)	Low
Project footprint and site layout					
1.	Risk of construction activities occurring outside the approved Project footprint.	Medium (Negative)	<ul style="list-style-type: none"> The Project footprint areas should remain as small as possible and should not encroach into the watercourses unless essential and part of the Project. It must be ensured that the watercourse habitat is off-limits to construction vehicles and non-essential personnel for the areas that does not form part of the WUL. The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled. Planning of temporary roads and access routes should avoid watercourse areas and be restricted to existing roads where possible. 	Low (Negative)	Low
Health and safety					



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
1.	Health and safety risk that may arise and impact on the public and construction workers.	Medium (Negative)	<ul style="list-style-type: none"> Ensure that all safety risks that may be present are clearly marked (e.g. through signage) and cordoned off from the public. All activities must comply with the Occupational Health and Safety Act (No 85 of 1993). 	Low (Negative)	Low
Soil					
1.	Soil pollution due to hazardous chemical substances including fuel greases and oils used on site.	Medium (Negative)	<ul style="list-style-type: none"> Identify all hazardous chemical substances used on site, including fuel, greases and oils. Obtain the material safety data sheets for each of the hazardous chemical substances. Appropriate equipment to deal with an emergency spill incident must be readily available on site. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for equipment and/or machinery leaks, drums or containers for contaminated water. Immediately clean all spillages of fuels, lubricants and other petroleum-based products. Soil and other material contaminated with hazardous chemical substances shall be treated as hazardous waste and removed from site. Sheet runoff from compacted areas should be slowed down by the strategic placement of berms; 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> As far as possible, all construction activities should occur in the low flow season, during the drier winter months. As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils. No stockpiling of topsoil is to take place within close proximity to the wetland, and all stockpiles must be protected with a suitable geotextile to prevent sedimentation of the wetland. All soils compacted as a result of construction activities as well as ongoing operational activities falling outside of Project footprint areas should be ripped and profiled. 		
Terrestrial ecology Impacts as per the Biodiversity Assessment by STS (October 2019)					
1	<ul style="list-style-type: none"> Loss of terrestrial habitat, diversity and species of conservation concern ("SCC"). Site preparation and vegetation clearing activities will result in the loss of terrestrial habitat and species diversity, both floral and faunal along the proposed sewer pipeline route. 	Medium (Negative)	<ul style="list-style-type: none"> As far as possible avoid disturbance of sensitive freshwater habitat units. No stockpiling must take place within the sensitive freshwater habitat as this can result in altered vegetation composition and water quality. Should any SCC be encountered within the construction footprint, they are to be relocated to suitable habitat by a qualified specialist. Furthermore, no collection of SCC is allowed. 	Low (Negative)	Low



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
<ul style="list-style-type: none"> Should any SCC be located within the construction footprint; although deemed unlikely, these species will be impacted upon as a result of the clearing activities, either resulting the loss of these species from the immediate area (floral species) or the relocation of such species to similar habitat nearby. 		<ul style="list-style-type: none"> Demarcate the construction footprint and ensure that all construction activities remain within this footprint. Ensure that the Project footprint area remains as small as possible, particularly within the areas adjacent to the freshwater habitat. Restrict vehicles to travelling only on designated roadways to limit the ecological footprint of the Project. No informal fires are allowed by construction personnel outside of the Project footprint. The contractor laydown and construction areas should be rehabilitated with indigenous species when construction is completed. Monitoring of these rehabilitated areas should take place a year after the construction has been completed to ensure vegetation growth. An alien vegetation monitoring programme should be developed and implemented for one year after construction activities have taken place. All areas of disturbed and compacted soils need to be ripped, reprofiled and reseeded with indigenous vegetation to prevent the establishment of alien and invasive species. No hunting or trapping of faunal species is to be allowed by construction personnel. 		



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • No construction rubble, old pipeline or cleared alien invasive species are to be disposed of along the extent of the proposed sewer pipeline and should be taken to a registered waste disposal facility. • Any contaminated soil due to the leaking sewer pipeline, should be disposed of at a suitably licensed facility. • Proliferation of alien and invasive species is expected within any disturbed areas. Whilst not considered severe at this time, the vegetation component within the watercourse environment is already transformed. However, alien invasive species are opportunistic, and where disturbances do occur, they will promulgate; therefore, these species should be eradicated and controlled to prevent their spread beyond the Project footprint. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, must be controlled. • Removal of the alien and weed species encountered within the watercourses must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and Section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). Removal of species 		



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<p>should take place throughout the construction, operational, and maintenance phases.</p> <ul style="list-style-type: none"> Species specific and area specific eradication recommendations: <ul style="list-style-type: none"> Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used. Footprint areas should be kept as small as possible when removing alien plant species; and No vehicles should be allowed to drive through designated sensitive wetlands areas during the eradication of alien and weed species. 		
Waste Management					
1	Poor waste management on site.	Medium (Negative)	<ul style="list-style-type: none"> Ensure that an adequate number of waste and “spill” bins are provided to prevent litter and ensure the proper disposal of waste and spills. No disposal of waste should take place within the freshwater resources or its buffer zones. All construction rubble should be removed from the wetlands. Waste bins must be emptied regularly, and the waste must be removed to a suitable waste disposal facility. 	Low (Negative)	Low
Freshwater Resource Impacts as per the DWS Risk Assessment Matrix in the SAS report dated October 2019					



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
1	<ul style="list-style-type: none"> Increased runoff and erosion leading to sedimentation of the wetlands; Increased sedimentation of the wetland habitat leading to smothering of vegetation and potentially altering surface water quality; Decreased ecoservice provision. 	Medium (Negative)	<ul style="list-style-type: none"> Limit clearing of vegetation and associated soil disturbances to essential areas only. Protect exposed soils by means of a geotextile such as hessian sheeting. No open trenching may be undertaken within the delineated wetlands or associated 30 m GDARD setback area. The pipeline within these areas must be directionally drilled. Temporary stockpiling of soil is to be placed outside of any wetland environments, as stockpiling of soils in the wetlands and setback area is not deemed feasible. Ensure contractor laydown areas are placed outside of the wetlands and a designated area should be approved by the ECO prior to use. The contractor laydown area should be rehabilitated with indigenous species when construction is completed. Monitoring of these rehabilitated areas should take place a year after the construction has been completed to ensure vegetation growth. 	None ²	None
2	<ul style="list-style-type: none"> Damage to wetland vegetation leading to exposed/compacted soils, in turn leading to increased runoff and erosion. 	Medium (Negative)	<ul style="list-style-type: none"> The wetland environments must be clearly demarcated on site, and to remain off-limits to all non-essential personnel. At no point may construction vehicles indiscriminately drive through the wetland habitat. Existing access 	None	None

² No post mitigation rating was provided by the specialist.



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
<ul style="list-style-type: none"> Decreased ecoservice provision. Further decreased ability to support biodiversity. 		<p>roads on either side of the proposed sewer pipeline can be utilized by vehicles. The remaining portions of the wetland must be demarcated as no-go areas.</p> <ul style="list-style-type: none"> Construction vehicles should be restricted to designated roads only. 		
<p>3</p> <ul style="list-style-type: none"> Disturbances of soils leading to increased alien vegetation proliferation, and in turn to altered wetland habitat; Altered stormwater runoff patterns, leading to increased erosion and sedimentation of the wetlands; Loss and change of the wetland habitat and ecological structure resulting in impacts on biota; Potential impacts on water quality and contamination of soils within the wetland environments; Potential changes to the ecoservice provision of the wetland's environments; and Impacts on hydrology and sediment balance of the wetland environments. 	Medium (Negative)	<ul style="list-style-type: none"> All construction must take place during the dry season to limit potential impacts to the wetland as a result of construction activities. Excavation activities should be done in a phased manner, preferably construction should only occur within one section of the wetland at a time. Protect exposed soils and stockpiles from wind, and limit the time in which soils are exposed, by covering with a suitable geotextile such as hessian sheeting. Any remaining soils following the completion of construction activities are to be recompacted to a depth of 450 mm, and all construction material must be removed from site upon the completion of construction. If stockpiled soil is to be used for rehabilitation purposes such as revegetation, all alien vegetation should be removed from soil before use, to avoid spread of alien vegetation. 	None	None



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
4	<ul style="list-style-type: none"> Altered flow regime as a result of solid waste within and surrounding the wetlands; Altered water quality due to chemical waste disposal within and surrounding the wetlands; and Possible contamination of wetland soils and surface water, leading to reduced ability to support biodiversity. 	Medium (Negative)	<ul style="list-style-type: none"> No waste disposal is to be permitted in the delineated wetlands. All waste is to be removed from the site and disposed at a registered facility. Vehicles should be regularly inspected for leaks and be refuelled on sealed surfaces to prevent ingress into soils. All spills are to be immediately cleaned up and treated accordingly. When not in use, all vehicles must be parked on a non-permeable surface outside the delineated watercourses, on a suitable platform area (within the 30 m GDARD setback area) or have drip trays under to prevent any leakage into the surrounding wetland environments. Vehicles are to be serviced at the contractor laydown area. 	None	None
5	<ul style="list-style-type: none"> Potential impacts on water quality and contamination of soil within the wetlands as a result of construction equipment and machinery, leading to altered wetland habitat; and Possible contamination of wetland soils and surface 	Low (Negative)	<ul style="list-style-type: none"> The decommissioned pipeline is to be suctioned by a registered sewage hauler before commencement of the blanking/blinding of the existing pipeline in order to ensure no ingress of sewage occurs into the wetlands and adjacent environments. No indiscriminate movement of construction equipment or personnel is allowed within the wetlands. Careful planning of all construction 	None	None



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
	water, leading to reduced ability to support biodiversity.		<p>equipment must be undertaken beforehand to ensure that the minimum impact on the wetland occurs.</p> <ul style="list-style-type: none"> The duration of impacts within the wetlands should be minimised as far as possible by ensuring that the duration of time in which sedimentation will take place is minimised. Therefore, the decommissioning activities should be kept as short as possible. Contaminant spillage outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. Decommissioning must be scheduled for the drier winter period in order to minimise the risk of sediment-laden runoff reaching the wetland as a result of the construction activities. 		
6	<ul style="list-style-type: none"> Disturbances of soils leading to sedimentation and increased alien vegetation proliferation, and in turn to altered wetland habitat. Impacts to the ecoservice provision of the wetland habitat. Potential impacts on water quality and contamination of soil within the wetland habitat due to concrete being cast alongside of the wetlands. 	Medium (Negative)	<ul style="list-style-type: none"> The duration of impacts within the wetlands should be minimised as far as possible by ensuring that the duration of time in which any construction activities around the wetlands and associated sedimentation that will take place is minimised. Therefore, the construction period should be kept as short as possible. No mixed concrete may be deposited outside of the designated construction footprint area. Effort should be made to not disrupt any other portions of wetland habitat associated with the Blesbokspruit Floodplain and Channelled Valley Bottom wetland 2 	None	None



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<p>besides that which is to be traversed by the proposed sewer pipelines during the construction phase of the proposed sewer pipeline.</p> <ul style="list-style-type: none"> Batter/dagga board mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited while it awaits placing. Contaminant spillage outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. Construction must be scheduled for the drier winter period in order to minimise the risk of sediment-laden runoff reaching the wetland as a result of the construction activities. No manholes may be located within the delineated wetlands and the column of the manholes must be designed to be above the 1 in 100-year floodline of the relevant watercourses. Excavated soils associated with open trenching should be placed outside the wetlands and the associated buffer zones to limit potential sedimentation of the wetlands. 		
Watercourses (Blesbokspruit Floodplain, Channelled Valley Bottoms and Unchannelled Valley Bottom wetland) SAS report dated October 2019					
1	<ul style="list-style-type: none"> Potential spills and leaks from vehicles delivering construction material (during 	Medium (Negative)	<ul style="list-style-type: none"> Should any leakages from construction vehicles or material containers occur, they should be cleaned up immediately. 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
	refuelling of vehicles, leaks from hazardous material containers). <ul style="list-style-type: none"> Indiscriminate movement of vehicles within the watercourses. Clearing of vegetation during site preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas. 		<ul style="list-style-type: none"> Refuelling of vehicles should take place on a sealed surface to prevent ingress of hydrocarbons into the soil. Construction vehicles should be restricted to designated roads only. Contractor laydown areas should be located outside the watercourses and the associated buffer zones (in consultation with the appropriate authority) to avoid contamination of the watercourse environment due to leakages from storage containers and vehicles. Vehicles are to be serviced at the contractor laydown area. Footprint area should be demarcated and kept as small as possible. 		
2	Topsoil stockpiling adjacent to the watercourse.	Medium (Negative)	<ul style="list-style-type: none"> The extent of vegetation clearing should be limited for the contractor's laydown area and outside of the watercourse environment. 	Low (Negative)	Low
3	Ground-breaking and excavation of trenches adjacent and within close proximity (tens of metres) to the watercourses.	Medium (Negative)	<ul style="list-style-type: none"> The contractor laydown area should be rehabilitated with indigenous species when construction is completed. Monitoring of these rehabilitated areas should take place a year after the construction has been completed to ensure vegetation growth. 	Medium (Negative)	Medium
4	<ul style="list-style-type: none"> Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the watercourses) 	Medium (Negative)	<ul style="list-style-type: none"> An alien vegetation monitoring programme should be developed and implemented for the first growing season after construction activities have taken place. The duration of activities within the watercourses (especially that of the Blesbokspruit Floodplain wetland) should be minimised in order to reduce the flow and functioning of the freshwater system. 	Low (Negative)	Low



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
<ul style="list-style-type: none"> Spillage of sewage effluent from existing pipeline during construction 		<ul style="list-style-type: none"> The wetlands must be clearly demarcated with danger tape by an ECO and marked as a no-go area (specific mention of the Blesbokspruit Floodplain wetland). No open trenching may be undertaken within the delineated watercourses or associated 30 m GDARD buffer. The pipeline within these areas must be directionally drilled and the following are applicable: <ul style="list-style-type: none"> a) The watercourses must be demarcated as a no-go area. b) No machinery or equipment is allowed within the delineated watercourses. All construction equipment required for the directional drilling must stand outside the delineated watercourses, on a suitable platform area, within the 30 m GDARD setback, although outside this area is considered preferable. c) No manholes may be located within the delineated watercourses and the column of the manholes must be designed to be above the 1 in 100-year floodline of the relevant watercourses. Excavated soils associated with open trenching should be placed outside the watercourses and the associated buffer zones to limit potential sedimentation of the watercourses. All stockpiles should be located alongside the open trench and may not exceed 2 m in height. Soil must be recompacted to a depth of 450 mm, and all construction material must be removed from site upon the completion of construction. 		



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none">• No disposal of waste should take place within the watercourses or associated zones of regulation.• All construction rubble must be removed from the wetlands.• The duration of impacts within the watercourse should be minimised as far as possible by ensuring that the duration of time in which any construction activities around the watercourses and associated sedimentation that will take place is minimised. Therefore, the construction period should be kept as short as possible.• Excavation activities should be done in a phased manner, preferably construction should only occur within one section of the watercourse at a time.• Effort should be made so as to not disrupt any other portions of wetland habitat associated with the Blesbokspruit Floodplain and Channelled Valley Bottom wetland 2 besides that which is to be traversed by the proposed sewer pipelines during the construction phase of the proposed sewer pipeline.• The construction of the portion of the pipeline (HDD activities) which will be crossing the watercourses and the area must be scheduled for the drier winter period in order to minimise the risk of sediment-laden runoff entering the wetland as a result of the construction activities.• The vegetation that will be cleared as part of the site preparation activities for the HDD activities must remain as small as possible, to reduce the risk of		



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<p>further proliferation of alien vegetation, and to retain a level of protection to the wetland during construction (e.g. sediment trapping, slowing of stormwater runoff etc.).</p> <ul style="list-style-type: none"> Excavated soil should be used to close off any trenches, immediately after inserting the pipeline. The area must be rehabilitated immediately after the completion of construction activities. In addition, excavated soils can be used to level the area as well as revegetating the area. In addition, alien vegetation eradication programme must be implemented. If any excess stockpiled soil is to be used for rehabilitation purposes such as revegetation, all alien vegetation should be removed from soil before use, to avoid spread of alien vegetation. 		
Groundwater					
1	Ground water contamination as a result of unsanitary practices and use of chemical toilets on site.	Medium (Negative)	<ul style="list-style-type: none"> Ablution facilities should be on impermeable surfaces and at least 50 m from wetlands, drainage lines or places where storm water may accumulate. The location of the ablution facilities is to be approved by the ECO prior to site establishment but shall be located within 50 m of any work point and outside of the wetland. 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> The contractor shall ensure that no chemical and/or waste from the ablution facilities are spilled on the ground at any time. Ablution facilities should be serviced weekly or more frequently if required and inspected to prevent blockages and leakages. Records of sewage disposal and maintenance shall be maintained and kept on file. 		
2	Groundwater contamination due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used on site.	Low (Negative)	<ul style="list-style-type: none"> Identify all hazardous chemical substances used on site including fuel, greases and oils. Obtain the material safety data sheets for each of the hazardous chemical substances. Material safety data sheets for all hazardous chemical substances must be readily available on site and ensure that the material safety data sheets have enough information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. Appropriate equipment to deal with emergency spill incidents is to be readily available on site. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for equipment and/or machinery leaks, drums or containers for contaminated water. Soil contaminated with hazardous chemical substances shall be treated as hazardous waste and 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<p>removed from site for safe disposal (records of such shall be maintained).</p> <ul style="list-style-type: none"> During refuelling at the contractor's camp, the ground must be protected, and proper dispensing equipment is to be used such as drip tray. All liquid fuels are to be stored in tanks and containers with lids on an impermeable surface in a bunded area. Generators must be stored on an impermeable surface and in a bunded area. 		
Storm water management					
1	Sedimentation of adjacent watercourse as a result of construction activities.	Medium (Negative)	<ul style="list-style-type: none"> As far as possible, all construction activities should occur in the low flow season, during the drier winter months. Implement appropriate storm water management features such as earth berms should be installed along the perimeter of the access road and the pipeline trench to prevent excessive run-off of storm water (and potential erosion) into the surrounding grassland habitat. 	Low (Negative)	Low
Atmosphere and noise					
3	Ambient noise levels and dust creation are likely to increase because of the construction activities.	Medium (Negative)	<ul style="list-style-type: none"> Noise generating activities must be conducted during daytime hours. 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> Vehicles and equipment must be inspected and maintained on a regular basis. Working hours should be restricted to daylight hours. No sound amplification equipment such as sirens, loud halers or hooters are to be used on site except in emergencies. A water cart should be kept on site to water down dusty construction activities. 		
Heritage and Palaeontology					
1	Construction activities may disturb or destroy sites, features or artefacts of archaeological and/or historical importance.	Medium (Negative)	<ul style="list-style-type: none"> If during any construction activities, any sites, features or objects of cultural heritage (archaeological or historical) nature are exposed, a qualified specialist should be contacted to investigate, and suitable mitigation measures must be implemented. All activities in the area should be stopped until the situation has been resolved. 	Low (Negative)	Low
2	Construction activities may disturb or destroy fossils or bedrock of palaeontological sensitivity.	Medium (Negative)	<ul style="list-style-type: none"> If bedrock is exposed during excavations, a qualified specialist must be appointed to inspect excavations for the presence of fossils. If excavations will not expose bedrock, no further mitigation for palaeontological heritage is recommended. 	Low (Negative)	Low
Social Impacts					



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
1	Traffic disturbances to commuters and local community as a result of road closures or construction activities occurring within the road reserve.	Medium (Negative)	<ul style="list-style-type: none"> Traffic control measures must be put in place if the need arises during the construction phase. Ensure effective communication with all interested and affected parties, detailing the period of construction as well as alternative access routes if they are available. 	Low (Negative)	Low
2	Risk associated with poor communication between landowners and the project team that may arise is conflict	Medium (Negative)	<ul style="list-style-type: none"> A complaints register should be kept on site. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed. 	Low (Negative)	Low
Rehabilitation					
1	Lack of rehabilitation will lead to the proliferation of alien invasive species.	Medium (Negative)	<ul style="list-style-type: none"> Disturbed and cleared areas need to be revegetated with indigenous grass species to help stabilise the soil surface. Implement an alien eradication plant programme to systematically control/eradicate the declared invasive plant species, especially during rehabilitation. Post-development rehabilitation should use species indigenous to South Africa and should preferably make use of species that are naturally growing along the route. All alien vegetation in the footprint area as well as immediate vicinity of the Project should be removed. 	Low (Negative)	Low



5.3.3 Operational Phase: Potential impacts, significance (pre- and post-mitigation) and mitigation measures

Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
Soil					
1	Soil pollution due to hazardous chemical substances including fuel greases and oils used on site during the maintenance or spill event associated with the Project activities.	Medium (Negative)	<ul style="list-style-type: none"> Immediately clean all spillages of fuels, lubricants and other petroleum-based products that can take place during maintenance activities. 	Low (Negative)	Low
2	Risk of soil erosion during maintenance activities that may be required for the Project activities (Sewer line).	Medium (Negative)	<ul style="list-style-type: none"> During maintenance, existing roads and tracks should be used as far as possible. Vegetation establishment should be monitored to ensure that vegetation cover is enough to prevent erosion development. 	Low (Negative)	Low
Freshwater Resource Impacts as per the DWS Risk Assessment Matrix in the SAS report dated October 2019					
1	<ul style="list-style-type: none"> Potentially increased sewage water input into the wetland habitat thus altering the natural hydrological regime; Sedimentation of the wetlands resulting from sediment-laden stormwater runoff entering the wetlands and associated disturbances to vegetation; 	Medium (Negative)	<ul style="list-style-type: none"> It is recommended that the managing authority test the integrity of the pipeline at a reasonable frequency (e.g. every 6 months). Should areas need to be excavated for maintenance purposes, all mitigation measures as stipulated above are deemed applicable. 	None	None



Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
<ul style="list-style-type: none"> Potential risk of contaminated runoff and litter entering the wetlands thus altering water quality; and Potential erosion and incision within the wetlands as a result of the concentrated flow of water. 		<ul style="list-style-type: none"> Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles. It should be ensured that the wetlands are not inundated as a result of leaks or bursting of the proposed sewer pipeline, and that an emergency plan should be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of the proposed sewer the pipeline. Should a blockage occur, all possible steps are to be taken to prevent the pollution of the wetlands during repair, including the placement of sheeting around the manhole used for access as well as containment barrels for any effluent withdrawn. In the instance of failure of the pipeline, all solid waste visible should be removed from the wetlands, preferably using hand equipment (no heavy machinery within any of the wetlands). The waste should be disposed of at a registered waste disposal facility. Any contaminated soil should be removed, and the topsoil layer removed (20 cm), where after the soil should be replaced and revegetated with indigenous freshwater vegetation. 		



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles. 		
2	<ul style="list-style-type: none"> Temporarily altered flow regime, leading to possible loss of recharge to downgradient areas of the wetlands, impacting on downgradient biota; and Possible sedimentation of downgradient areas of the wetlands. 	Low (Negative)	<ul style="list-style-type: none"> An Alien and Invasive Plant ("AIP") management plan should be developed and implemented following construction. AIPs should be removed by hand and no machinery should be allowed in the wetland. The portions of the Blesbokspruit Floodplain and Channelled Valley Bottom 2 wetland as well as any other wetlands disturbed by construction activities must be rehabilitated with indigenous vegetation, thus reinstating faunal and floral habitats. This will ensure that the current levels of ecological service provision of the wetland are maintained and where feasible, improved. 	None	None
Watercourses (Blesbokspruit Floodplain wetland, Channelled Valley Bottoms and Unchannelled Valley Bottom wetland) SAS report dated October 2019					
1	Potential failure of infrastructure: possible leaks from pipeline into the wetland systems, causing incision and alteration of the hydroperiod of the wetland in some areas.	High	<ul style="list-style-type: none"> It should be ensured that additional watercourses are not inundated as a result of leaks or failure of the pipeline, and that an emergency plan should be compiled to ensure a quick response and attendance to the matter in case of a leakage or failure of the pipeline. 	Medium (Negative)	Medium
2	Indiscriminate movement of vehicles and vegetation trampling within the watercourses during	High	<ul style="list-style-type: none"> The pipeline and manholes must be pressure tested for integrity upon the completion of construction. The managing authority should test the integrity of the 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
	maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure.		<p>pipeline at least once every five years or more often should there be any sign or reports of a leak.</p> <ul style="list-style-type: none"> Should a blockage occur, all possible steps are to be taken to prevent the pollution of the watercourse during repair, including the placement of sheeting around the manhole used for access as well as containment barrels for any effluent withdrawn. In the instance of failure of the pipeline, if the watercourse has significant flow, the flow should be diverted (by means of sandbags/cofferdam) to allow for a dry work environment as well as prevent further leakages into the watercourses. Any contaminated soil should be removed, and the topsoil layer removed (20 cm), where after the soil should be replaced and revegetated with indigenous freshwater vegetation. Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate. 		
Terrestrial ecology as per the Biodiversity assessment by STS, dated October 2019.					
1	Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential ("SCC").	Medium (Negative)	<ul style="list-style-type: none"> No vehicles or maintenance personnel are to traverse through the sensitive freshwater habitat areas unnecessarily. 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
	Potential indiscriminate movement of vehicles and personnel through the terrestrial habitat as well as vegetation trampling during maintenance activities, resulting in soil compaction and disturbance, which could result in increased habitat disturbance and the proliferation of alien floral species. Possible leaks from the pipeline (currently taking place on-site) resulting in contamination of soils leading to nutrient and pH changes which will impact upon the floral and faunal ecology.		<ul style="list-style-type: none"> Restrict maintenance vehicles to travelling only on designated roadways to limit the ecological footprint of the Project. An alien vegetation monitoring programme should be continued. 		
Groundwater					
1	<p>Groundwater pollution due to maintenance activities undertaken for the Project activities. That may include:</p> <ul style="list-style-type: none"> -Potential spills as a result of failure in the sewerage infrastructure due to poor maintenance. -Potential spills of hazardous chemical substances including 	Medium (Negative)	<ul style="list-style-type: none"> Appropriate equipment to deal with emergency spill incidents is to be available in the maintenance vehicle. This includes fire extinguishers, spill kits for hydrocarbon spills, drip trays for equipment and/or machinery leaks, drums or containers for contaminated water. Soil contaminated with hazardous chemical substances shall be treated as hazardous waste and removed from site. 	Low (Negative)	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
	fuel, greases and oils used on site during maintenance activities.				
Atmosphere and noise					
1	Ambient noise levels are likely to increase as a result of maintenance activities that may occur during the operational phase.	Medium (Negative)	<ul style="list-style-type: none"> Maintenance activities that may generate noise must be conducted during daytime hours. Vehicles and equipment must be inspected and maintained on a regular basis. Working hours should be restricted to daylight hours. No sound amplification equipment such as sirens, loud halers or hooters are to be used on site except in emergencies. A complaints register should be kept on site. The register must record the following: Date when complaint was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed. 	Low (Negative)	Low
Socio-economic					
1	Creation of Jobs and transfer of skills.	Positive	<ul style="list-style-type: none"> The Project will result in the creation of new jobs during the construction phase of the Project and workers will be sourced from the local community. The Project will promote skills development as there will be transfer of skills that will occur as part of the construction phase of the Project. 	Positive	Low



Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
2	Sourcing of local goods and services.	Positive	<ul style="list-style-type: none"> Materials and services will be sourced locally, and this will result in a positive economic impact as the revenue generated will be beneficial to the local economic development of the Brakpan, Springs and Welgedacht and surrounding areas. 	Positive	Low
3	Improved functioning of the sewerage infrastructure	Positive	<ul style="list-style-type: none"> The Project provides a solution to the sewer capacity challenges that the municipality faces in terms of efficient sanitation service provision. 	Positive	Low
4	Increased capacity to deal with the anticipated future volumes of sewage as a result of development in the area.	Positive	<ul style="list-style-type: none"> The proposed sewer pipeline has been designed with consideration for anticipated growth trends in the greater Brakpan, Springs and Welgedacht area. The proposed pipeline will provide efficient sanitation services in the future as it is designed to effectively handle the expected increase in sewage flows associate with the anticipated development in the area. 	Positive	Low
5	Increased development and economic growth within area.	Positive	<ul style="list-style-type: none"> Increase in development opportunities that promote local economic development as the improved sewage capacity will be able to support future developmental opportunities within the area. 	Positive	Low

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



- Scientific Terrestrial Services, October 2019. *Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.*
- Scientific Aquatic Services, October 2019. *Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province.*

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

Scientific Terrestrial Services, October 2019. *Biodiversity assessment as part of an environmental assessment and authorisation process for the proposed sewer pipeline from the Dal Fouche mine to Impala Mine between Springs and Brakpan, Gauteng province.*

The following assumptions and limitations apply to the report:

- The ecological assessment is confined to a 20 m buffer on either side of the proposed sewer pipeline. It does not include the neighbouring and adjacent properties. These were however considered as part of the desktop assessment;
- With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is, however, expected that most floral and faunal communities had been accurately assessed and considered;
- Due to the nature and habits of most faunal taxa, it is unlikely that all species would have been observed during a field assessment of limited duration. Therefore, site observations were compared with literature studies where necessary;
- Sampling, by its nature, means that not all individuals are assessed and identified. Some species and taxa associated with the proposed sewer pipeline may have been missed during the assessment; and
- The data presented in this report are based on one site visit, undertaken on the 05th of September 2019 (Early Spring). A more accurate assessment would require that assessments take place further into the summer season, a few weeks after the first rains. Yet, in this circumstance, on-site data was significantly augmented with all available desktop data. Together with Project experience in the area, the findings of this assessment are considered to be an accurate reflection of the ecological characteristics of the proposed sewer pipeline.

Scientific Aquatic Services, October 2019. *Watercourse Assessment as part of the environmental authorisation process for the proposed construction of the Dal Fouche and Impala Mine gravity sewer pipeline, near Springs, Gauteng Province.*

The following assumptions and limitations are applicable to the report:

- All watercourses identified within 500 m of the Project were delineated in fulfilment of GN 509 as it relates to the National Water Act, 1998 (Act No. 36 of 1998) using desktop methods and verification thereof undertaken according to “Department of Water Affairs and Forestry (DWAF) (2008): Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas”;
- Historically, most of the landscape surrounding the proposed sewer pipeline were utilised for mining and related activities. As a result, these surrounding landscapes have been historically transformed and thereby affecting the soil profiles and vegetation composition of the watercourses within these landscapes;
- Some areas surrounding the proposed sewer pipeline have undergone significant anthropogenic influences aside from mining (industrial and road construction, informal housing settlements and grazing and cultivation activities), which have further altered the soil profiles and vegetation composition. As a result, identification of the outer boundary of the temporary zone of the wetlands proved difficult in some areas. Therefore, the watercourse



delineations as presented in this report are regarded as a best estimate of the boundaries based on the site conditions present, as observed during the site assessment. These delineations are, however, deemed accurate enough to guide the authorisation process;

- It is assumed that Horizontal Directional Drilling (“HDD”) techniques will be utilised for all portions of the pipeline that traverse watercourses. Open trenching will be undertaken for other portions not associated with watercourses. Should this not be the case, the impact assessment will need to be revised to reflect the relevant construction techniques;
- Global Positioning System (“GPS”) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur, however, the delineations as provided in this report are deemed accurate enough to fulfil the authorisation requirements as well as implementation of the mitigation measures provided. If more accurate assessments are required, the watercourses will need to be surveyed and pegged according to surveying principles;
- Watercourse and terrestrial zones create transitional areas where an ecotone is formed as vegetation species change from terrestrial to obligate/facultative species. Within this transition zone, some variation of opinion on the watercourse boundary may occur. However, if the DWAF (2008) method is followed, all assessors should get largely similar results; and
- With ecology being dynamic and complex, certain aspects (some of which may be important) may have been overlooked. However, it is expected that the Project activities have been accurately assessed and considered, based on the field observations and the consideration of existing studies and monitoring data in terms of riparian and wetland ecology.

5.4 Decommissioning Phase: Potential impacts, significance (pre- and post-mitigation) and mitigation measures

Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation (positive or negative):	Risk of the impact and mitigation not being implemented
<p>No decommissioning will be done as part of this Project. The existing sewer pipelines will not be removed, and the Dal Fouche pump station will be decommissioned (not be demolished but it will cease to operate).</p> <p>No decommissioning is foreseen for the Project as the newly constructed sewer pipelines will be permanent. However, should this be required, a closure plan will be submitted to the competent authority for approval and it will comply to the relevant legislation at the time of closure.</p>				

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



Not applicable.

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

Not applicable.



5.5 Cumulative Impacts

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

Cumulative Impacts that may arise as a result of direct and indirect impacts associated with the Project as assessed in the Impact Assessment above. The proposed layout (Preferred) will result in the following cumulative impacts over time as a result of construction and maintenance activities that were not efficiently mitigated include:

Contribution to the degradation of sensitive environments over time as a result of:

- Construction, run- off and accidental spillages may serve as a source of pollution, while siltation may occur during construction;
- Possible surface water impacts from sewage spillages in the Blesbokspruit Floodplain and Channelled Valley Bottom wetlands.
- Possible ground water contamination as a result of possible undetected failures in the sewerage infrastructure that could lead to sewage spills that may serve as a source of ground water pollution; and

The Project contribution to cumulative impacts will, however, be low if managed according to the EMPr.

6 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.

The Proposal (Preferred)

The proposed layout has been assessed in terms of impacts that could arise during the planning, construction and operational phase of the Project. Decommissioning impacts were not considered as the Project will result in the construction of permanent infrastructure. The impacts of the Project that have been identified in the planning phase of the Project have been mitigated to low impact significance. These impacts relate to possible risk of non-compliance with legal requirements, incorrect site layout, shortage of municipal supply of services, poor communication and associated harm to the environment due to inadequate planning and design.

The impacts that have been identified in the construction phase relate to legislative requirements, the Project footprint, health and safety, soils, and the terrestrial ecology of the area that can be mitigated to low impact significance. The proposed sewer pipeline will traverse two wetland systems namely the Blesbokspruit Floodplain and a Channelled Valley Bottom and run adjacent to another Channelled Valley and Unchannelled Valley Bottom wetland. Based on the findings of the watercourse assessment and results of the impact assessment, the proposed sewer pipeline has limited potential impacts that are considered to pose a low impact to the wetlands, post-mitigation.

Operational phase impacts associated with the maintenance of the sewer infrastructure on the surrounding environment can be mitigated to low impact significance except potential failure of infrastructure impact that remains medium.

The proposed layout provides many positive socio-economic benefits with positive impact that will occur during the operational phase of the Project. The positive benefits include:

- Creation of Jobs and transfer of skills,



- Sourcing of local goods and services,
- Improved functioning of the sewerage infrastructure; and
- Increased capacity to deal with the anticipated future volumes of sewage as a result of development in the area.

The proposed layout (as opposed to the no-go option) is preferred as it possess a low risk to the environment and provides socio-economic benefits.

Alternative

The alternative assessment considered the site, layout and technology and design alternatives. The alternative is not supported as the route will follow the existing sewage line footprint area that is the preferred option. Place new pipeline and leave existing pipelines is preferred as no new areas will be disturbed. The use of HDPE pipelines is preferred to concrete due to the corrosive nature of sewage.

No-Go Option (Compulsory)

If the No-Go option was to occur, then the current status of the sanitation services will persist and worsen over time as the existing infrastructure is already stressed by current demand. Over time, the situation will deteriorate and the risk of failure of the existing infrastructure will increase. It is worth noting that currently, the existing pipeline has numerous leaks and as such, implementation of the new pipeline will minimise the occurrence of leakages and aid in preventing the impacts of sewage flowing into the wetlands as a result.

The positive impacts associated with improved environmental conditions in terms of the prevention of sewage spills that have been observed as a result in the failure of the existing infrastructural sewage capacity will not be realised.

The associated positive impacts such as the provision of adequate and efficient sewerage infrastructure in the greater Brakpan and Welgedacht area will not occur. The positive socio-economic impacts associated with the creation of employment opportunities, sourcing of local goods and services will not be realised. The provision and availability of efficient sanitation service provision is essential for economic growth and as such, if the Project was not to go ahead, the future opportunities for economic growth will be lost if the No-Go option is implemented.

6.1 Impact Summary of The Project or Preferred Alternative

The Proposal (Preferred)

PLANNING/PRE-CONSTRUCTION PHASE:

Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Significance rating of impacts after mitigation (positive or negative):
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Legislative Requirements



1	Risk of non-compliance with legal requirements of national and provincial legislation in terms of the Project.	Medium (Negative)	Low (Negative)
Environmental			
1	Harm to the environment.	Medium (Negative)	Low (Negative)
Social			
1	Poor communication and lack of transparency of Project information that may lead to conflict.	Medium (Negative)	Low (Negative)
CONSTRUCTION PHASE			
Potential impacts:		Significance rating of impacts prior to mitigation (positive or negative):	Significance rating of impacts after mitigation (positive or negative):
Legislative requirements			
1	Non-compliance with legal requirements of the EA and WUL.	Medium (Negative)	Low (Negative)
Project footprint and site layout			
1	Risk of construction activities occurring outside the approved Project footprint.	Medium (Negative)	Low (Negative)
Health and safety			
2	Risk of damage caused by fires on site	Medium (Negative)	Low (Negative)
	Health and safety risk that may arise and impact on the public and construction workers.	Medium (Negative)	Low (Negative)
Soil			



1	Soil pollution due to hazardous chemical substances including fuel greases and oils used on site.	Medium (Negative)	Low (Negative)
2	Exposure to soil erosion.	Medium (Negative)	Low (Negative)
Terrestrial ecology Impacts as per the Biodiversity Assessment by STS October 2019			
1	<p>Loss of terrestrial habitat, diversity and species of conservation concern ("SCC").</p> <p>Site preparation and vegetation clearing activities will result in the loss of terrestrial habitat and species diversity, both floral and faunal along the proposed sewer pipeline route.</p> <p>Should any SCC be located within the construction footprint; although deemed unlikely, these species will be impacted upon as a result of the clearing activities, either resulting the loss of these species from the immediate area (floral species) or the relocation of such species to similar habitat nearby.</p>	Medium (Negative)	Low (Negative)
Waste Management			
1	Poor waste management on site.	Medium (Negative)	Low (Negative)
Freshwater Resource Impacts as per the DWS Risk Assessment Matrix in the SAS report dated October 2019			
1	<ul style="list-style-type: none"> Increased runoff and erosion leading to sedimentation of the wetlands; Increased sedimentation of the wetland habitat leading to smothering of vegetation and potentially altering surface water quality; Decreased ecoservice provision. 	Medium (Negative)	None ³
2	<ul style="list-style-type: none"> Damage to wetland vegetation leading to exposed/compacted soils, in turn leading to increased runoff and erosion. Decreased ecoservice provision. Further decreased ability to support biodiversity. 	Medium (Negative)	None
3	<ul style="list-style-type: none"> Disturbances of soils leading to increased alien vegetation proliferation, and in turn to altered wetland habitat; 	Medium	None

³ No post mitigation rating was provided by the specialist.



	<ul style="list-style-type: none"> Altered stormwater runoff patterns, leading to increased erosion and sedimentation of the wetlands; Loss and change of the wetland habitat and ecological structure resulting in impacts on biota; Potential impacts on water quality and contamination of soils within the wetland environments; Potential changes to the ecoservice provision of the wetland's environments; and Impacts on hydrology and sediment balance of the wetland environments. 	(Negative)	
4	<ul style="list-style-type: none"> Altered flow regime as a result of solid waste within and surrounding the wetlands; Altered water quality due to chemical waste disposal within and surrounding the wetlands; and Possible contamination of wetland soils and surface water, leading to reduced ability to support biodiversity. 	Medium (Negative)	None
5	<ul style="list-style-type: none"> Potential impacts on water quality and contamination of soil within the wetlands as a result of construction equipment and machinery, leading to altered wetland habitat; and Possible contamination of wetland soils and surface water, leading to reduced ability to support biodiversity. 	Low (Negative)	None
6	<ul style="list-style-type: none"> Disturbances of soils leading to sedimentation and increased alien vegetation proliferation, and in turn to altered wetland habitat. Impacts to the ecoservice provision of the wetland habitat. Potential impacts on water quality and contamination of soil within the wetland habitat due to concrete being cast alongside of the wetlands. 	Medium (Negative)	None
Watercourses (Blesbokspruit Floodplain, Channelled Valley Bottoms and Unchannelled Valley Bottom wetland) SAS report dated October 2019			
1	Potential spills and leaks from vehicles delivering construction material (during refuelling of vehicles, leaks from hazardous material containers).	Medium (Negative)	Low (Negative)
2	Indiscriminate movement of vehicles within the watercourses.	Medium (Negative)	Low (Negative)
3	Clearing of vegetation during site preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas.	Medium (Negative)	Low (Negative)
4	Topsoil stockpiling adjacent to the watercourse.	Medium	Low



		(Negative)	(Negative)
5	Ground-breaking and excavation of trenches adjacent and within close proximity (tens of metres) to the watercourses.	Medium (Negative)	Low (Negative)
6	Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the watercourses)	Low (Negative)	Low (Negative)
7	Spillage of sewage effluent from existing pipeline during construction	Low (Negative)	Low (Negative)
Groundwater			
1	Ground water contamination as a result of unsanitary practices and use of Chemical toilets on site.	Medium (Negative)	Low (Negative).
2	Groundwater contamination due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used on site.	Low (Negative).	Low (Negative).
Storm water management			
1	Sedimentation of adjacent watercourse as a result of construction activities.	Medium (Negative)	Low (Negative).
Atmosphere and noise			
1	Ambient noise levels and dust creation are likely to increase because of the construction activities.	Medium (Negative)	Low (Negative).
Heritage and Palaeontology			
1	Construction activities may disturb or destroy sites, features or artefacts of archaeological and/or historical importance.	Medium (Negative)	Low (Negative).
2	Construction activities may disturb or destroy fossils or bedrock of palaeontological sensitivity.	Medium (Negative)	Low (Negative).
Social Impacts			



1	Traffic disturbances to commuters and local community as a result of road closures or construction activities occurring within the road reserve.	Medium (Negative)	Low (Negative).
2	Risk associated with poor communication between landowners and the Project team that may arise is conflict	Medium (Negative)	Low (Negative).
Rehabilitation			
1	Construction activities may lead to the disturbance of the site and areas within the Project footprint	Medium (Negative)	Low (Negative).

OPERATIONAL PHASE

Potential impacts:	Significance rating of impacts prior to mitigation (positive or negative):	Significance rating of impacts after mitigation (positive or negative):
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Soil

1	Soil pollution due to hazardous chemical substances including fuel greases and oils used on site during the maintenance or spill event associated with the Project activities.	Medium (Negative)	Low (Negative)
2	Risk of soil erosion during maintenance activities that may be required for the Proposed project activities (Sewer line).	Medium (Negative)	Low (Negative)

Freshwater Resource Impacts as per the DWS Risk Assessment Matrix in the SAS report dated October 2019

1	<ul style="list-style-type: none"> Potentially increased sewage water input into the wetland habitat thus altering the natural hydrological regime; Sedimentation of the wetlands resulting from sediment-laden stormwater runoff entering the wetlands and associated disturbances to vegetation; Potential risk of contaminated runoff and litter entering the wetlands thus altering water quality; and Potential erosion and incision within the wetlands as a result of the concentrated flow of water. 	Medium (Negative)	None
2	<ul style="list-style-type: none"> Temporarily altered flow regime, leading to possible loss of recharge to downgradient areas of the wetlands, impacting on downgradient biota; and 	Low (Negative)	None



	Possible sedimentation of downgradient areas of the wetlands.		
Watercourses (Blesbokspruit Floodplain wetland, Channelled Valley Bottoms and Unchannelled Valley Bottom wetland) SAS report dated October 2019			
1	Potential failure of infrastructure: possible leaks from pipeline into the wetland systems, causing incision and alteration of the hydroperiod of the wetland in some areas.	High (Negative)	Medium (Negative)
2	Indiscriminate movement of vehicles and vegetation trampling within the watercourses during maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure.	High (Negative)	Low (Negative)
Terrestrial ecology as per the Biodiversity assessment by STS, dated October 2019			
1	Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential ("SCC"). Potential indiscriminate movement of vehicles and personnel through the terrestrial habitat as well as vegetation trampling during maintenance activities, resulting in soil compaction and disturbance, which could result in increased habitat disturbance and the proliferation of alien floral species. Possible leaks from the pipeline (currently taking place on-site) resulting in contamination of soils leading to nutrient and pH changes which will impact upon the floral and faunal ecology.	Medium (Negative)	Low (Negative)
Groundwater			
1	Groundwater pollution due to maintenance activities undertaken for the Project activities. That may include:	Medium (Negative)	Low (Negative)
Atmosphere and noise			
1	Ambient noise levels are likely to increase as a result of maintenance activities that may occur during the operational phase.	Medium (Negative)	Low (Negative)
Socio-economic			
1	Creation of Jobs and transfer of skills.	Positive	
2	Sourcing of local goods and services.	Positive	
3	Improved functioning of the sewerage infrastructure.	Positive	
4	Increased capacity to deal with the anticipated future volumes of sewage as a result of development in the area.	Positive	
5	Increased development and economic growth within area.	Positive	
DECOMMISSIONING PHASE			



The Project will involve the construction of permanent infrastructure and decommissioning will not be required.

Alternative (Not Supported)

Not Applicable as the new sewer pipeline will be constructed parallel to the existing sewer pipeline.

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

The proposal is the preferred layout as all impacts identified as part of the proposed activity can be mitigated to low impact significance. The proposal provides many positive socio-economic benefits:

- Creation of Jobs and transfer of skills;
- Sourcing of local goods and services;
- Improved functioning of the sewerage infrastructure; and
- Increased capacity to deal with the anticipated future volumes of sewage as a result of development in the area.

The preferred layout involves the construction of new HDPE pipelines parallel to the existing Dal Fouche and Impala Mine Outfall Sewer line that will be decommissioned (pipelines to remain in the ground). The proposal is supported from an ecological, freshwater and engineering perspective as outlined in the specialist reports attached to this report as annexure G and I.

The Project has an overall low risk to the environment and provides socio-economic and environmental benefits to the surrounding community. For this reason, the proposed layout is preferred.

6.2 Spatial Development Tools

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

The City of Ekurhuleni Regional Spatial Development Framework Region D. The proposed activity is fully aligned with the provisions thereof; Gauteng Provincial EMF. The proposed activity will be in the urban development zone and fully complies with the provisions thereof.

6.3 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:



- All Project footprint areas should remain as small as possible and should not encroach into the watercourses unless essential and part of the Project. It must be ensured that the watercourse habitat is off-limits to construction vehicles and non-essential personnel.
- The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled.
- Planning of temporary roads and access routes should avoid watercourse areas and be restricted to existing roads where possible.
- Appropriate sanitary facilities must be provided for the life of the construction phase and all waste removed to an appropriate waste facility.
- All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas.
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage.
- No fires should be permitted in or near the construction area.
- Ensuring that an adequate number of waste and “spill” bins are provided will also prevent litter and ensure the proper disposal of waste and spills.
- All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil.
- In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss.
- All spills should they occur, should be immediately cleaned up and treated accordingly.
- As far as possible avoid disturbance of sensitive freshwater habitat units.
- No stockpiling must take place within the sensitive freshwater habitat as this can result in altered vegetation composition and water quality.
- Should any SCC be encountered within the construction footprint, they are to be relocated to suitable habitat by a qualified specialist. Furthermore, no collection of SCC are allowed.
- Demarcate the construction footprint and ensure that all construction activities remain within this footprint.
- Ensure that the Project footprint area remains as small as possible, particularly within the areas adjacent to the freshwater habitat.
- Restrict vehicles to travelling only on designated roadways to limit the ecological footprint of the Project.
- No informal fires are allowed by construction personnel outside of the Project footprint.
- The contractor laydown and construction areas should be rehabilitated with indigenous species when construction is completed. Monitoring of these rehabilitated areas should take place a year after the construction has been completed to ensure vegetation growth.
- An alien vegetation monitoring programme should be developed and implemented for one year after construction activities have taken place.
- All areas of disturbed and compacted soils need to be ripped, reprofiled and reseeded with indigenous vegetation to prevent the establishment of alien and invasive species.
- No hunting or trapping of faunal species is to be allowed by construction personnel.
- No construction rubble, old pipeline or cleared alien invasive species are to be disposed of along the extent of the proposed sewer pipeline and should be taken to a registered waste disposal facility.
- Any contaminated soil due to the leaking sewer pipeline, should be disposed of at a suitably licensed facility.
- Proliferation of alien and invasive species is expected within any disturbed areas. Whilst not considered severe at this time, the vegetation component within the watercourse environment is already transformed. However, alien invasive species are opportunistic, and where disturbances do occur, they will promulgate; therefore, these species should be eradicated and controlled to prevent their spread beyond the Project footprint. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, must be controlled.
- Removal of the alien and weed species encountered within the watercourses must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and Section 28 of the National



Environmental Management Act, 1998 (Act No. 107 of 1998). Removal of species should take place throughout the construction, operational, and maintenance phases.

- Species specific and area specific eradication recommendations:
 - Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used;
 - Footprint areas should be kept as small as possible when removing alien plant species; and
 - No vehicles should be allowed to drive through designated sensitive wetlands areas during the eradication of alien and weed species.
- Sheet runoff from compacted areas should be slowed down by the strategic placement of berms.
- As far as possible, all construction activities should occur in the low flow season, during the drier winter months.
- As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils.
- No stockpiling of topsoil is to take place within close proximity to the wetland, and all stockpiles must be protected with a suitable geotextile to prevent sedimentation of the wetland.
- All soils compacted as a result of construction activities as well as ongoing operational activities falling outside of Project footprint areas should be ripped and profiled.
- A monitoring plan for the Project and the immediate zone of influence should be implemented to prevent erosion and incision.
- Construction rubble must be collected and disposed of at a suitable landfill site.
- All alien vegetation in the footprint area as well as immediate vicinity of the Project should be removed. Alien vegetation control should take place for a minimum period of two growing seasons after rehabilitation is completed.
- Recommendations against the use of open trenching within the watercourses and GDARD 30 m setback and rather the use of HDD is advised.
- The watercourses must be demarcated as a no-go area.
- It is recommended that the new pipeline is to be installed as soon as possible in order to prevent any further leakage of sewage and by extension further degradation of the watercourses. Of specific importance is the Blesbokspruit wetland system which was declared as a Ramsar site in 1986. At present, the wetland is facing large scale pollution from industries upstream which is coupled with influx of sewage effluent that is being discharged from the degraded leaking pipeline.
- The construction of the portion of the pipeline (HDD activities) which will be crossing the wetlands must be scheduled for the drier winter period in order to minimise the risk of sediment-laden runoff entering the wetland as a result of the construction activities.
- The vegetation that will be cleared as part of the site preparation activities for the HDD activities must remain as small as possible, to reduce the risk of further proliferation of alien vegetation, and to retain a level of protection to the wetland during construction (e.g. sediment trapping, slowing of stormwater runoff etc.).
- Any excavated areas must be backfilled with in situ material and shaped to mimic the natural topography in order to avoid concentrated preferential surface flow runoff into any wetlands and minimise the risk of erosion. Additionally, these areas must be revegetated with indigenous vegetation; and
- Should any manholes be included in the final plan, these are not to be located within the 1:100-year flood line of the wetland and must be constructed in such a way as to elevate the manhole cover above the 1:100-year flood level. This can be done by extending the collar of the manhole above the ground level and then building up a mound of appropriate soil around the manhole which is then sloped as gently as possible back to natural ground level.

6.4 The Needs and Desirability of the Proposed Development

Needs and Desirability of the proposed development has been assessed in terms of the DEA Guideline Series: Needs and Desirability (2017)



The City of Ekurhuleni constructed the Dal Fouche and Impala Mine sewer pipeline between 50 to 130 years ago. Sections of the sewer line date back between 50 to 130 years. The existing pipelines were constructed using concrete, as concrete was the most frequently used material for the manufacture of outfall sewers.

The City of Ekurhuleni has concluded to decommission the existing pipeline and design to construct a new pipeline. By constructing a new pipeline, it will ensure a longer life span, therefore, reducing the maintenance of the infrastructure. The HDPE material for the Impala Mine section will provide proper resistance against any corrosion attacks.

The Project will bring the following benefits to society in general:

- The provision of basic services to the greater community.
- The promotion of improved operation of the sanitation infrastructure within the greater community.
- The improved health status of the wetland units as the risk of sewage spills will be reduced.
- The promotion of good health practices within the community.
- The proposed employment opportunities will be generated during the construction; new business opportunities will be encouraged.

The Project will provide many positive socio-economic benefits to the local community these include:

- Creation of Jobs and transfer of skills,
- Sourcing of local goods and services,
- Improved functioning of the sewerage infrastructure in the greater community.

6.5 Environmental Authorisation (EA) Period

The period for which the environmental authorisation (as applicable to the construction phase) is required

For a period of 10 years.

6.6 Environmental Management Programme (EMPr)

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

Undertaking Regarding Correctness of Information

EMPr attached	Yes	
Refer to Appendix H		

7 APPENDIXES (SECTION F)

The following appendixes have been attached:

Appendices	
Appendix A:	Site plan(s)
Appendix B:	Photographs



Appendices	
Appendix C:	Facility illustration(s)
Appendix D:	Route position information
Appendix E	Public Participation Process
Appendix F:	Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information
Appendix G:	Specialist reports
Appendix H:	Environmental Management Programme
Appendix I	Other information

