Ekurhuleni Metropolitan Municipality

Welgedacht water pipeline draft BAR application form

Locality: Welgedacht

Date: 13 September 2017

SHANGONI
Management Services (Pty) Ltd

DRAFT BASIC ASSESSMENT REPORT

Ekurhuleni Metropolitan Municipality

Welgedacht draft BAR

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SHANGONI
Management Services (Pty) Ltd

PROJECT DETAILS	
Department of	Gauteng Department of Agriculture and Rural Development
Reference No.:	GAUT: 002/17-18/E0105
Project Title:	Welgedacht water pipeline
Report Title:	Draft Basic Assessment report
Project Number:	EKU-POM-17-04-24 PS-WS 34-2016 EIA 0001
Compiled by:	Lee-Anne Fellowes 
Date:	September 2017
Revision number:	01
Location:	Between Sundra and Springs
Technical Reviewer:	Brian Hayes (Pr.Eng.) 

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GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

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

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.

2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.

3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**

4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**

5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.

6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.

8. An incomplete report may lead to an application for environmental authorisation being refused.

9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**

10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.

11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.

12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.

13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

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

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

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

(For official use only)

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

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

The draft BAR will be submitted to GDARD within 90 days.

Is a closure plan applicable for this application and has it been included in this report? **No**

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

The Welgedacht water pipeline project is part of Ekurhuleni's master plan, and is 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? **Yes**

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

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented? **No**

If no, why?

This Draft Basic Assessment Report submitted will be circulated for a period of 30 days to all interested and affected parties including organs of state.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Welgedacht water pipeline and associated infrastructure.

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	X	Other, specify	

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

The water pipeline triggers a Water Use License in terms of National Water Act (NWA) (Act No. 36 of 1998) as the proposed water pipeline will transect a wetland, and is administered by the Department of Water and Sanitation (DWS).

If yes, have you applied for the authorisation(s)?	YES	**NO**
If yes, have you received approval(s)? (attach in appropriate appendix)	YES	**NO**

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

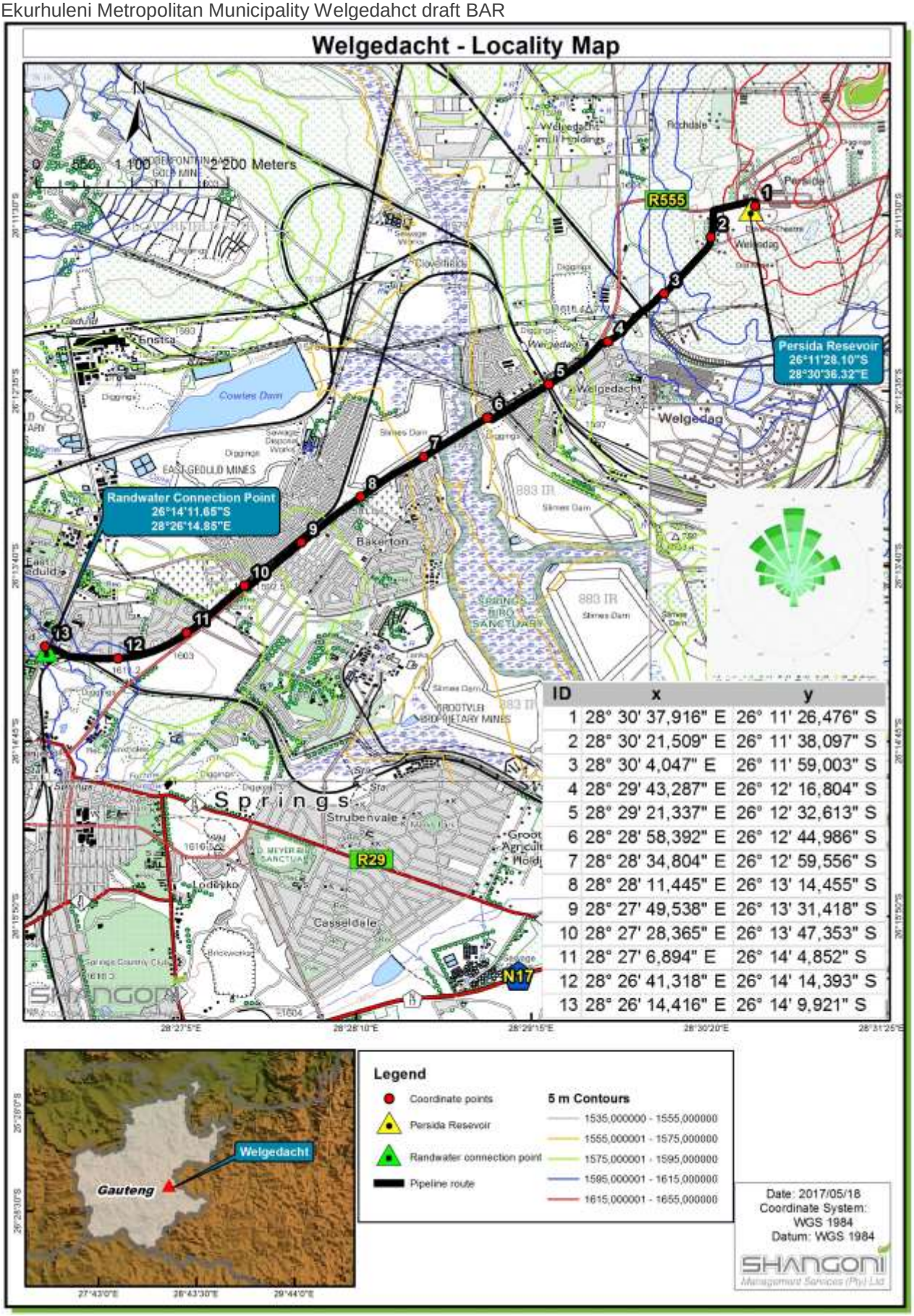
List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	**National & Provincial**	**27 November 1998**
EIA Regulations GN 983 & GN 985 (Listing Notice 1 & 3)	**National and Provincial**	**8 December 2014, as amended**
Water Use License in terms of Section 21 (c) and (i) of the National Water Act (Act No. 36 of 1998) as amended.	**Department of Water and Sanitations (DWS)**	**1998**
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEM: AQA)	**National & Provincial**	**24 February 2005**
South African Heritage Resource Act, 1999 (Act No. 25 of 1999)	**South Africa Heritage Resources Agency (SAHRA) Provincial Heritage Resources Authority-Gauteng (PHRA-G)**	**28 April 1999**
Occupational Health and Safety Act (No 85 of 1993)	**National Department of Labour**	**23 June 1993**
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).	**GDARD and Department of Environmental Affairs (DEA)**	**2004**
Gauteng Provincial Environmental Management Framework	**Provincial**	**May 2015**
Ekurhuleni Water Services By-Laws, 2002	**Ekurhuleni Metropolitan Municipality**	**2002**
Ekurhuleni Solid Waste By-Laws	**Ekurhuleni Metropolitan Municipality**	**2002**
The National Environmental Management: Protected Areas Act. 2004 (Act No 57 of 2003)	**GDARD and Department of Environmental Affairs (DEA)**	**2003**
Ekurhuleni Metropolitan Municipality Biodiversity Plan	**Ekurhuleni Metropolitan Municipality**	**November 2012**
Gauteng Conservation Plan Version 3.3 (C-Plan 3.3)	**GDARD and Department of Environmental Affairs (DEA)**	**2011**
Ekurhuleni Metropolitan Municipality Environmental Policy Final		
Gauteng Department of Agriculture, Conservation, Environment and Land Affairs Development Guidelines for Ridges		

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

Legislation, policy of guideline	Description of compliance
National Environmental Management Act No. 107 of 1998 (NEMA)	**The National Environmental Management Act (Act No. 107 of 1998) (NEMA) is the overarching framework for environmental legislation as well as the Regulations for Environmental Impact Assessment. It sets out the principles that serve as a general framework for environmental planning, as guidelines by reference to which organs of state must exercise their functions and guide other laws concerned with the protection or management of the environment. The application considers the environmental and socio-economic conditions in compliance with the NEMA principles.**
The National Environmental Management: Biodiversity Act (Act 10 of 2004)	**The Act provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA. Areas of high biodiversity need to be protected. Should any protected plants be found on site, these will be managed in consultation with GDARD**
The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008	**No waste management license would be required for the construction or operational phases of the proposed activity. Only a limited amount of solid construction waste will be stored and handled on the site, before being hauled away and dumped at the nearest registered landfill site.**
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEM: AQA)	**During the construction phase, dust and the generation of noise can become a significant factor, especially to the surrounding landowners. However, if the development is well planned and the mitigating measures proposed in the EMPr are successfully implemented the proposed development's contribution to air pollution and the generation of air pollution can become less significant**
National Heritage Resources Act, 1999 (Act No. 45 of 1999 (NHRA)	**The Act aims to promote the good management of the national heritage resources. According to the Act the South African Heritage Resources Agency (SAHRA) must be notified during the early planning phases of a project for any development that meet certain criteria. The Agency has been notified as required. Any artefacts uncovered during the construction phase will be reported to SAHRA as provided for in the EMPr.**
Occupational Health and Safety Act (No 85 of 1993)	**The Act provides for the health and safety of persons at work and for the health and safety of persons regarding the use of machinery; the protection of persons other than persons at work, against hazards to health and safety arising out of or relating to the activities of persons at work. The EMPr provides for measures to ensure that objectives of the Act are met on this site**
EIA Regulations GN 983 (Listing Notice 1) and EIA Regulations GN 985 (Listing Notice 3)	**The proposed development constitutes an activity listed under GN R. 983 and GN R. 985 and therefore a Basic Assessment Report process is being followed to obtain authorization from the GDARD.**
Gauteng Provincial Environmental Management Framework	**The aim of the EMF is to guide the protection and enhancement of environmental assets and natural resources along with development patterns to ensure sustainable environmental management and development patterns within and around the Gauteng Province. The development site is in Zone 1 of the EMF which 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 proposed development is aligned with and is fully supportive of the objectives of the EMF.**
Red List Plant Species Guidelines	**The purpose of the guidelines is to promote the conservation of Red List Plant Species in Gauteng, which are species that face risk of extinction in the wild. By protecting Red List Plant Species, conservation of diverse landscapes is promoted which forms part of the overall environmental preservation of diverse ecosystems, habitats, communities, populations, species and genes in Gauteng.**
Gauteng Noise Control Regulations, 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 EMPr**
Ekurhuleni Metropolitan Municipality Regional	**In terms of the RSDF policy document, as adopted by the**

Spatial Development Framework	**City of Ekurhuleni Metropolitan Municipality, the property is situated well within a mixed use with an industrial bias, which may include commercial and light industrial land uses. Higher density residential development is considered appropriate provided that protective development conditions are applied.**
Ekurhuleni Biodiversity and open space strategy	**The EBOS serves as a strategy for biodiversity and opens space in the area and is supported by a range of implementation policies which are integral to the Spatial Development Frameworks. The site does not fall within or affect any of the key areas (open spaces and corridors) identified on the EBOS.**
Ekurhuleni Metropolitan Municipality Environmental Policy	**The policy aims at ensuring a safe and healthy environment for those living and working within the EMM and that infrastructure and development incorporate environmental considerations. The site is already disturbed and therefore no environmental sensitivities will be compromised.**



ID	x	y
1	28° 30' 37,916" E	26° 11' 26,476" S
2	28° 30' 21,509" E	26° 11' 38,097" S
3	28° 30' 4,047" E	26° 11' 59,003" S
4	28° 29' 43,287" E	26° 12' 16,804" S
5	28° 29' 21,337" E	26° 12' 32,613" S
6	28° 28' 58,392" E	26° 12' 44,986" S
7	28° 28' 34,804" E	26° 12' 59,556" S
8	28° 28' 11,445" E	26° 13' 14,455" S
9	28° 27' 49,538" E	26° 13' 31,418" S
10	28° 27' 28,365" E	26° 13' 47,353" S
11	28° 27' 6,894" E	26° 14' 4,852" S
12	28° 26' 41,318" E	26° 14' 14,393" S
13	28° 26' 14,416" E	26° 14' 9,921" S

Figure 1: Welgedacht water pipeline

3. ALTERNATIVES

Refer to figure 2 for the pipeline alternative on Stoffberg road.

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

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

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

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

The process followed to decide on alternatives was to consult with landowners. Some landowners indicated that they do not want the proposed supply 500 mm water pipeline to transverse their properties (even though it is within the servitude). The distribution line of between 355 – 500 mm that was constructed earlier in 2017 created problems for one the landowners who sells grass and vegetables on his property and his clients didn't have access to his stall for a week.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	**Description**
	Location alternatives	
1	**Proposal**	**The proposed pipeline will be routed from the new Persida reservoir (which will be constructed in December 2017) along the road reserve of the R555 (Stoffberg avenue) for approximately 410m, from where the pipeline would follow on the western side of a partially tarred road, becoming a dirt road (southerly direction). The pipeline will cross under the railway line by means of pipejacking to eventually join to Main Street (central portion of the proposed pipeline route), where the proposed pipeline would be routed along the southern side of the road (within the road reserve). After the point where Main Street becomes Welgedacht Road, the proposed pipeline would cross underneath the road by means of pipe jacking, from where it would be routed on the northern side of Welgedacht Road. This road traverses over the Blesbokspruit (by means of a bridge), where the pipeline would be constructed underneath the bridge crossing, which has existing pipelines that also cross the system at this point. A short section of the proposed pipeline will be diverted into Enstra Road (northerly direction), from where the pipeline is proposed to be routed along the railway line (within the railway line reserve) up to the Rand Water connection point in Geduld Road (southern section of the proposed pipeline route).**
2	**Alternative 1**	**The proposed pipeline will be routed from the new Persida reservoir (which will be constructed in December 2017) and be pipe jacked under the R555 (Stoffberg avenue) in a northerly direction. The pipeline will then be routed in a westerly direction (for approximately 410m) in front of the shops. The pipeline will then again cross the R555 (Stoffberg avenue) and follow on the western side of a partially tarred road, becoming a dirt road (southerly direction). The pipeline will cross under the railway line by means of pipejacking to eventually join to Main Street (central portion of the proposed pipeline route), where the proposed pipeline will be routed along the southern side of the road (within the road reserve). After the point where Main Street becomes Welgedacht Road, the proposed pipeline will cross underneath the road, from where it would be routed on the northern side of Welgedacht Road. This road traverses over the Blesbokspruit (by means of a bridge), where the pipeline will be constructed underneath the bridge crossing, which has existing pipelines that also cross the system at this point. A short section of the proposed pipeline will be diverted into Enstra Road (northerly direction), from where the pipeline is proposed to be routed along the railway line (within the railway line reserve) up to the Rand Water connection point in Geduld Road (southern section of the**

		proposed pipeline route).
3	Alternative 2	[redacted]
	Design alternatives	
1	**Proposal**	**Welgedacht road traverses over the Blesbokspruit (by means of a bridge), where the pipeline would be constructed underneath the bridge crossing, which has existing pipelines that also cross the system at this point.**
2	**Alternative 1**	[redacted]
3	Alternative 2	

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

[redacted]

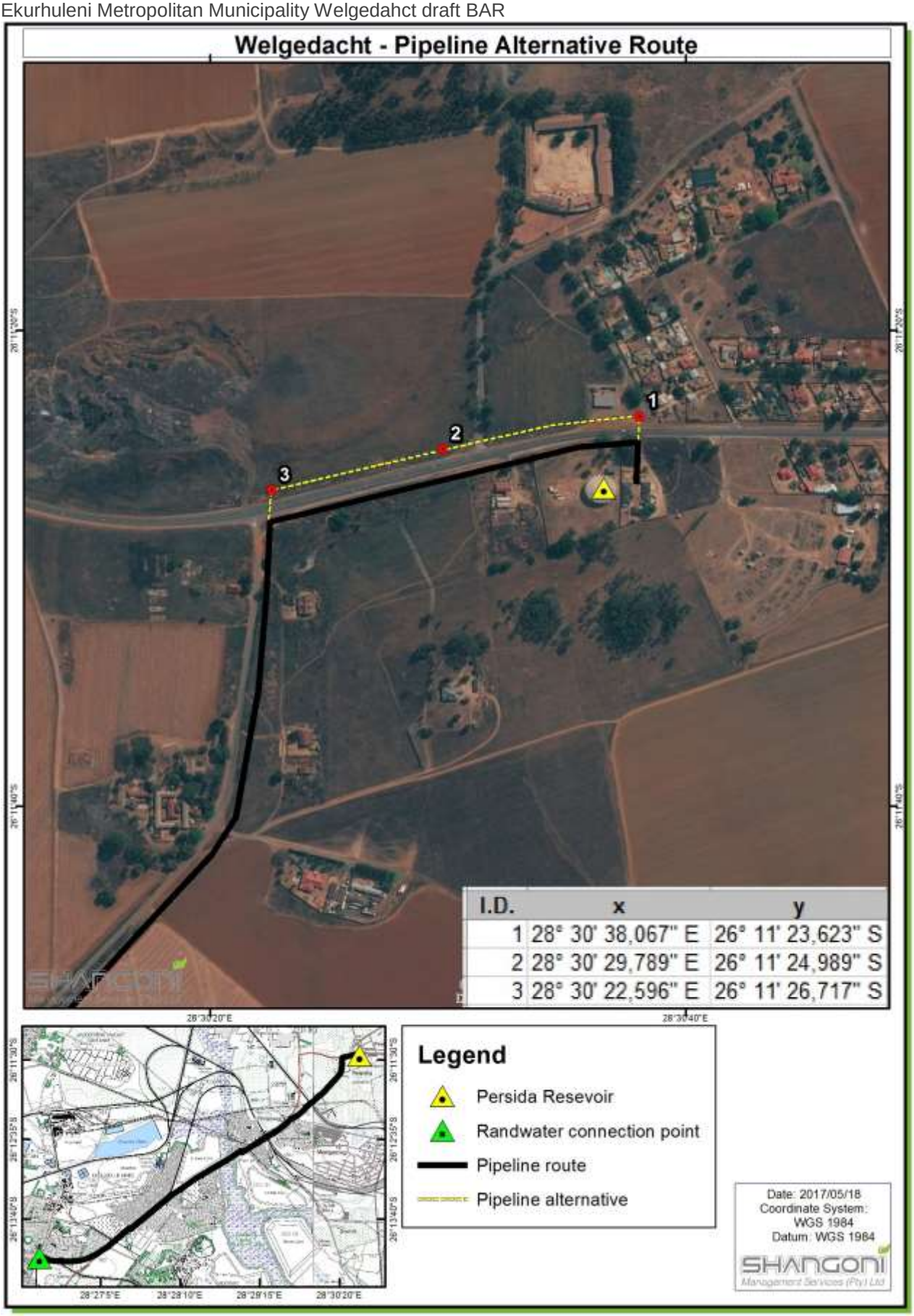


Figure 2: Alternative pipeline route (Stoffberg road)

4. PHYSICAL SIZE OF THE ACTIVITY

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

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	**28 500m² (2.85ha)**
Alternatives:	
Alternative 1 (if any)	**28 550m² (2.855ha)**
Alternative 2 (if any)	
	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	**9.5km**
Alternatives:	
Alternative 1 (if any)	**9.55km**
Alternative 2 (if any)	
	m/km

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

	Size of the site/servitude:
Proposed activity	**3m**
Alternatives:	
Alternative 1 (if any)	**3m**
Alternative 2 (if any)	
	Ha/m^2

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	**YES**
If NO, what is the distance over which a new access road will be built	m

Describe the type of access road planned:

Not applicable.

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

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	**YES**
If NO, what is the distance over which a new access road will be built	m

Describe the type of access road planned:

Not applicable.

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

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

Section A 6-8 has been duplicated ☐ Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;

- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

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

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

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

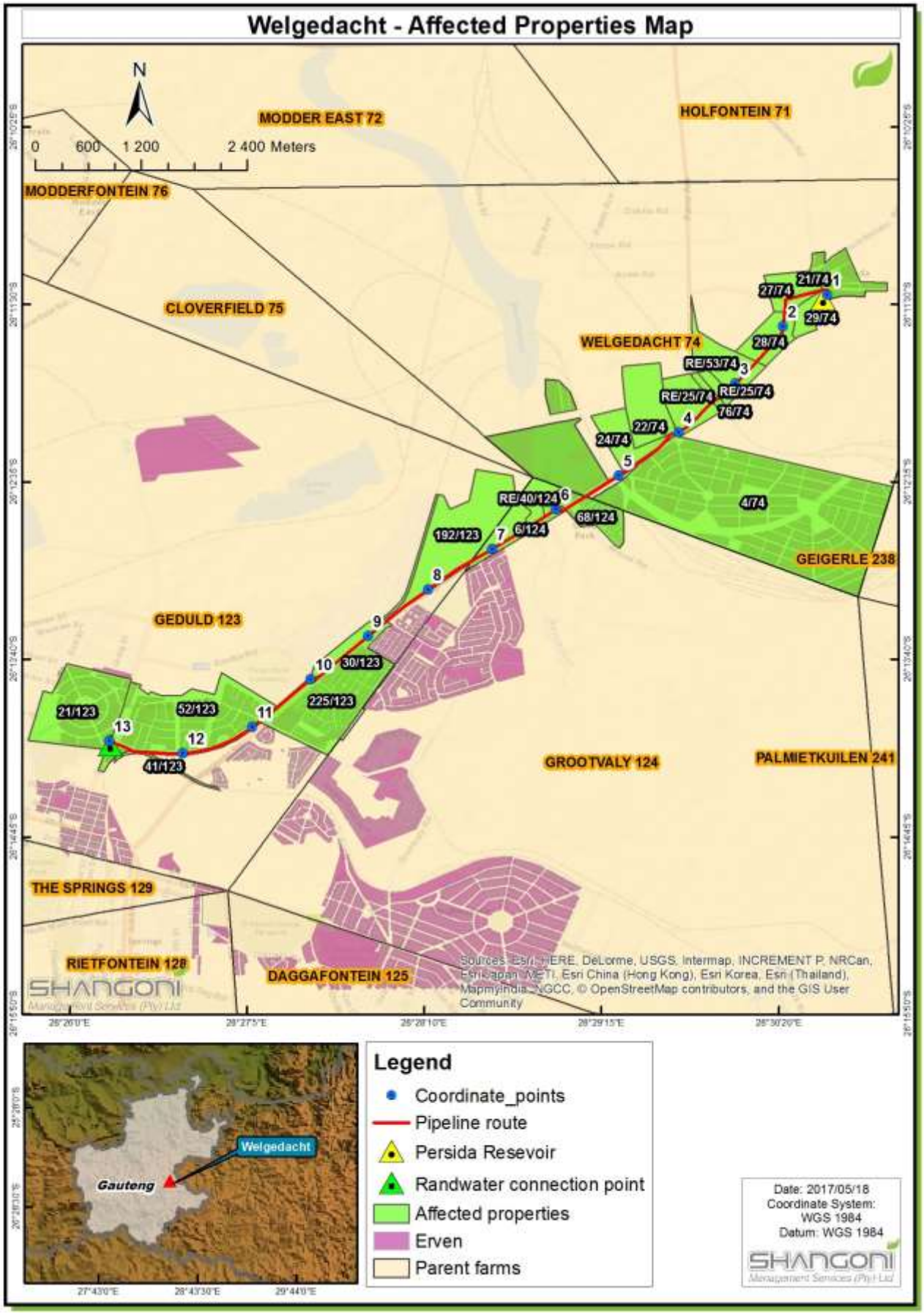


Figure 3: Affected property map broken into sections from 1 -13

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Section 1: Beginning of the pipeline from points 1 - 5

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

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc.) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route **"insert No. of duplicates"** **X 3 times**

Instructions for completion of Section B for location/route alternatives

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

Section B has been duplicated for location/route alternatives **"insert No. of duplicates"** times (complete only when appropriate)

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

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

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

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

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	**Portions 21, 22, 24, RE 25, 27, 28, 29, RE 53 of the farm Welgedacht 74IR.**

2. ACTIVITY POSITION

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

Alternative:	**Latitude (S):**	**Longitude (E):**
	[redacted]	

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	**26° 11’ 26,476’’**	**28° 30’ 37,916’’**
• Middle point of the activity	**26° 11’ 59,003’’**	**28° 30’ 4,047’’**
• End point of the activity	**26° 12’ 32,613’’**	**28° 29’ 21,337’’**

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

Addendum of route alternatives attached **Yes**

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

PROPOSAL																					
ALT. 1																					
PORTION 21	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**1**
PORTION 22	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION 24	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**4**
PORTION RE 25	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION RE 53	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION 27	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**7**
PORTION 28	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**8**
PORTION 29	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**9**
ALT. 2																					
PORTION 21	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**1**
PORTION 22	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION 24	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**4**
PORTION RE 25	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION RE 53	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION 27	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**7**
PORTION 28	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**8**
PORTION 29	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**0**	**0**	**0**	**2**	**9**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	**Plain**	Undulating plain/low hills	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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

Latitude (S):	**Longitude (E):**
°	°

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

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

Latitude (S):	**Longitude (E):**
°	°

d) are any sinkholes located within a 300m radius of the site(s) **NO**

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

Latitude (S):	**Longitude (E):**
°	°

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 10	**Natural veld with scattered aliens % =5**	**Natural veld with heavy alien infestation % = 5**	**Veld dominated by alien species % = 15**	**Landscaped (vegetation) % = 0**
Sport field % = 0	**Cultivated land % = 50**	**Paved surface (hard landscaping) % = 0**	**Building or other structure % = 5**	**Bare soil % = 10**

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

Wetland specialist input section 1-5

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site. — YES / **NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site? **YES** / NO

If YES, specify and explain:

A natural depression wetland is located within the northern portion of the proposed pipeline route. The PES of this depression was calculated to be 'Largely modified' (PES Category: D). It is the opinion of the ecologist that this depression could be considered to be moderately modified. Despite the historical and more recent modifiers (extensive cultivation activities and the construction of a railway west of the depression) to this wetland, it still has the ability to support a variety of biota. This depression provides moderate levels of ecological functioning, particularly nutrient and toxicant assimilation. This depression also provides harvestable resources to the local rural community who harvest reeds and crops from the surrounding agricultural fields. Based on site observations a variety of faunal species were observed due to the habitat that is provided by this depression. Overall, the extensive changes to the surrounding area of the depression such as extensive cultivation activities and the construction of a railway line west of the depression, have resulted in large changes to the ecosystem processes of the depression that have transformed the ecological functioning of this depression.

Was a specialist consulted to assist with completing this section		**YES**	NO
If yes complete specialist details			
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:	**P.O. Box 751779 Gardenview**		
Postal code:	**2047**		
Telephone:	**011 616 7893**	Cell:	**083 415 2356**
E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**
Are any further specialist studies recommended by the specialist?		YES	**NO**
If YES, specify:			
If YES, is such a report(s) attached?		YES	**NO**
If YES list the specialist reports attached below			

Signature of specialist: 

Date: 01/08/2017

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

Fauna & flora specialist input section 1-5

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	**NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	**YES**	NO

If YES, specify and explain:

A freshwater habitat is located adjacent to the current railway line. The freshwater habitat provides habitat, resources and areas of shelter to a few faunal species in the area, as well as providing breeding and nursery grounds for water fowl and amphibian species.

Was a specialist consulted to assist with completing this section		**YES**	NO
If yes complete specialist details			
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:	**P.O. Box 751779 Garden view**		
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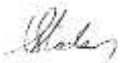
E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**
If YES list the specialist reports attached below		

Signature of specialist:		Date:	01/08/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

	7	**34**	**8**	**34**	**34**
	7	**34**	**8**	**34**	**34**
WEST	**7**	**7**		**6**	**34**
	7	**2**	**7**	**34**	**34**
	24	**24**	**24**	**24**	**24**

EAST

SOUTH

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

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

Have specialist reports been attached		**NO**
If yes indicate the type of reports below		

9. SOCIO-ECONOMIC CONTEXT

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

The existing social and economic characteristics of the community are agricultural farming and a few local vegetable shops and cafeteria. The community is generally poor with low economic activity.

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

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

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

Will any building or structure older than 60 years be affected in any way?		**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If yes, please attached the comments from SAHRA in the appropriate Appendix		**NO**

Section 2: Beginning of the pipeline from points 5 - 9

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

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc.) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route | **"insert No. of duplicates"** | **X 3 times**

Instructions for completion of Section B for location/route alternatives

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

Section B has been duplicated for location/route alternatives | **"insert No. of duplicates"** | times | (complete only when appropriate)

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

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

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

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

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	**Remaining extent of portion 40 of the farm Grootvaly 124IR, portion 6 of the farm Grootvaly 124IR, and portion 192 of the farm Geduld 123IR.**

2. ACTIVITY POSITION

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

Alternative:	**Latitude (S):**	**Longitude (E):**
	[redacted]	

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	**26° 12' 32,613''**	**28° 29' 21,337''**
• Middle point of the activity	**26° 12' 59,556''**	**28° 28' 34,804''**
• End point of the activity	**26° 13' 31,418''**	**28° 27' 46,538''**

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

Addendum of route alternatives attached | **Yes**

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

PROPOSAL																				
ALT. 1																				

PORTION RE 40	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**0**
PORTION 6	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**6**
PORTION 123	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	**Plain**	Undulating plain/low hills	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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

Latitude (S):	**Longitude (E):**
°	°

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

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

Latitude (S):	**Longitude (E):**
°	°

d) are any sinkholes located within a 300m radius of the site(s) YES **NO**

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

Latitude (S):	**Longitude (E):**
°	°

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

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	YES	**NO**

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 5	**Natural veld with scattered aliens % =5**	**Natural veld with heavy alien infestation % =0**	**Veld dominated by alien species % =5**	**Landscaped (vegetation) % =0**
Sport field % =0	**Cultivated land % =10**	**Paved surface (hard landscaping) % =10**	**Building or other structure % =50**	**Bare soil % =10**

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

Wetland specialist inputs sections 5-9

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	**NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	**YES**	NO

If YES, specify and explain:

A floodplain wetland associated with the Blesbokspruit being crossed by the proposed pipeline. The presence of robust reed species (*Phragmites australis* and *Typha capensis)* provides habitat and refuge to fauna species, thus increasing the biodiversity of this wetland. Although the southern section of this floodplain wetland is being conserved (Springs Bird Sanctuary), the norther section of this wetland has seen extensive historical disturbances due to mining activities. Other activities that have also had influences on this system are the construction of the Welgedacht Road crossing and rapid urbanization of the surrounding area. This influence has altered the natural geomorphology and hydraulic regime of the system, however, the floral community appeared to be resilient and has adapted to the changes over time.

Was a specialist consulted to assist with completing this section		**YES**	NO
If yes complete specialist details			
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:	**P.O. Box 751779 Garden view**		
Postal code:	**2047**		
Telephone:	**011 616 7893**	Cell:	**083 415 2356**
E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**

If YES list the specialist reports attached below

Signature of specialist: 

Date: 01/08/2017

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

Fauna & flora specialist inputs sections 5-9

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	**NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	**YES**	NO

If YES, specify and explain:

The Blesbokspruit is located between points 6 and 7, and the Springs Bird Sanctuary is located to the south of the proposed pipeline. The freshwater resources provide habitat, food and water resources and areas of shelter to several faunal species in the area, whilst providing breeding and nursery grounds for water fowl and amphibian species. No sensitive floral species were observed within the habitat located along the proposed pipeline route, nor are any expected to occur. The vegetation near the proposed pipeline has been degraded because of frequent fires, harvesting/collection of plants/plant material by the local community and ongoing grazing activities by local livestock. As the pipeline will be attached to the existing bridge infrastructure and not placed directly within the wetland, it is expected that the associated activities will not have any significant impacts on the habitat nor species located therein.

Was a specialist consulted to assist with completing this section	**YES**	NO

If yes complete specialist details

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:	**P.O. Box 751779 Garden view**		
Postal code:	**2047**		
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E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**

If YES list the specialist reports attached below

Signature of specialist:  Date: 01/08/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

NORTH

10	**10**	**2**	**10**	**10**
10	**10**	**2**	**3**	**31**
10	**10**		**3**	**31**
10	**10**	**3**	**2**	**31**
24	**24**	**24**	**24**	**24**

WEST

EAST

SOUTH

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

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

Have specialist reports been attached	YES	**NO**
If yes indicate the type of reports below		

9. SOCIO-ECONOMIC CONTEXT

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

The existing social and economic characteristics of the community are low-cost housing, a few local shops and cafeteria. The community is generally poor with low economic activity.

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

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

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

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

Section 3: Beginning of the pipeline from points 9 - 13

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

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc.) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route | **"insert No. of duplicates"** | **X 3 times**

Instructions for completion of Section B for location/route alternatives

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

Section B has been duplicated for location/route alternatives | **"insert No. of duplicates"** | times | (complete only when appropriate)

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

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

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

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

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	**Portion 30 of the farm Geduld 123IR, portion 225 of the farm Geduld 123IR, portion 52 of the farm Geduld 123IIR, portion 41 of the farm Geduld 123IR and portion 21 of the farm Geduld 123IR.**

2. ACTIVITY POSITION

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

Alternative:	**Latitude (S):**	**Longitude (E):**
	[redacted]	

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	**26° 13’ 31,418’’**	**28° 27’ 49,538’’**
• Middle point of the activity	**26° 14’ 4,852’’**	**28° 27’ 6,894’’**
• End point of the activity	**26° 14’ 9,921’’**	**28° 26’ 14,416’’**

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

Addendum of route alternatives attached | **Yes**

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

PROPOSAL																				
ALT. 1																				

PORTION 30	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**3**	**0**
PORTION 225	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**2**	**2**	**5**
PORTION 52	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**5**	**2**
PORTION 41	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**4**	**1**
PORTION 21	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**2**	**1**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	**Plain**	Undulating plain/low hills	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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

Latitude (S):	**Longitude (E):**
°	°

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

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

Latitude (S):	**Longitude (E):**
°	°

d) are any sinkholes located within a 300m radius of the site(s) YES **NO**

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

Latitude (S):	**Longitude (E):**
°	°

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

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	YES	**NO**

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 5	**Natural veld with scattered aliens % =5**	**Natural veld with heavy alien infestation % =5**	**Veld dominated by alien species % =10**	**Landscaped (vegetation) % =0**
Sport field % =0	**Cultivated land % =0**	**Paved surface (hard landscaping) % =5**	**Building or other structure % =50**	**Bare soil % =20**

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

Wetland specialist input section 9-13

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	**NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	YES	**NO**

If YES, specify and explain:

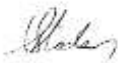
Was a specialist consulted to assist with completing this section	**YES**	NO

If yes complete specialist details

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:	**P.O. Box 751779 Garden view**		
Postal code:	**2047**		
Telephone:	**011 616 7893**	Cell:	**083 415 2356**
E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**

If YES list the specialist reports attached below

Signature of specialist: 

Date: 1/08/2017

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

Fauna and flora specialist input section 9-13

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 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	**NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	YES	**NO**

If YES, specify and explain:

Was a specialist consulted to assist with completing this section	**YES**	NO

If yes complete specialist details

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:	**P.O. Box 751779 Garden view**		
Postal code:	**2047**		
Telephone:	**011 616 7893**	Cell:	**083 415 2356**
E-mail:	**Stephen@sasenvironmental.co.za**	Fax:	**011 615 6240 086 724 3132**

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**

If YES list the specialist reports attached below

Signature of specialist:  Date: 01/08/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

WEST	**10**	**10**	**10**	**10**	**10**	EAST
	10	**10**	**10**	**10**	**10**	

10	10		10	10
10	10	10	10	10
24	24	24	24	24

SOUTH

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

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

Have specialist reports been attached	YES	**NO**

If yes indicate the type of reports below

9. SOCIO-ECONOMIC CONTEXT

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

The existing social and economic characteristics of the community are low-cost housing, a few local shops and cafeteria. The community is generally poor with low economic activity.

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

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

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

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		

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

2. LOCAL AUTHORITY PARTICIPATION

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

Was the draft report submitted to the local authority for comment?	**YES**	NO

This report has been provided to local authorities and key organs of state for comment as per the stakeholder database presented in Annexure E.

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):

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 comments will be incorporated into the Final BAR.

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?	YES	**NO**

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

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

The draft report will still be circulated for a period of 30 days.

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

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

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Communications to and from interested and affected parties

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

Appendix 6 - Comments and Responses Report

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

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

Appendix 9 – Copy of the register of I&Aps

SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

Section D has been duplicated for alternatives | **"insert No. of duplicates"** | **X0 times** | (complete only when appropriate)

This section has not been duplicated as the sections of pipeline from 1-13 are deemed the same.

Section D Alternative No. | "insert alternative number" | (complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**	NO
If yes, what estimated quantity will be produced per month?	**5m^3**	

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

There will be no large quantities of solid waste produced during the construction phase. Construction waste that cannot be reused will be collected at the construction camp and on site with skips and bins, and transported to a registered landfill site.

Excavated material that is not suitable to be backfilled into the excavations will be evenly spread across the adjacent environment, outside the delineated wetland area, ensuring that the wetland is not negatively impacted. Material that cannot be re-used will be disposed of at a registered landfill site.

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

The construction waste will be disposed of at a suitably licensed/ registered disposal facility. During the construction, wastes must be separated at source and disposed at relevant suitably registered/licensed facilities. 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, re-use 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 re-used.

Will the activity produce solid waste during its operational phase?	YES	**NO**
If yes, what estimated quantity will be produced per month?	`m^3	

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

All construction waste will be collected, sorted and disposed of at suitably licensed disposal facilities. During the operation phase no solid waste will be produced.

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**

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

Trenches will be excavated for the laying of the water pipeline. The excavated material, if suitable, will be used as backfill.

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? If yes, inform the competent authority and request a change to an application for scoping and EIA.	YES	**NO**
Is the activity that is being applied for a solid waste handling or treatment facility? If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.	YES	**NO**

Describe the measures, if any, that will be taken to ensure the 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 EMPr. 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. From there, it will be separated into appropriately marked receptacles.

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?		m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	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?		m^3

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

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

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

If yes, provide the particulars of the facility:

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

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

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**? 5 liters of domestic sewerage per person x 100 construction workers x 21 days.**		**10.5m^3**
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	**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.

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

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

During 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.

2. WATER USE

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

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

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

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

Does the activity require a water use permit from the Department of Water Affairs?	YES	**NO**

If yes, list the permits required

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

3. POWER SUPPLY

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

Electricity will be supplied by Eskom.

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

Use of generators.

4. 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.

SECTION E: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

As this is the draft BAR, the only issues that were brought to the attention of the EAP was that the landowners were disgruntled about the water distribution project that took place earlier in 2017.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)
(A full response must be provided in the Comments and Response Report that must be attached to this report):

Responses will be included in the Final BAR.

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

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

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,**
- **Identity residual risks that need to be managed and monitored.**

The construction, operational and decommissioning 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;**
- **The changes that will occur in future, should the proposed activity not occur, will be identified;**
- **A detailed understanding of the activity will be obtained in order 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).**

After all impacts have been identified, the nature of each impact can be predicted. The impact prediction will take into account 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 1 and Table 2 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 3 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 1: Determination of Probability of Impact

Frequency of Aspect / Unwanted Event	Score	Availability of pathway from the source to the receptor	Score	Availability of receptor	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 3: Determination of Magnitude of Impact

Source								**Receptor**			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
Lasting days to a month	**1**	**Effect limited to the site. (metres);**	**1**	**Very small quantities / volumes / intensity (e.g. < 50L or < 1Ha)**	**1**	**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**
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. 50L to 210L or 1Ha to 5Ha)**	**2**	**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**
Lasting 1 – 5 years	**3**	**Impacts on extended area beyond site boundary (hundreds of metres)**	**3**	**Moderate quantities / volumes / intensity (e.g. > 210 L < 5000L or 5 – 8Ha)**	**3**	**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**
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 L – 10 000L or 8Ha– 12Ha)**	**4**	**Toxic (e.g. diesel & Sodium Hydroxide)**	**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**
Beyond life of Organisation /	**5**	**Extends widely (nationally or globally)**	**5**	**Very large quantities /**	**5**	**Highly toxic (e.g. arsenic or TCE)**	**5**	**Bio-physical and/or social functions and/or processes might**	**5**	**Current environmental component(s)**	**5**

Permanent impacts				**volumes / intensity (e.g. > 10 000 L or > 12Ha)**				**be severely/substantially altered or enhanced / Irreversible**		**are in a pristine natural state. Highly Sensitive area (endangered species, wetlands, protected habitats etc.)**	

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

Table 2: Determination of Severity of Impact

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**

Step 3: Determine the SEVERITY of the impact by plotting the averages that were obtained above for Probability and Magnitude in the table below.

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

Proposal

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact and mitigation not being implemented**
Planning/pre-construction phase				
Harm to the environment due to inadequate planning and design of the proposed Welgedacht water pipeline.	**Medium (Negative)**	• **Suitable specialist(s) to identify sensitive environmental features (including fauna, flora, and Freshwater/wetland) where special care needs to be taken and implement suitable mitigation measures to safeguard these features (e.g. barricading, signage and awareness creation).** • **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.** • **Training of construction workers to recognise threatened animal species will reduce the probability of fauna being harmed unnecessarily.** • **Posters should be displayed on site to sensitise workers to fauna in the region.**	**Low (Negative)**	**Low**

		• During site preparation, special care must be taken during the clearing of the works area to minimise damage or disturbance of roosting and nesting sites. • No access is allowed to no-go areas without the permission of the Project Manager. • Contractor to develop method statements to be approved by the Project Manager prior to construction taking place. The plan must show the following (as relevant), as a minimum: o Buildings and structures; o Site offices; o Roads and access routes; o Gates and fences; o Essential services (permanent and temporary water, electricity and sewage); o Rubble and waste rock storage and disposal sites; o Solid waste storage and disposal sites; o Site toilets and ablutions; o Topsoil stockpiles; o Sensitive environmental features; and o Any other activities, facilities and structures deemed relevant. • Design to consider and incorporate environmental requirements. • Define and communicate roles and responsibilities for the implementation of the EMPr. • Develop and implement an environmental awareness plan. • The appointment of an Environmental Control Officer (ECO). • Before construction commences, all the sensitive areas must be clearly demarcated with fencing or orange mesh netting. However, the barricading measures to be utilised should restrict the movement of the fauna in the area from falling into open trenches. • Records of compliance / non-compliance must be kept on site at all times for 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. • During site preparation, special care must be taken during the clearing of the works area where organic material must be stored separately from the topsoil. Further, the topsoil must also be stored separately from the subsoil material to ensure for the protection thereof and that it can be reused during the rehabilitation phase.		
Construction phase				
Geology and Soil				
• Soil pollution due to hazardous chemical substances including fuel greases and oils used onsite.	**Medium (Negative)**	• Identify all hazardous chemical substances used onsite, including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • Appropriate equipment to deal with emergency spill incidents 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	**Low (Negative)**	**Low**

		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.		
• Exposure to soil erosion.	**Medium (Negative)**	• Contractors are to ensure that all reasonable measures are taken to limit erosion during the construction phase. • Don't allow erosion to develop to a large scale before taking action. • Existing roads and tracks should be used as far as possible. • Retain vegetation and soil in position as long as possible. It should only be removed immediately ahead of construction. • Remove only the vegetation essential for construction. No disturbance of adjoining vegetation should be allowed. • Colonisation of the disturbed areas should be monitored to ensure that vegetation cover is sufficient within one growing season. • Stockpiles can be covered with shade netting to minimise wind- and water erosion.	**Low (Negative)**	**Low**
Construction phase				
Fauna and Flora				
• The removal of vegetation will expose soils which may lead to soil erosion. Indigenous vegetation communities are unlikely to colonise eroded soils successfully.	**Medium (Negative)**	• Remove only the vegetation where essential for construction and don't allow any disturbance to adjoining natural vegetation cover. • Protect all areas susceptible to erosion (stockpiled soils) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction site. • Don't allow erosion to develop on a large scale before taking action. • A temporary fence or demarcation must be erected around the construction area to prevent access to sensitive environs. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction. • Once construction is complete, the temporary road should be obliterated and the area rehabilitated. • After construction, the land must be cleared of rubbish, surplus materials and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.	**Low (Negative)**	**Low**
• Spread of alien invasive plant species from the transformed areas to the natural vegetation.	**Medium (Negative)**	• Alien invasive species should be removed (prioritising category 1 species). • All alien seedlings and saplings must be removed as they become evident. • Manual/mechanical removal should be used rather than chemical control. Hazardous chemicals may impact upon natural vegetation in the area as well as the freshwater resources. • All equipment and vehicles should be thoroughly cleaned prior to access the study area to prevent the spread of alien invasive vegetation.	**Low (Negative)**	**Low**
• Disturbance of sensitive vegetation.	**Medium (Negative)**	• Any sensitive vegetation present on site must be demarcated to avoid disturbance. • If removal is required, a qualified	**Low (Negative)**	**Low**

		specialist should remove and relocated the sensitive vegetation.		
• Damage to natural habitat due to construction activities and consequential displacement of faunal species.	Medium (Negative)	• Construction activities should be restricted to the development footprint. • The site should be cordoned off to restrict the movement of construction vehicles and personnel. • No development should occur within any sensitive natural open spaces.	Low (Negative)	Low
• Loss of ecosystem function such as reduction in water quality, soil pollution and underground water contamination and the consequent negative impacts on faunal species.	Medium (Negative)	• Restrict construction activities to the development site. • Prevent movement of construction personnel and vehicles outside of the development footprint. • No development should occur within any sensitive natural open spaces. • Minimise environmental pollution by effective implementation of the prescribed mitigation measures.	Low (Negative)	Low
• Disturbance of faunal species.	Medium (Negative)	• Education of site workers and contractors about the value of wildlife and environmental sensitivity. • Site workers and contractors should ensure that no animals are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be included into contracts for construction personnel. • Outside lighting should be designated to minimise impact on fauna. • All outside lighting should be directed away from sensitive areas. • Fluorescent and mercury vapour lighting should be avoided. Sodium vapour or LED lights should rather be used as far as possible.	Low (Negative)	Low
Construction phase				
Terrestrial Ecology				
Loss of terrestrial habitat, diversity and species of conservation concern, caused from site preparation and vegetation clearing.	Medium (Negative)	• Avoid disturbance of sensitive freshwater habitat units. • Should any species of conservation concern be encountered within the construction footprint, they are to be relocated to suitable habitat by a qualified specialist. • Demarcate the construction footprint, and ensure that all construction activities remain within this footprint. • Ensure that the proposed development 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 proposed development. • No informal fires are allowed by construction personnel outside of the development 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	Low (Negative)	Low

		prevent the establishment of alien and invasive species.		
Construction phase				
Freshwater Resources				
Potential spills and leaks from vehicles delivering construction material (during refueling of vehicles, leaks from hazardous material containers) **Indiscriminate movement of vehicles within the freshwater resources** **Clearing of vegetation during site preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas** **Topsoil stockpiling adjacent to the freshwater resources** **Ground breaking and excavation of trenches within close proximity to the freshwater resources** **Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the freshwater resources)**	**Medium (Negative)**	• **Should any leakages from construction vehicles or material containers occur, they should be cleaned up immediately** • **Refueling 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 freshwater resources and the associated buffer zones (in consultation with the appropriate authority) to avoid contamination of the freshwater environment due to leakages from storage containers and vehicles.** • **Vehicles to be serviced at the contractor laydown area, and concrete shall also be mixed in that area so much as is possible. Additional mixing of concrete may be required onsite, and when this occurs, batter boards must be used and sheeting shall be laid down to ensure concrete does not mess outside of the trenches.** • **Footprint area should be demarcated and kept as small as possible.** • **The extent of vegetation clearing should be limited for the contractor's laydown area and outside of the freshwater environment.** • **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.** • **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 freshwater resources (especially that of the floodplain wetland) should be minimised in order to reduce the flow and functioning of the freshwater system.** • **The freshwater resource areas must be clearly demarcated with danger tape by an environmental control officer (ECO) and marked as a no-go area (specific mention of the depression wetland).** • **Excavated soils should be placed outside the freshwater resources and the associated buffer zones to limit potential sedimentation of the freshwater resources.** • **Soil should be covered to avoid being blown by the wind and prevent sediment runoff during rainfall events.** • **Soil must be recompacted to a depth of 450 mm, and all construction material must be removed from site upon the completion of construction.** • **The area must be rehabilitated after the completion of the construction phase. In addition, alien vegetation eradication programme must be implemented.** • **If stockpiled soil is to be used for rehabilitation purposes such as revegetation, all alien vegetation**	**Low (Negative)**	**Low**

		should be removed from soil before use, to avoid spread of alien vegetation. • **Excavated soil should be used to close off the trenches, immediately after inserting the pipeline.** • **Flow diversion by means of scaffolding (created during the installation of the pipeline underneath the bridge structure) should be done properly to avoid inundation of the area as well as drying out of downstream areas.** • **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.** • **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 disposal bins must be provided for the duration of the construction phase.** • **Waste bins must be emptied regularly and the waste must be removed to a suitable waste disposal facility.** • **Sanitation services must be provided for construction personnel, whereby at least one portable toilet will be provided per ten personnel and will be emptied regularly.** • **Construction personnel must be informed that no firewood is to be harvested, all litter must be stored immediately and only in closed dustbins, including cigarette ends, and no litter is to remain behind on site following completion of construction activities.**		
Construction phase				
Department of Water and Sanitation Risk Assessment				
<u>Site clearing prior to commencement of construction activities:</u> • **Exposure of soils, leading to increased runoff and erosion, and thus increased sedimentation of the freshwater resources.** • **Increased sedimentation of freshwater resources, leading to smothering of biota and potentially altering surface water quality.** • **Decreased ecoservice provision.**	**Low (Negative)**	• **Contractor laydown areas and stockpiles to be established outside of the delineated freshwater resources zone and the applicable buffer zones in consultation with the appropriate authority.** • **Vehicles to be serviced at the contractor laydown area, and concrete shall also be mixed in that area so much as is possible. Concrete may require additional mixing onsite, and when this occurs batter boards must be used and sheeting shall be laid down to ensure concrete does not mess outside of the trenches.** • **Should any leakages from construction vehicles or material containers occur, they should be cleaned up immediately.** • **Refueling of vehicles should take place on a sealed surface to prevent ingress of hydrocarbons into the soil.**	**Low (Negative)**	**Low**

Groundbreaking, excavation of trench adjacent to freshwater resource (depression wetland): • Disturbances of soils leading to increased alien vegetation proliferation in the freshwater resources, and in turn to further altered freshwater habitat. • Altered runoff patterns, leading to increased erosion and sedimentation of freshwater habitat. **Construction of a pipeline within proximity to the freshwater resource (depression wetland) and over a freshwater resource (floodplain wetland):** • Sedimentation of freshwater resources • Erosion of the exposed trench. • Removal of vegetation and disturbance of soils, which may enable the recruitment of alien and invasive vegetation. **Potential indiscriminate waste disposal:** • Altered flow regime because of solid wastes within the freshwater resources. • Altered water quality due to chemical waste disposal. **Potential spillage from construction vehicles:** • Possible contamination of freshwater soils and surface water, leading to reduced ability to support biodiversity.		• Construction vehicles should be restricted to designated roads only. • The freshwater areas must be clearly demarcated with danger tape by an ECO and marked as a no-go area. • During trenching within proximity to the freshwater resources, no stockpiling of soils is to take place within the NEMA zone of regulation/GDARD buffer zone, and stockpiles may not exceed 2m in height. • All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the freshwater resources. • All manholes should be raised above the 1:100-year flood line. • Soil must be recompacted to a depth of 450 mm, and all construction material must be removed from site upon the completion of construction. • The area must be rehabilitated after the completion of the construction phase. In addition, alien vegetation eradication programme must be implemented. • 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. • Flow diversion by means of scaffolding (created during the installation of the pipeline underneath the bridge structure) should be done properly to avoid inundation of the area as well as drying out of downstream areas. • 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. • 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 freshwater resources (especially that of the floodplain wetland) should be minimised to reduce the flow and functioning of the freshwater system. • Sanitation services must be provided for construction personnel, whereby at least one portable toilet will be provided per ten personnel and will be emptied regularly. • Construction personnel must be informed that no firewood is to be harvested, all litter must be stored immediately and only in closed dustbins, including cigarette ends, and no litter is to remain behind on site following completion of construction activities.		
Construction phase				
Groundwater				
• Groundwater pollution due to unsanitary conditions onsite.	**Medium (Negative)**	• Sufficient ablution facilities shall be provided – 1 toilet per 10 workers. • Ablution facilities should be on impermeable surfaces and at least 50m from wetlands, drainage lines or	**Low (Negative)**	**Low**

		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 100m of any work point. • Ablating anywhere other than in toilets shall not be allowed. • Ablution facilities are to be secured. • The contractor shall ensure that no chemical and/or waste form the ablution facilities are spilled on the ground at any time. • Ablution facilities should be serviced weekly or more frequently if required. • Contents are to be removed from site on a regular basis. • Ablution facilities should be inspected and maintained to prevent and minimise blockages and leakages. • Toilets should have properly closing doors and be supplied with toilet paper. • Awareness of the importance of proper hygiene should be created among employees.		
• Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	Medium (Negative)	• Identify all hazardous chemical substances used onsite including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material safety data sheets for all hazardous chemical substances must be readily available onsite. • Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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. • During refuelling, the ground must be protected and proper dispensing equipment is to be used. • 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 concrete floors in bunded areas.	Low (Negative)	Low
Construction phase				
Atmosphere and Noise				
• Ambient noise levels are likely to increase because of the construction activities.	Medium (Negative)	• Noise generating activities 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 onsite. The register must record the following: Date when compliant was	Low (Negative)	Low

		received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed.		
• Degradation of ambient air quality due to dust and exhaust emission generation.	Medium (Negative)	• A water cart should be kept onsite to water down dusty construction activities. • A complaints register should be kept onsite. The register must record the following: Date when compliant was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed. • Open areas should be re-vegetated. • Regular maintenance of vehicles and equipment should be undertaken. Optimal engine combustion will allow for "cleaner" exhaust emissions.	Low (Negative)	Low
Construction phase				
Heritage and Paleontology				
• Construction activities may disturb or destroy sites, features or artefacts of archaeological and/or historical importance.	Low (Negative)	• 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
• Construction activities may disturb or destroy fossils or bedrock of palaeontological sensitivity.	Low (Negative)	• 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
Operational phase				
Geology and soil				
• Soil pollution due to hazardous chemical substances including fuel greases and oils used onsite.	Medium (Negative)	• Identify all hazardous chemical substances used onsite, including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • 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. • 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 form site.	Low (Negative)	Low
• Soil erosion.	Medium (Negative)	• Don't allow erosion to develop to a large scale before taking action. • During maintenance, existing roads and tracks should be used as far as possible. • Vegetation establishment should be monitored to ensure that vegetation cover is sufficient to prevent erosion development.	Low (Negative)	Low
Operational phase				
Fauna and Flora				
• Spread of alien invasive plant species.	Medium (Negative)	• Alien invasive species should be removed (prioritising category 1 species).	Low (Negative)	Low

		• All alien seedlings and saplings must be removed as they become evident. • Manual/mechanical removal should be used rather than chemical control. Hazardous chemicals may impact upon natural vegetation in the area as well as the freshwater resources.		
• Disturbance of faunal species.	Medium (Negative)	• Outside lighting should be designated to minimise impact on fauna. • All outside lighting should be directed away from sensitive areas. • Fluorescent and mercury vapour lighting should be avoided. Sodium vapour or LED lights should rather be used as far as possible.	Low (Negative)	Low
Operational phase				
Freshwater Resources				
Potential failure of infrastructure: possible leaks from pipeline into freshwater resources, causing incision and alteration of the hydroperiod of the wetland in some areas Indiscriminate movement of vehicles and vegetation trampling within the freshwater resources during maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure	Medium (Negative)	• It should be ensured that additional freshwater areas are not inundated as a result of leaks or bursting 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 bursting of the pipeline. • Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles	Low (Negative)	Low
Operational phase - Department of Water and Sanitation Risk Assessment				
<u>Operations and maintenance of the proposed pipeline across the floodplain wetland and within proximity to the depression wetland:</u> • Possible incision and alteration of the hydroperiod of the wetland in some areas. • Possible soil compaction and disturbance, resulting in increased alteration of the vegetation community structure. • Impacts as per activity 1 and 2 above as applicable depending upon the location of the leak.	Medium (Negative)	• It should be ensured that additional freshwater areas are not inundated as a result of leaks or bursting 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 bursting of the pipeline. • Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles. • Should repair of the pipeline be required to address a leak, mitigations as per activity 1 and 2 above as applicable depending upon the location of the leak	Low (Negative)	Low
Operational phase				
Terrestrial Ecology				
Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential species of	Medium (Negative)	• No vehicles or maintenance personnel are to traverse through the sensitive freshwater habitat areas unnecessarily • Restrict maintenance vehicles to travelling only on designated	Low (Negative)	Low

conservation concern, by movement of vehicles during maintenance activities.		roadways to limit the ecological footprint of the proposed development. • No informal fires are allowed by construction personnel outside of the development footprint.		
Operational phase - Groundwater				
• Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	Low (Negative)	• Identify all hazardous chemical substances used onsite including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material safety data sheets for all hazardous chemical substances must be readily available onsite. • Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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. • During refuelling, the ground must be protected and proper dispensing equipment is to be used. • 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 concrete floors in bunded areas.	Low (Negative)	Low
• Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	Low (Negative)	• Obtain the material safety data sheets for each of the hazardous chemical substances. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material safety data sheets for all hazardous chemical substances must be readily available onsite. • Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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. • During refuelling, the ground must be protected and proper dispensing equipment is to be used. • 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 concrete floors in bunded areas.	Low (Negative)	Low
Operational phase				
Atmosphere and Noise				
• Ambient noise levels	Low	• Maintenance activities that may	Low	Low

are likely to increase as a result of the operational activities.	**(Negative)**	**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 onsite. The register must record the following: Date when compliant was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed.**	**(Negative)**	
Decommissioning phase				
No decommissioning is foreseen in the near future for the proposed project. However, should decommission 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.				

Alternative 1 *(REPEAT THIS TABLE FOR EACH ALTERNATIVE)*

Proposal

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Planning/pre-construction phase				
Harm to the environment due to inadequate planning and design of the proposed Welgedacht water pipeline.	**Medium (Negative)**	• **Conflict management with disgruntled landowners with position of the water pipeline** • **Suitable specialist(s) to identify sensitive environmental features (including fauna, flora, and Freshwater/wetland) where special care needs to be taken and implement suitable mitigation measures to safeguard these features (e.g. barricading, signage and awareness creation).** • **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.** • **Training of construction workers to recognise threatened animal species will reduce the probability of fauna being harmed unnecessarily.** • **Posters should be displayed on site to sensitise workers to fauna in the region.** • **During site preparation, special care must be taken during the clearing of the works area to minimise damage or disturbance of roosting and nesting sites.** • **No access is allowed to no-go areas without the permission of the Project Manager.** • **Contractor to develop method statements to be approved by the Project Manager prior to construction taking place. The plan must show the**	**Low (Negative)**	**Low**

		following (as relevant), as a minimum: **o Buildings and structures;** **o Site offices;** **o Roads and access routes;** **o Gates and fences;** **o Essential services (permanent and temporary water, electricity and sewage);** **o Rubble and waste rock storage and disposal sites;** **o Solid waste storage and disposal sites;** **o Site toilets and ablutions;** **o Topsoil stockpiles;** **o Sensitive environmental features; and** **o Any other activities, facilities and structures deemed relevant.** • **Design to consider and incorporate environmental requirements.** • **Define and communicate roles and responsibilities for the implementation of the EMPr.** • **Develop and implement an environmental awareness plan.** • **The appointment of an Environmental Control Officer (ECO).** • **Before construction commences, all the sensitive areas must be clearly demarcated with fencing or orange mesh netting. However, the barricading measures to be utilised should restrict the movement of the fauna in the area from falling into open trenches.** • **Records of compliance / non-compliance must be kept on site at all times for 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.** • **During site preparation, special care must be taken during the clearing of the works area where organic material must be stored separately from the topsoil. Further, the topsoil must also be stored separately from the subsoil material to ensure for the protection thereof and that it can be reused during the rehabilitation phase.**		
Construction phase				
Geology and Soil				
• **Soil pollution due to hazardous chemical substances including fuel greases and oils used onsite.**	**Medium (Negative)**	• **Identify all hazardous chemical substances used onsite, including fuel, greases and oils.** • **Obtain the material safety data sheets for each of the hazardous chemical substances.** • **Appropriate equipment to deal with emergency spill incidents 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.** • **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.**	**Low (Negative)**	**Low**
• **Exposure to soil erosion.**	**Medium (Negative)**	• **Contractors are to ensure that all reasonable measures are taken to limit erosion during the construction phase.** • **Don't allow erosion to develop to a**	**Low (Negative)**	**Low**

		large scale before taking action. • Existing roads and tracks should be used as far as possible. • Retain vegetation and soil in position as long as possible. It should only be removed immediately ahead of construction. • Remove only the vegetation essential for construction. No disturbance of adjoining vegetation should be allowed. • Colonisation of the disturbed areas should be monitored to ensure that vegetation cover is sufficient within one growing season. • Stockpiles can be covered with shade netting to minimise wind- and water erosion.		
Construction phase				
Fauna and Flora				
• The removal of vegetation will expose soils which may lead to soil erosion. Indigenous vegetation communities are unlikely to colonise eroded soils successfully.	**Medium (Negative)**	• Remove only the vegetation where essential for construction and don't allow any disturbance to adjoining natural vegetation cover. • Protect all areas susceptible to erosion (stockpiled soils) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction site. • Don't allow erosion to develop on a large scale before taking action. • A temporary fence or demarcation must be erected around the construction area to prevent access to sensitive environs. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction. • Once construction is complete, the temporary road should be obliterated and the area rehabilitated. • After construction, the land must be cleared of rubbish, surplus materials and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.	**Low (Negative)**	**Low**
• Spread of alien invasive plant species from the transformed areas to the natural vegetation.	**Medium (Negative)**	• Alien invasive species should be removed (prioritising category 1 species). • All alien seedlings and saplings must be removed as they become evident. • Manual/mechanical removal should be used rather than chemical control. Hazardous chemicals may impact upon natural vegetation in the area as well as the freshwater resources. • All equipment and vehicles should be thoroughly cleaned prior to access the study area to prevent the spread of alien invasive vegetation.	**Low (Negative)**	**Low**
• Disturbance of sensitive vegetation.	**Medium (Negative)**	• Any sensitive vegetation present on site must be demarcated to avoid disturbance. • If removal is required, a qualified specialist should remove and relocated the sensitive vegetation.	**Low (Negative)**	**Low**
• Damage to natural habitat due to construction activities and consequential displacement of faunal species.	**Medium (Negative)**	• Construction activities should be restricted to the development footprint. • The site should be cordoned off to restrict the movement of construction vehicles and personnel. • No development should occur within any sensitive natural open spaces.	**Low (Negative)**	**Low**
• Loss of ecosystem function such as	**Medium (Negative)**	• Restrict construction activities to the development site.	**Low (Negative)**	**Low**

reduction in water quality, soil pollution and underground water contamination and the consequent negative impacts on faunal species.		• Prevent movement of construction personnel and vehicles outside of the development footprint. • No development should occur within any sensitive natural open spaces. • Minimise environmental pollution by effective implementation of the prescribed mitigation measures.		
• Disturbance of faunal species.	Medium (Negative)	• Education of site workers and contractors about the value of wildlife and environmental sensitivity. • Site workers and contractors should ensure that no animals are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be included into contracts for construction personnel. • Outside lighting should be designated to minimise impact on fauna. • All outside lighting should be directed away from sensitive areas. • Fluorescent and mercury vapour lighting should be avoided. Sodium vapour or LED lights should rather be used as far as possible.	Low (Negative)	Low
Construction phase				
Terrestrial Ecology				
Loss of terrestrial habitat, diversity and species of conservation concern, caused from site preparation and vegetation clearing.	Medium (Negative)	• Avoid disturbance of sensitive freshwater habitat units. • Should any species of conservation concern be encountered within the construction footprint, they are to be relocated to suitable habitat by a qualified specialist. • Demarcate the construction footprint, and ensure that all construction activities remain within this footprint. • Ensure that the proposed development 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 proposed development. • No informal fires are allowed by construction personnel outside of the development 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.	Low (Negative)	Low
Construction phase				
Freshwater Resources				
Potential spills and leaks from vehicles delivering construction material (during refueling of vehicles, leaks from hazardous material containers)	Medium (Negative)	• Should any leakages from construction vehicles or material containers occur, they should be cleaned up immediately • Refueling of vehicles should take place on a sealed surface to prevent ingress of hydrocarbons into the soil. • Construction vehicles should be	Low (Negative)	Low

Indiscriminate movement of vehicles within the freshwater resources **Clearing of vegetation during site preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas** **Topsoil stockpiling adjacent to the freshwater resources** **Ground breaking and excavation of trenches within close proximity to the freshwater resources** **Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the freshwater resources)**		**restricted to designated roads only.** • **Contractor laydown areas should be located outside the freshwater resources and the associated buffer zones (in consultation with the appropriate authority) to avoid contamination of the freshwater environment due to leakages from storage containers and vehicles.** • **Vehicles to be serviced at the contractor laydown area, and concrete shall also be mixed in that area so much as is possible. Additional mixing of concrete may be required onsite, and when this occurs, batter boards must be used and sheeting shall be laid down to ensure concrete does not mess outside of the trenches.** • **Footprint area should be demarcated and kept as small as possible.** • **The extent of vegetation clearing should be limited for the contractor's laydown area and outside of the freshwater environment.** • **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.** • **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 freshwater resources (especially that of the floodplain wetland) should be minimised in order to reduce the flow and functioning of the freshwater system.** • **The freshwater resource areas must be clearly demarcated with danger tape by an environmental control officer (ECO) and marked as a no-go area (specific mention of the depression wetland).** • **Excavated soils should be placed outside the freshwater resources and the associated buffer zones to limit potential sedimentation of the freshwater resources.** • **Soil should be covered to avoid being blown by the wind and prevent sediment runoff during rainfall events.** • **Soil must be recompacted to a depth of 450 mm, and all construction material must be removed from site upon the completion of construction.** • **The area must be rehabilitated after the completion of the construction phase. In addition, alien vegetation eradication programme must be implemented.** • **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.** • **Excavated soil should be used to close off the trenches, immediately after inserting the pipeline.** • **Flow diversion by means of scaffolding (created during the installation of the pipeline underneath the bridge structure) should be done properly to avoid inundation of the area as well as drying out of downstream areas.**		

		• 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. • 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 disposal bins must be provided for the duration of the construction phase. • Waste bins must be emptied regularly and the waste must be removed to a suitable waste disposal facility. • Sanitation services must be provided for construction personnel, whereby at least one portable toilet will be provided per ten personnel and will be emptied regularly. • Construction personnel must be informed that no firewood is to be harvested, all litter must be stored immediately and only in closed dustbins, including cigarette ends, and no litter is to remain behind on site following completion of construction activities.		
Construction phase				
Department of Water and Sanitation Risk Assessment				
Site clearing prior to commencement of construction activities: • Exposure of soils, leading to increased runoff and erosion, and thus increased sedimentation of the freshwater resources. • Increased sedimentation of freshwater resources, leading to smothering of biota and potentially altering surface water quality. • Decreased ecoservice provision. **Groundbreaking, excavation of trench adjacent to freshwater resource (depression wetland):** • Disturbances of soils leading to increased alien vegetation proliferation in the freshwater resources, and in turn to further altered freshwater habitat. • Altered runoff patterns, leading to increased erosion and sedimentation of freshwater habitat.	**Low (Negative)**	• Contractor laydown areas and stockpiles to be established outside of the delineated freshwater resources zone and the applicable buffer zones in consultation with the appropriate authority. • Vehicles to be serviced at the contractor laydown area, and concrete shall also be mixed in that area so much as is possible. Concrete may require additional mixing onsite, and when this occurs batter boards must be used and sheeting shall be laid down to ensure concrete does not mess outside of the trenches. • Should any leakages from construction vehicles or material containers occur, they should be cleaned up immediately. • Refueling 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. • The freshwater areas must be clearly demarcated with danger tape by an ECO and marked as a no-go area. • During trenching within proximity to the freshwater resources, no stockpiling of soils is to take place within the NEMA zone of regulation/GDARD buffer zone, and stockpiles may not exceed 2m in height. • All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the freshwater resources. • All manholes should be raised above the 1:100-year flood line. • Soil must be recompacted to a depth of 450 mm, and all construction material	**Low (Negative)**	**Low**

Construction of a pipeline within proximity to the freshwater resource (depression wetland) and over a freshwater resource (floodplain wetland): • Sedimentation of freshwater resources • Erosion of the exposed trench. • Removal of vegetation and disturbance of soils, which may enable the recruitment of alien and invasive vegetation. **Potential indiscriminate waste disposal:** • Altered flow regime because of solid wastes within the freshwater resources. • Altered water quality due to chemical waste disposal. **Potential spillage from construction vehicles:** • Possible contamination of freshwater soils and surface water, leading to reduced ability to support biodiversity.		• must be removed from site upon the completion of construction. • The area must be rehabilitated after the completion of the construction phase. In addition, alien vegetation eradication programme must be implemented. • 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. • Flow diversion by means of scaffolding (created during the installation of the pipeline underneath the bridge structure) should be done properly to avoid inundation of the area as well as drying out of downstream areas. • 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. • 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 freshwater resources (especially that of the floodplain wetland) should be minimised to reduce the flow and functioning of the freshwater system. • Sanitation services must be provided for construction personnel, whereby at least one portable toilet will be provided per ten personnel and will be emptied regularly. • Construction personnel must be informed that no firewood is to be harvested, all litter must be stored immediately and only in closed dustbins, including cigarette ends, and no litter is to remain behind on site following completion of construction activities.		
Construction phase				
Groundwater				
• Groundwater pollution due to unsanitary conditions onsite.	**Medium (Negative)**	• Sufficient ablution facilities shall be provided – 1 toilet per 10 workers. • Ablution facilities should be on impermeable surfaces and at least 50m 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 100m of any work point. • Ablating anywhere other than in toilets shall not be allowed. • Ablution facilities are to be secured. • The contractor shall ensure that no chemical and/or waste form the ablution facilities are spilled on the ground at any time. • Ablution facilities should be serviced weekly or more frequently if required. • Contents are to be removed from site on a regular basis. • Ablution facilities should be inspected and maintained to prevent and minimise blockages and leakages. • Toilets should have properly closing doors and be supplied with toilet	**Low (Negative)**	**Low**

		paper. • Awareness of the importance of proper hygiene should be created among employees.		
• Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	Medium (Negative)	• Identify all hazardous chemical substances used onsite including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material safety data sheets for all hazardous chemical substances must be readily available onsite. • Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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. • During refuelling, the ground must be protected and proper dispensing equipment is to be used. • 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 concrete floors in bunded areas.	Low (Negative)	Low
Construction phase				
Atmosphere and Noise				
• Ambient noise levels are likely to increase because of the construction activities.	Medium (Negative)	• Noise generating activities 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 onsite. The register must record the following: Date when compliant was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed.	Low (Negative)	Low
• Degradation of ambient air quality due to dust and exhaust emission generation.	Medium (Negative)	• A water cart should be kept onsite to water down dusty construction activities. • A complaints register should be kept onsite. The register must record the following: Date when compliant was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed. • Open areas should be re-vegetated. • Regular maintenance of vehicles and equipment should be undertaken. Optimal engine combustion will allow for “cleaner” exhaust emissions.	Low (Negative)	Low
Construction phase				
Heritage and Paleontology				

• Construction activities may disturb or destroy sites, features or artefacts of archaeological and/or historical importance.	Low (Negative)	• 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
• Construction activities may disturb or destroy fossils or bedrock of palaeontological sensitivity.	Low (Negative)	• 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
Operational phase				
Geology and soil				
• Soil pollution due to hazardous chemical substances including fuel greases and oils used onsite.	Medium (Negative)	• Identify all hazardous chemical substances used onsite, including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • 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. • 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 form site.	Low (Negative)	Low
• Soil erosion.	Medium (Negative)	• Don't allow erosion to develop to a large scale before taking action. • During maintenance, existing roads and tracks should be used as far as possible. • Vegetation establishment should be monitored to ensure that vegetation cover is sufficient to prevent erosion development.	Low (Negative)	Low
Operational phase				
Fauna and Flora				
• Spread of alien invasive plant species.	Medium (Negative)	• Alien invasive species should be removed (prioritising category 1 species). • All alien seedlings and saplings must be removed as they become evident. • Manual/mechanical removal should be used rather than chemical control. Hazardous chemicals may impact upon natural vegetation in the area as well as the freshwater resources.	Low (Negative)	Low
• Disturbance of faunal species.	Medium (Negative)	• Outside lighting should be designated to minimise impact on fauna. • All outside lighting should be directed away from sensitive areas. • Fluorescent and mercury vapour lighting should be avoided. Sodium vapour or LED lights should rather be used as far as possible.	Low (Negative)	Low
Operational phase				
Freshwater Resources				
Potential failure of infrastructure: possible leaks from pipeline into	Medium (Negative)	• It should be ensured that additional freshwater areas are not inundated as a result of leaks or bursting of the	Low (Negative)	Low

freshwater resources, causing incision and alteration of the hydroperiod of the wetland in some areas Indiscriminate movement of vehicles and vegetation trampling within the freshwater resources during maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure		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 pipeline. • Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles		
Operational phase - Department of Water and Sanitation Risk Assessment				
Operations and maintenance of the proposed pipeline across the floodplain wetland and within proximity to the depression wetland: • Possible incision and alteration of the hydroperiod of the wetland in some areas. • Possible soil compaction and disturbance, resulting in increased alteration of the vegetation community structure. • Impacts as per activity 1 and 2 above as applicable depending upon the location of the leak.	**Medium (Negative)**	• It should be ensured that additional freshwater areas are not inundated as a result of leaks or bursting 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 bursting of the pipeline. • Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles. • Should repair of the pipeline be required to address a leak, mitigations as per activity 1 and 2 above as applicable depending upon the location of the leak	**Low (Negative)**	**Low**
Operational phase				
Terrestrial Ecology				
Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential species of conservation concern, by movement of vehicles during maintenance activities.	**Medium (Negative)**	• No vehicles or maintenance personnel are to traverse through the sensitive freshwater habitat areas unnecessarily • Restrict maintenance vehicles to travelling only on designated roadways to limit the ecological footprint of the proposed development. • No informal fires are allowed by construction personnel outside of the development footprint.	**Low (Negative)**	**Low**
Operational phase - Groundwater				
• Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	**Low (Negative)**	• Identify all hazardous chemical substances used onsite including fuel, greases and oils. • Obtain the material safety data sheets for each of the hazardous chemical substances. • Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment. • Material safety data sheets for all hazardous chemical substances must be readily available onsite.	**Low (Negative)**	**Low**

		• **Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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.** • **During refuelling, the ground must be protected and proper dispensing equipment is to be used.** • **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 concrete floors in bunded areas.**		
• **Groundwater pollution due to poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.**	**Low (Negative)**	• **Obtain the material safety data sheets for each of the hazardous chemical substances.** • **Ensure that the material safety data sheets have sufficient information to enable the user to take the necessary measures to protect his/her health and safety and that of the environment.** • **Material safety data sheets for all hazardous chemical substances must be readily available onsite.** • **Appropriate equipment to deal with emergency spill incidents is to be readily available onsite. 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.** • **During refuelling, the ground must be protected and proper dispensing equipment is to be used.** • **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 concrete floors in bunded areas.**	**Low (Negative)**	**Low**
Operational phase				
Atmosphere and Noise				
• **Ambient noise levels are likely to increase as a result of the operational activities.**	**Low (Negative)**	• **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 onsite. The register must record the following: Date when compliant was received, name of person who reported the complaint, details of the complaint and when and how the concern was addressed.**	**Low (Negative)**	**Low**
Decommissioning phase				
No decommissioning is foreseen in the near future for the proposed project. However, should decommissioning 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.

No Go

If no developments occur the following impacts will occur as a result:

- **There will be no dedicated supply to the new developments in the Persia Reservoir zone namely Welgedacht Ext 1. Slovo Park.**
- **No employment opportunities will be created if the development is not conducted.**

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 Terrestrial Sensitivity Scan as Part of Environmental Assessment and Authorisation Process for The Proposed Pipeline from The Persida Reservoir to The Randwater Connection in Springs, Gauteng Province June 2017. Attached as annexure G.

Scientific Aquatic Services Freshwater Resource Ecological Assessment as Part of The Water Use License Application Requirements for The Proposed Pipeline from The Persida Reservoir to The Randwater Connection in Springs, Gauteng Province June 2017. Attached as annexure G.

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

The following assumptions and limitations are applicable to the terrestrial report:

- **The ecological assessment is confined to the proposed pipeline (with 30m area of investigation) and 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 have been accurately assessed and considered;**
- **Due to the nature and habits of most faunal taxa and the increased level of surrounding anthropogenic activities, it is unlikely that all species would have been observed during a site assessment of limited duration. Therefore, site observations were compared with literature studies where necessary;**
- **The data presented in this report are based on a single site visit, undertaken on 30 May 2017 (Autumn). A more accurate assessment would require that assessments take place in all seasons of the year. However, on-site data was significantly augmented with all available desktop data, and the findings of this assessment are considered an accurate reflection of the ecological characteristics of the proposed pipeline.**

The following assumptions and limitations are applicable to the fresh water report:

- **The determination of the freshwater resource boundaries and the assessment thereof, is confined to the freshwater resource traversed by the proposed pipeline. All freshwater resources identified within 500m of the proposed pipeline, were delineated in fulfilment of Regulation GN509 of the NWA on a desktop level, however these resources were not assessed individually. The general surroundings were, however, considered in the desktop assessment of the investigation zone;**
- **Some areas surrounding the proposed pipeline have undergone significant anthropogenic influences (road/railway construction, mining activities and cultivation activities) that have altered the soil profiles and vegetation composition. As a result, identification of the outer boundary of the temporary zone of the freshwater resources proved difficult in some areas. Therefore, the freshwater resource 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. Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required, the freshwater resource boundaries will need to be surveyed and pegged according to surveying principles;**
- **Wetland 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 freshwater resource 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 proposed development 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.**

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

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

Proposal

No decommissioning is foreseen in the near future for the proposed project. However, should decommissioning 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.

Alternative 1

No decommissioning is foreseen in the near future for the proposed project. However, should decommissioning 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.

Alternative 2

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**

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

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

4. CUMULATIVE IMPACTS

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

Construction run-off and accidental spillages may serve as a source of pollution, while siltation may occur during construction. The proposed linear development poses a risk to mainly a floodplain wetland and may potentially impact negatively on a depression wetland. Noise be created during the construction phase, this will not be significant as it is short in duration.

The predicted cumulative impacts will however be low if managed according to the EMPr.

5. ENVIRONMENTAL IMPACT STATEMENT

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

Proposal

The short term environmental impacts of the activity include loss of terrestrial habitat, diversity and species of conservation concern (SCC), degradation of the terrestrial ecology, siltation of the watercourse, erosion, increased construction vehicles, possible dust, noise pollution and employment opportunities during the construction phase. However, the entire proposed pipeline route is within the existing servitude. The crossing over the Blesboksrpuit will be on the existing bridge structure, and will not impede any flow of the spruit.

Three habitat units were observed along the proposed pipeline namely the Disturbed Grassland Habitat, Freshwater Habitats and Agricultural Fields.

- **The habitat along the proposed pipeline is considered to be of a moderately low sensitivity, due to past and current impacts and edge effects from the local peri urban and agricultural areas;**
- **No faunal or floral SCC were observed along the proposed pipeline, nor are any expected to occur therein;**
- **The proposed pipeline was predominantly inhabited by faunal species common to the region, that are widely distributed throughout the surrounding habitat;**
- **The floral component along the proposed pipeline was characterised by grass species indicative of disturbed areas, as well as a large number of alien invasive plant species that are common to urban areas.**

From a terrestrial ecological perspective, the Freshwater habitat is considered to be of a moderately high sensitivity, whilst the Disturbed Grassland and Agricultural Lands are a moderately-low sensitivity.

The Freshwater habitat unit provides water and food resources to faunal species in the region, as well as areas of refuge from impacts relating to the surrounding farming activities and anthropogenic impacts stemming from the local communities.

Based on the findings of the freshwater resource assessment and the results of the impact assessment, it is the opinion of the wetland specialist that although the proposed development poses a risk to mainly the floodplain wetland, while minimal

impacts expected to occur on the depression wetland, these impacts can be satisfactorily mitigated. Adherence to cogent, well-conceived and ecologically sensitive site development plans, and the mitigation measures provided in the BAR and EMPr as well as general good construction practice, will greatly reduce the significance of perceived impacts.

It is the opinion of the EAP therefore that the proposed pipeline, be considered favourably, with the provision that strict adherence to mitigation measures is enforced, in order to ensure that the environment is not compromised.

Alternative 1

Alternative 1 will not have additional environmental impacts, but will incur additional costs.

The short term environmental impacts of the activity include loss of terrestrial habitat, diversity and species of conservation concern (SCC), degradation of the terrestrial ecology, siltation of the watercourse, erosion, increased construction vehicles, possible dust, noise pollution and employment opportunities during the construction phase. However, the entire proposed pipeline route is within the existing servitude. The crossing over the Blesboksrpuit will be on the existing bridge structure, and will not impede any flow of the spruit. The only difference between the preferred and alternative 1 is the landowner who doesn't want the water pipeline to run in front of his property. Therefore, the proposed alternative pipeline will be routed from the new Persida and under the R555 (Stoffberg avenue) in a northerly direction, the pipeline will then be routed in a westerly direction (for approximately 410m) in front of the shops, the pipeline would then cross the R555 (Stoffberg avenue) again and follow on the western side of a partially tarred road.

Three habitat units were observed along the proposed pipeline namely the Disturbed Grassland Habitat, Freshwater Habitats and Agricultural Fields.

- **The habitat along the proposed pipeline is considered to be of a moderately low sensitivity, due to past and current impacts and edge effects from the local peri urban and agricultural areas;**
- **No faunal or floral SCC were observed along the proposed pipeline, nor are any expected to occur therein;**
- **The proposed pipeline was predominantly inhabited by faunal species common to the region, that are widely distributed throughout the surrounding habitat;**
- **The floral component along the proposed pipeline was characterised by grass species indicative of disturbed areas, as well as a large number of alien invasive plant species that are common to urban areas.**

From a terrestrial ecological perspective, the Freshwater habitat is considered to be of a moderately high sensitivity, whilst the Disturbed Grassland and Agricultural Lands are a moderately-low sensitivity.

The Freshwater habitat unit provides water and food resources to faunal species in the region, as well as areas of refuge from impacts relating to the surrounding farming activities and anthropogenic impacts stemming from the local communities.

Based on the findings of the freshwater resource assessment and the results of the impact assessment, it is the opinion of the wetland specialist that although the proposed development poses a risk to mainly the floodplain wetland, while minimal impacts expected to occur on the depression wetland, these impacts can be satisfactorily mitigated. Adherence to cogent, well-conceived and ecologically sensitive site development plans, and the mitigation measures provided in the BAR and EMPr as well as general good construction practice, will greatly reduce the significance of perceived impacts.

It is the opinion of the EAP therefore that the proposed pipeline, be considered favourably, with the proviso that strict adherence to mitigation measures is enforced, in order to ensure that the environment is not compromised.

Alternative 2

[redacted]

No-go (compulsory)

Where impacts to the receiving environment are deemed to be significantly high and/or irreversible, then a no-go or alternative routing may have to be considered. The proposed pipeline is routed across the Bleskbokspriut; however, the crossing point will utilise the existing bridge infrastructure, and not be routed directly through or under the wetland habitat. As such the risk of impacts and habitat disturbance to the wetland will be significantly reduced. Provided that the current layout and construction plans pertaining to the use of the existing bridge for the pipeline crossing do not change, a no-go option or alternative route selection is not considered to be necessary. However, should the layout plans change, then the alternative route or no-go option will have to be reinvestigated.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

A summary of the results of the terrestrial specialist study.

Activity	Pre-mitigation	Post mitigation
Construction phase		
Loss of terrestrial habitat, diversity and species of conservation concern. Site preparation and vegetation clearing activities will result in the loss of terrestrial habitat and species diversity, both floral and faunal along the proposed pipeline. 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	**Medium**	**Low**

immediate area (floral species) or the relocation of such species to similar habitat nearby.		
Operational phase		
Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential species of conservation concern. 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 resulting in contamination of soils leading to nutrient and pH changes which will impact upon the floral and faunal ecology. Furthermore, leaks may lead to increased erosion activities and disturbance of the surrounding habitat.	**Medium**	**Low**

Summary of the freshwater resource specialist study.

Activity	Pre-mitigation	Post-mitigation
Construction phase		
Potential spills and leaks from vehicles delivering construction material (during refuelling of vehicles, leaks from hazardous material containers) Indiscriminate movement of vehicles within the freshwater resources Clearing of vegetation during site preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas	**Medium**	**Low**
Topsoil stockpiling adjacent to the freshwater resources	**Medium**	**Low**
Ground breaking and excavation of trenches within close proximity to the freshwater resources	**Medium**	**Low**
Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the freshwater resources)	**Medium**	**Low**
Operational phase		
Potential failure of infrastructure: possible leaks from pipeline into freshwater resources, causing incision and alteration of the hydroperiod of the wetland in some areas	**Medium**	**Low**
Indiscriminate movement of vehicles and vegetation trampling within the freshwater resources during maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure	**Low**	**Low**

For alternative:

summary of the results of the terrestrial specialist study.

Activity	Pre-mitigation	Post mitigation
Construction phase		
Loss of terrestrial habitat, diversity and species of conservation concern. Site preparation and vegetation clearing activities will result in the loss of terrestrial habitat and species diversity, both floral and faunal along the proposed pipeline. Should any species of conservation concern 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.	**Medium**	**Low**
Operational phase		
Continued loss of terrestrial habitat, degradation of the terrestrial ecology and loss of potential species of conservation concern. 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 resulting in contamination of soils leading to nutrient and pH changes which will impact upon the floral and faunal ecology. Furthermore, leaks may lead to increased erosion activities and disturbance of the surrounding habitat.	**Medium**	**Low**

Summary of the freshwater resource specialist study.

Activity	Pre-mitigation	Post-mitigation
Construction phase		
Potential spills and leaks from vehicles delivering construction material (during refuelling of vehicles, leaks from hazardous material containers) Indiscriminate movement of vehicles within the freshwater resources Clearing of vegetation during site	**Medium**	**Low**

preparation, creating access roads where existing roads cannot be used and creating contractor laydown areas		
Topsoil stockpiling adjacent to the freshwater resources	**Medium**	**Low**
Ground breaking and excavation of trenches within close proximity to the freshwater resources	**Medium**	**Low**
Potential indiscriminate waste disposal (disposal of waste material such as soil, rocks, concrete chemicals and litter within the freshwater resources)	**Medium**	**Low**
Operational phase		
Potential failure of infrastructure: possible leaks from pipeline into freshwater resources, causing incision and alteration of the hydroperiod of the wetland in some areas	**Medium**	**Low**
Indiscriminate movement of vehicles and vegetation trampling within the freshwater resources during maintenance activities, resulting in soil compaction and disturbance, which could result in increased alteration of the vegetation community structure	**Low**	**Low**

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 information contained in this DBAR and specialist studies, provides a detailed and comprehensive description of the proposed project, baseline environment and potential environmental impacts associated with the proposed activity. As no significant impacts that cannot be mitigated were identified, we are of the opinion that the project should proceed, provided the necessary mitigation and management measures are implemented.

Furthermore, should the proposed development be approved, the social and economic benefits to the province and Ekurhuleni communities will be significantly positive. The only reason for the alternative would be to accommodate concerns as raised by a dissatisfied land owner, although the duration for discomfort is of short term in nature.

7. SPATIAL DEVELOPMENT TOOLS

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

- **Ekurhuleni Metropolitan Municipality Regional Spatial Development Framework Region D. The activity is fully aligned with the provisions thereof;**
- **Gauteng Provincial EMF - activity will be located in the urban development zone and fully complies with the provisions thereof.**

8. RECOMMENDATION OF THE PRACTITIONER

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

YES	NO

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:

The following conditions were recommended by the wetland specialist:

➢ Effort should be made so as to not destroy any wetland habitat of especially the floodplain wetland, during the construction phase of the proposed pipeline. It will entail construction workers to enter the wetland, however, as much as possible habitat and vegetation loss should be prevented and no unnecessary trampling should be permitted;

➢ Where the proposed pipeline crosses in close proximity to the depression wetland, care should be taken to not allow edge effects of the construction activities to influence on these wetlands, especially with regards to possible sedimentation of the wetlands due to close by trenching or ground-breaking activities;

➢ Areas which are to be cleared of vegetation, including contractor laydown areas, must remain as small as possible, in order to reduce the risk of proliferation of alien vegetation, and in order to retain a level of protection to the freshwater resources during construction (e.g. sediment trapping, slowing of storm water runoff etc.). Contractor laydown areas are to remain outside of the delineated freshwater resources and their associated buffers, and as much as feasible no natural/indigenous wetland vegetation is to be cleared;

➢ It is highly recommended that an alien vegetation management plan be compiled during the planning phase and implemented concurrently with the commencement of construction;

➢ A soil management plan must be compiled during planning, and implemented when construction commences. It is essential that the following be included in the soil management plan:

• All exposed soils are to be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) in order to prevent erosion and sedimentation of the freshwater resources;

• No stockpiling of soils is to take place within the freshwater resources or associated buffer zones, and stockpiles may not exceed 2m in height; and

• Any remaining soils following the completion of construction activities are to be levelled and re-seeded with

indigenous flora species to minimise the risk of further sedimentation of the wetland, and to aid in the natural reclamation process; and
• All Manholes located within the 1:100-year flood line 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, building up a mound of appropriate soil around the manhole which is then gently sloped back to the natural ground level.

The following conditions were recommended by the terrestrial specialist:

- **Should any floral or faunal SCC be encountered during the site preparation or construction phase, the following measures are to be carried out:**
- **Where feasible, effective relocation of individuals to suitable similar habitat in the vicinity of the proposed pipeline;**
- **All rescue and relocation plans should be overseen by a suitably qualified specialist;**
- **It is recommended that operational activities take place in a phased manner, so as to ensure that as far as possible faunal species can naturally disperse out of the area ahead of construction activities;**
- **The construction footprint must be kept as small as possible in order to minimize impact on the surrounding environment;**
- **Edge effects of activities need to be actively managed to minimise further impacts to the receiving environment, with specific consideration to erosion control and alien floral species management;**
- **Restrict vehicles to travelling only on designated roadways to limit the ecological footprint;**
- **No uncontrolled fires whatsoever should be allowed;**
- **No dumping of waste should take place. If any spills occur, they should be immediately cleaned up;**
- **In the event of a breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced preventing the ingress of hydrocarbons into the topsoil; and**
- **No trapping or hunting of any faunal species is to take place;**
- **Alien vegetation must be removed from the proposed pipeline during both the construction and operational phases, in line with the NEMBA Alien and Invasive Species Regulations (2016).**

Rehabilitation and Maintenance Recommendations

- **Disturbed and cleared areas need to be revegetated with indigenous grass species to help stabilise the soil surface**
- **All alien plants within the proposed pipeline should be cleared, with follow up activities running concurrently for two years; and**
- **Soils that have been compacted must be ripped and profiled in line with the surrounding area;**
- **Where spills or soil contamination occurs as a result of maintenance activities, the contaminated soil needs to be excavated and removed to an approved waste disposal site. New soil is then to be used to replace the removed soil and the area appropriately revegetated.**

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

Guideline on Need and Desirability (March 2013) as well as the GN 891 of 2014 integrated environmental management guideline series 9 guidelines on need and desirability in terms of the 2014 EIA regulations as published on the 20th of October 2014.)

<table>
<tr><th>Requirement</th><th>Part where requirement is addressed/response</th></tr>
<tr><td>1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?</td><td>The proposed water pipeline is within road reserves and already disturbed areas. The pipeline will cross the Blesbokspruit by means of an existing bridge which has existing pipelines. Therefore, the proposed pipeline will have minimal impacts on the ecological integrity of the area.</td></tr>
<tr><td colspan="2">How were the following ecological integrity considerations taken into account?</td></tr>
<tr><td>1.1.1 Threatened Ecosystems.</td><td>There are no threatened ecosystems located within the project boundaries.</td></tr>
<tr><td>1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.</td><td>A natural depression wetland located within the northern portion of the proposed pipeline route.
The PES of this depression was calculated to be ‘Largely modified’ (PES Category: D), it’s the opinion of the ecologist that this depression could be considered to be moderately modified. Despite the historical and more recent modifiers (extensive cultivation activities and the construction of a railway west of the depression) to this wetland, it still has the ability to support a variety of biota. This depression provides moderate levels of ecological functioning, particularly nutrient and toxicant assimilation. This depression also provides harvestable resources to the local rural community who harvest reeds and crops from the surrounding agricultural fields. Based onsite observations a variety of faunal species were observed due to the habitat that is provided by this depression. Overall, the extensive changes to the surrounding area of the depression such as extensive cultivation activities and the construction of a railway line west of the depression, which has resulted in large changes to the ecosystem processes of the depression, has transformed the ecological functioning of this depression.</td></tr>
<tr><td>1.1.3 Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs").</td><td>The central portion (where the NFEPA database identified the Blesbokspruit) and a portion along the northern section (where the NFEPA database identified a depression wetland) of the proposed pipeline was identified by the Gauteng Conservation Plan to be Critical Biodiversity Areas (CBA). The southern portion of the proposed pipeline is located along an area also identified as a CBA. A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation and ridges.</td></tr>
<tr><td>1.1.4 Conservation targets.</td><td>The proposed pipeline traverses the Soweto Highveld Grassland, Eastern Highveld Grassland, and Eastern Temperate Freshwater Wetlands.
<table>
<tr><th>Vegetation type</th><th>Conservation targets</th></tr>
<tr><td>Eastern Temperate Freshwater Wetlands</td><td>Endangered. Very little statutorily conserved.
Provincial conservation target is 24%.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Requirement</th><th>Part where requirement is addressed/response</th></tr>
<tr><td></td><td>
<table>
<tr><td>Eastern Highveld Grassland</td><td>Endangered. Target 24%. Only a very small fraction is conserved in statutory.</td></tr>
<tr><td>Eastern Temperate Freshwater Wetlands</td><td>Conservation target is 24%. Currently about 5% statutorily conserved.</td></tr>
</table>
</td></tr>
<tr><td>1.1.5 Ecological drivers of the ecosystem.</td><td>The Blesbokspruit wetland is considered the ecological driver of the ecosystem.</td></tr>
<tr><td>1.1.6 Environmental Management Framework.</td><td>Access to water is a basic need, a human right as per the South African constitution and sanitation is dignity; therefore, the construction of water pipelines is considered as a basic requirement in addressing water shortages and poor sanitation in the Ekurhuleni Metropolitan Municipality (EMM). Hence the proposed development is well within the scope of Environmental Management Framework as such an initiative is of higher priority in addressing the current supply constraints in the Welgedacht and Solvo Park areas. The pipeline project forms part of a larger scheme for the improved basic provision of water, which will not only improve sanitation and the living standards for a number of the previously disadvantaged community, but also potentially allow for the future development of this area.</td></tr>
<tr><td>1.1.7 Spatial Development Framework.</td><td>EMM is experiencing a backlog in the provision of basic water services to Ekurhuleni communities. This project is critical to route water to the new developments in the Persia Reservoir zone namely Welgedacht Ext.1, Slovo Park etc.</td></tr>
<tr><td>1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).</td><td>Not applicable.</td></tr>
<tr><td>1.2 How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</td><td>The proposed water pipeline will be within the existing servitude, where this habitat is considered to be of a moderately low sensitivity, due to past and current impacts and edge effects from the local peri urban and agricultural areas. No faunal or floral species of conservation concern were observed along the proposed pipeline, nor are any expected to occur therein.

From a terrestrial ecological perspective, the Freshwater habitat is considered to be of a moderately high sensitivity, whilst the Disturbed Grassland and Agricultural Lands are a moderately-low sensitivity. The Freshwater habitat unit provides water and food resources to faunal species in the region, as well as areas of refuge from impacts relating to the surrounding farming activities and anthropogenic impacts stemming from the local communities. No faunal or floral species of conservation concern were observed during the field assessment, nor do any of the species have an increased likelihood of occurrence due to the high levels of disturbances and close locality within the urban areas.

Based on the findings of the freshwater resource assessment and the results of the impact assessment, it is the opinion of the ecologist that although the proposed development poses a risk to mainly the floodplain wetland, while minimal impacts</td></tr>
</table>

Requirement		Part where requirement is addressed/response
		expected to occur on the depression wetland, these impacts can be satisfactorily mitigated. Adherence to cogent, well-conceived and ecologically sensitive site development plans, and the mitigation measures provided in the BAR and EMPr as well as general good construction practice, will greatly reduce the significance of perceived impacts. **The project will provide positive impacts in the form of 100 employment opportunities.**
1.3	**How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	**Strict mitigation measures will be imposed on the development to avoid pollution. Positive impacts will be the creation of employment opportunities and GDP growth.**
1.4	**What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?**	**Only a small amount of construction waste will be generated during the construction phase of the project.**
1.5	**How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	**This development will not impact on the landscapes and nations cultural heritage.**
1.6	**How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been**	**The activity will not impact on non-renewable natural resources.**

Requirement		Part where requirement is addressed/response
	considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	
1.7	**How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?**	**The activity will not impact on renewable natural resources.**
1.7.1	***Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)***	**Not applicable.**
1.7.2	***Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources***	**The activity will not impact on non-renewable natural resources.**

Requirement	Part where requirement is addressed/response
should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)	
1.7.3 Do the proposed location, type and scale of development promote a reduced dependency on resources?	**Not applicable.**
1.8 How were a risk-averse and cautious approach applied in terms of ecological impacts?	**During the BAR, the specialists will complete a risk assessment table as part of their specialist studies.**
1.8.1 What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	**The following assumptions and limitations are applicable to the Wetland report:** **➢ The determination of the freshwater resource boundaries and the assessment thereof, is confined to the freshwater resource traversed by the proposed pipeline. All freshwater resources identified within 500m of the proposed pipeline, were delineated in fulfilment of Regulation GN509 of the NWA on a desktop level, however these resources were not assessed individually. The general surroundings were, however, considered in the desktop assessment of the investigation zone;** **➢ Some areas surrounding the proposed pipeline have undergone significant anthropogenic influences (road/railway construction, mining activities and cultivation activities) which have altered the soil profiles and vegetation composition. As a result, identification of the outer boundary of the temporary zone of the freshwater resources proved difficult in some areas. Therefore, the freshwater resource 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. Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required, the freshwater resource boundaries will need to be surveyed and pegged according to surveying principles;** **➢ Wetland 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 freshwater resource 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 proposed development 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.** **The following assumptions and limitations are applicable to the Terrestrial report:** **➢ The ecological assessment is confined to the proposed pipeline (with 30m area of investigation) and does not include the neighbouring and adjacent properties; these were however considered as part of the desktop assessment;**

Requirement	Part where requirement is addressed/response
	➢ 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 have been accurately assessed and considered; ➢ Due to the nature and habits of most faunal taxa and the increased level of surrounding anthropogenic activities, it is unlikely that all species would have been observed during a site assessment of limited duration. Therefore, site observations were compared with literature studies where necessary; ➢ The data presented in this report are based a single site visit, undertaken on 30 May 2017 (Autumn). A more accurate assessment would require that assessments take place in all seasons of the year. However, on-site data was significantly augmented with all available desktop data, and the findings of this assessment are considered to be an accurate reflection of the ecological characteristics of the proposed pipeline.
1.8.2 What is the level of risk associated with the limits of current knowledge?	The risk is that GDARD might request a spring or summer study for the terrestrial and freshwater study.
1.8.3 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	All specialist studies were conducted by registered and certified specialists in their fields. The mitigation measures proposed by the specialists will be considered by the client.
How will the ecological impacts resulting from this development impact on people's environmental right in terms following:	
1.8.4 Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to section E for identified environmental impacts associated with the activity.
1.8.5 Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Positive impacts are related to Social and Socio-economic.
1.9 Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-	Refer to section E for identified environmental impacts associated with the activity.

Requirement		Part where requirement is addressed/response
	economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	
1.10	**Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?**	**Refer to section E for identified environmental impacts associated with the activity.**
1.11	**Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?**	**Refer to section E for identified environmental impacts associated with the activity.**
1.12	**Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?**	**Refer to section E for identified environmental impacts associated with the activity.**
What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?		
2.1.1	***The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,***	**According to the Integrated Development Plan (IDP) of City of Ekurhuleni 2017/18 to 2020/21, EMM is experiencing a backlog in the provision of basic water services, as such this project is critical to route water to the new developments in the Persida Reservoir zone namely Welgedacht Ext.1, Slovo Park etc.**
2.1.2	***Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),***	**The current system is inadequate to meet the demands of the surrounding community; therefore, this project will result in an improvement in the quality and quantity of potable water accessible to the community.**
2.1.3	***Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and***	**The existing land use is characterized by the agricultural farms with few local vegetable shops and cafeteria.**
2.1.4	***Municipal Economic Development Strategy ("LED***	**It is the mandate of the Ekurhuleni Metropolitan Municipality to provide clean, potable water to its citizens as it is a basic right.**

Requirement		Part where requirement is addressed/response
	Strategy").	**Not only limited to that, but develop and uplift the local area.**
2.2	**Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?**	**The proposed development will result in a positive socio-economic impact such that besides the City of Ekurhuleni's mandate of improving access to clean water to all, there will be a generation of employment and technical skills transfer to the local communities during the construction phase of the project.**
2.2.1	***Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?***	**Yes, it is the mandate of the City of Ekurhuleni to provide the community with access to water, develop and uplift local area.**
2.3	**How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?**	**As mentioned the public participation process for this project was conducted by Shangoni Management Services in terms of:** **• The procedures and provisions in terms of the NEMA;** **• Chapter 6 of the 2014 EIA Regulations;** **• GN 807 of 2012; Public Participation Guideline; and** **• Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.** **The specialist studies have provided mitigation measures and recommendations that should be adopted to minimise negative impacts, as well as recommendations to enhance positive impacts. Access to water is basic human right; hence the construction of the water pipe lines is a basic requirement to address water shortages, helping to improve the quality of life within the community.**
2.4	**Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and longterm? Will the impact be socially and economically sustainable in the short- and long-term?**	**The construction of water pipeline will address the problems of water shortages, therefore the quality of life will be improved in a short and long term, considering that mitigation measures are addressed. With adequate mitigation, there are no clear reasons to suspect that the project would be unsustainable**
2.4.1	***result in the creation of residential and employment opportunities in close proximity to or integrated with each other,***	**The development will result in the employment generation to the local residents, 100 new employment opportunities to be created in the construction phase of this activity.**
2.4.2	***reduce the need for transport of people and goods,***	**The proposed development is for the construction of water pipeline as such the development will not involve the transportation of people and goods.**
2.4.3	***result in access to public transport or enable non-***	**No, the development does not relate to the public transportation.**

Requirement	Part where requirement is addressed/response
motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	
2.4.4 ***compliment other uses in the area,***	**The proposed construction of water pipe lines is ideal, such that the pipelines will be routed from the new Persida reservoir that will be constructed adjacent to the existing Persida reservoir. The pipelines will be constructed along the existing road reserves and underneath the bridge crossing, which also has existing pipelines. Therefore, considering such similar land uses the water pipeline will fit well.**
2.4.5 ***be in line with the planning for the area,***	**Undoubtedly the proposed construction of water pipelines from the new Persida reservoir is in line will the plan of the area such that the new reservoir is similar in nature to the already existing Persida reservoir infrastructure, and there is a need for water in the surrounding communities. The policy stipulated in the IDP, expresses the need for the provision of water to the community, hence the Ekurhuleni Metropolitan Municipality saw a need to improve the water services by installing pipelines. The proposed project will also result in employment, capacity building and skills development.**
2.4.6 ***for urban related development, make use of underutilised land available with the urban edge,***	**Urban edge policies are not affected since the Welgedacht water pipeline project is not in the boundaries of the city, in other respects pipelines are not regarded as urban development preferable to be developed within the urban edge.**
2.4.7 ***optimise the use of existing resources and infrastructure,***	**The proposed Welgedacht water pipelines will be constructed within the servitude. Use of the existing bridge structure will significantly decrease the overall costs of the proposed new infrastructure.**
2.4.8 ***consider opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),***	**The proposed Welgedacht water pipelines will be constructed within the servitude. Use of the existing bridge structure will significantly decrease the overall costs of the proposed new infrastructure.**
2.4.9 ***discourage "urban sprawl" and contribute to compaction/densification,***	**The manner of the development will not encourage migration of Welgedacht population to low density residential development.**
2.4.10 ***contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,***	**The development of this area is of great importance and the proposed project will assist in improving water services, providing reliable sanitation services and employment creation to the previously disadvantaged local communities as part of the National Development Plan.**
2.4.11 ***encourage environmentally sustainable land development practices and processes,***	**The construction of water pipelines is the best practicable environmental option for this land/site to curb water shortages and sanitation problems. The proposed site has already been disturbed by the previous and current activities including the**

Requirement	Part where requirement is addressed/response
	construction of roads, railway, mining and agriculture.
2.4.12 take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	**The proposed Welgedacht water pipelines will be constructed within the servitude. Use of the existing bridge structure will significantly decrease the overall costs of the proposed new infrastructure.**
2.4.13 result in the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	**The water pipeline project will not necessarily directly lead to the generation of high economic potential within Welgedacht however. Since access to portable water and improved sanitation is a basic requirement it will pave way to other businesses within the area that will socially and economically uplift EMM.**
2.4.14 impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	**The development will not impact any area of historical significance.**
2.4.15 in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	**The water pipeline project will not necessarily lead to similar activities, however it will pave way to other businesses within the area that will socially and economically uplift EMM.**
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?:	
2.4.16 What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	**Throughout the impact assessment, a cautious approach was followed whereby listed activities in GN. R 983 and R985 were identified based on the precautionary principle.**
2.4.17 What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	**In relation to inequality, vulnerable communities and economic vulnerability, no risk was identified. A 100 percent of the construction workers will be accrued to previously disadvantaged individuals and 53% of those will be women.**
2.4.18 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	**The specialist studies conducted provides mitigation measures and recommendations that should be adopted to minimise negative impacts, as well as recommendations to enhance positive impacts. The specialist study notes the gaps, limits in current knowledge and assumptions that the assessments are based on.**
How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.4.19 Negative impacts: e.g. health (e.g. HIV-Aids), safety,	**The proposed project will result in positive social impacts were reliable, portable water and sanitation services will be**

Requirement		Part where requirement is addressed/response
	social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	**appreciated by the community of Welgedacht and other surrounding areas. It will promote good health practices within the community. Employment opportunities will be generated during the construction, new business opportunities will be encouraged.**
2.4.20	***Positive impacts. What measures were taken to enhance positive impacts?***	**The development of this area is of great importance such that the proposed project will assist in providing water services which will ultimately improve sanitation and create employment to the previously disadvantaged local communities as part of the National Development Plan.**
2.5	**Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?**	**The specialist studies conducted provides mitigation measures and recommendations that should be adopted to minimise negative impacts, as well as recommendations to enhance positive impacts. The specialist study notes the gaps, limits in current knowledge and assumptions that the assessments are based on.**
2.6	**What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?**	**The specialist studies conducted provides mitigation measures and recommendations that should be adopted to minimise negative impacts, as well as recommendations to enhance positive impacts. The specialist study notes the gaps, limits in current knowledge and assumptions that the assessments are based on.**
2.7	**What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?**	**No person's rights will be negatively affected by the proposed activity. The property belongs to the EMM and no resident will be vacated due to the development thereto. The rights of the residents will in no way be infringed due to the water pipeline construction. Instead the proposed project will assist in improving water services and ultimately improved sanitation services and creating employment to previously disadvantaged local communities as part of the National Development Plan.**
2.8	**What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure**	**A number of 100 new employment opportunities will be created in the construction phase, of which 53 will be women, and 2 people with disability. Therefore, the discrimination on the disabled and women is fended off.**

Requirement		Part where requirement is addressed/response
	access thereto by categories of persons disadvantaged by unfair discrimination?	
2.9	**What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?**	**100 employment opportunities will be created during the construction phase.**
What measures were taken to:		
2.9.1	***ensure the participation of all interested and affected parties,***	**The public participation process for this project was conducted by Shangoni Management Services in terms of:** • **The procedures and provisions in terms of the NEMA;** • **Chapter 6 of the 2014 EIA Regulations;** • **GN 807 of 2012; Public Participation Guideline; and** • **Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.**
2.9.2	***provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,***	**Public will have ample opportunity to comment on the draft BAR & EMPr to provide comments and their inputs on the project.**
2.9.3	***ensure participation by vulnerable and disadvantaged persons,***	**All public including vulnerable and disadvantaged persons will be included in our public participation process.**
2.9.4	***promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,***	**Employment opportunities will be created during the project life time.**
2.9.5	***ensure openness and transparency, and access to information in terms of the process,***	**The public participation process for this project was conducted by Shangoni Management Services in terms of:** • **The procedures and provisions in terms of the NEMA;** • **Chapter 6 of the 2014 EIA Regulations;** • **GN 807 of 2012; Public Participation Guideline; and** • **Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.** **The process will be open and transparent and the public will have access to all documents throughout the process. All public comments will be included in this document and addressed appropriately.**
2.9.6	***ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and***	
2.9.7	***ensure that the vital role of women and youth in***	

Requirement		Part where requirement is addressed/response
	environmental management and development were recognised and their full participation therein were be promoted?	
2.10	**Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?**	**Local labour and broad-based black economic empowerment will be considered when sourcing labour.**
2.11	**What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?**	**The EMPr (Annexure H) addresses the mitigation measures and management actions to be conducted to reduce negative environmental impacts, including those impacts that might affect the surrounding communities. Awareness training and on the job training for the construction workers have been included as part of the EMPr and will be the responsibility of the construction contractor as well as the proponent (EMM). Furthermore, employment contracts will also be put in place for each worker. The Environmental Control Officer will conduct an environmental awareness training for the construction workers before commencement of work. Safety and health will be considered a priority.**
Describe how the development will impact on job creation in terms of, amongst other aspects:		
2.11.1	***the number of temporary versus permanent jobs that will be created,***	**100 temporary employment opportunities will be created during the construction phase and no permanent jobs will be granted.**
2.11.2	***whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),***	**Out of 100 new employment opportunities to be created in the construction phase of the project, 25% will be new skilled employment and 75% are unskilled.**
2.11.3	***the distance from where labourers will have to travel,***	**Labour will be sourced locally.**
2.11.4	***the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and***	**The proposed project will result in positive social impacts were reliable water and sanitation services will be appreciated by the community, not only that, the development will also result in employment and technical skills transfer to the local communities during the construction phase of the project.**
2.11.5	***the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000***	**Due to the proposed development, no jobs will be lost. 100 new jobs will be created during the construction phase.**

Requirement	Part where requirement is addressed/response
agricultural jobs, etc.).	
What measures were taken to ensure:	
2.11.6 ***that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and***	**The public participation process for this project was conducted by Shangoni Management Services in terms of:** • **The procedures and provisions in terms of the NEMA;** • **Chapter 6 of the 2014 EIA Regulations;** • **GN 807 of 2012; Public Participation Guideline; and** • **Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.** **The process will be open and transparent and the public will have access to all documents throughout the process. All public comments will be included in this document and addressed appropriately .**
2.11.7 ***that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?***	**Ekurhuleni Local Municipality (the applicant) is an organ of state, therefore no conflict of interest is foreseen.**
2.12 **What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?**	**The Basic Assessment is being undertaken as required in terms of the 2014 NEMA EIA Regulations. The process will ensure that the environment is protected. Furthermore, the EMPr provides recommendations and management actions for all aspects of the project lifecycle, including monitoring frequency and monitoring responsibility and will be regarded as a legal binding document to the Applicant.**
2.13 **Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?**	**According to the specialist studies, the recommended mitigation measures are realistic for both short and long term. There is a low probability of the waterpipe lines to be decommissioned. The intention would be to manage the proposed development indefinitely and to upgrade and renew the infrastructure should there be any leakages identified.**
2.14 **What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?**	**EMPr provides recommendations and management actions for all aspects of the project lifecycle, including monitoring frequency and monitoring responsibility and will be regarded as a legal binding document to the Applicant. The EMPr further ensures that rehabilitation will be undertaken when required and that any pollution, environmental degradation and resulting adverse health effects will be remedied by the Applicant or the polluter.**
2.15 **Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the**	**The impact of noise due to the construction activity on its own may not be significant, however, when combined with the ambient noise emissions resulting from the vehicles travelling on Welgedacht road and the noise emanating from surrounding**

Requirement		Part where requirement is addressed/response
	alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	**communities and the railway line may result in adverse impacts. However, this will only be during the construction phase of the project.** **The predicted cumulative impacts will however be low if managed according to the EMPr.**
2.16	**Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?**	

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

For a period of 5 years.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

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

EMPr attached	**YES, refer to Annexure H**

SECTION F: APPENDIXES

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

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

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

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

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

Appendix G: Specialist reports

Appendix H: EMPr

CHECKLIST

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

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