



AMENDED FINAL BASIC ASSESSMENT REPORT:

Proposed N4 Industrial Park outfall sewer pipeline traversing on certain Portions and the Remaining Extent of the Farms Zwartkoppies 364 - JR, and Mooiplaats 367- JR, City of Tshwane Metropolitan Municipality, Gauteng Province

GDARD REF NO: 002/14-15/0253

25 AUGUST 2015



Applicant: Mag Truck Spares (Pty) Ltd

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BASIC ASSESSMENT REPORT [REGULATION 22(1)]



Gauteng Department of Agriculture and Rural Development (GDARD)

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, 2010 (Version 1)

List of all organs of state and State Departments where the draft report has been submitted, their full contact details and contact person

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2010.
2. This application form is current as of 2 August 2010. 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 to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken. The draft reports must be submitted to the relevant State Departments and on the same day, two CD's of draft reports must also be submitted to the Competent Authority (GDARD) with a signed proof of such submission of draft report to the relevant State Departments.**
4. 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.
5. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
6. An incomplete report shall be rejected.
7. 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 rejection of the application as provided for in the regulations.
8. 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.
9. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
10. 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.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
 Attention: Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
 P.O. Box 8769
 Johannesburg
 2000

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
 18th floor Glen Cairn Building
 73 Market Street, Johannesburg

Admin Unit telephone number: (011) 355 1345
 Department central telephone number: (011) 355 1900



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(For official use only)

File Reference Number:						
Application Number:						
Date Received:						

*** Submission to State Departments (Number 3 above)**

Has a draft report for this application been submitted to 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 State Departments referred to above been attached to this report? **Yes**

Refer to the cover letter.

if no, state reasons for not attaching the list.

N/A

SECTION A: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

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

Proposed construction of a 5.3 km long outfall sewer pipeline as part of the N4 industrial park development, connecting from the main sewer on Portion 311 of the Farm Mooiplaats 367 –JR to the existing Baviaanspoort Waste Water Treatment Works (WWTW) bulk sewer line traversing on the Remainder of Portion 6 of the Farm Zwartkoppies 364-JR, City of Tshwane Metropolitan Municipality, Gauteng Province
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Select the appropriate box

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

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

YES

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

<ol style="list-style-type: none"> Water Use Authorisation in terms of Section 21 (c) & (i) of the National Water Act, 1998, from the Department of Water and Sanitation; Approval by the City of Tshwane Water and Sanitation Division.
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If yes, have you applied for the authorisation(s)?

YES

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

NO

Project Background

The applicant, Mag Truck Spares (Pty) Ltd, proposes to construct and install an outfall sewer pipeline as part of the services infrastructure for its N4 Light Industrial Park development. The industrial park was granted environmental authorisation (Gaut: 002/07-08/N0537) by the Gauteng Department of Agriculture and Rural Development (GDARD) in terms of the EIA Regulations, 2006 on 23/09/2009. The authorised activities included amongst others the development of services infrastructure for the bulk transportation of sewerage and water, including stormwater, in pipelines with (i) an internal diameter of 0.36 metres or more. The

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initially authorised sewer pipeline route and design has since changed over time, and coupled with the legislative changes in the EIA Regulations, the proposed sewer pipeline now triggers additional activities that were not previously listed in the 2006 EIA Regulations (Refer to **Section 2** above).

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 No. 107 of 1998 as amended.	National & Provincial	27 November 1998
Listing Notice 1: GNR 983, 2014 , Activity 12 & 19 12. "The development of - (ii) channels exceeding 100 square metres in size; (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occur - (a) within a watercourse". 19. The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse".	Gauteng Department of Agriculture and Rural Development (GDARD)	04 December 2014
Listing Notice 3: GNR 985, 2014, Activity 14 & 23 14. "The development of- (i) channels exceeding 10 square metres in size; (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs (b) within a watercourse; or (d) if no development setback has been adopted, within 32 meters of a watercourse, measured from the edge of a watercourse. (b) In Gauteng: iv. Sites identified as Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans". 23. "The expansion of- (ii) channels where the channel is expanded by 10 square metres or more in size; (xi) infrastructure or structures where the physical footprint is expanded by 10 square meters or more. Where such development occurs - (a) within a watercourse; or (d) if no development setback has been adopted, within 32 meters of a watercourse, measured from the edge of a watercourse (b) In Gauteng: iv. Sites identified as ESAs in the Gauteng Conservation Plan or in bioregional plans".	GDARD	04 December 2014
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 Sanitation	20 August 1998
National Dust Control Regulations, 2013, in terms of section 53(o), read with Section 32 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)	Department of Environmental Affairs (DEA) & GDARD	01 November 2013
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	GDARD	31 May 2004
Possible excavation of Heritage Resources or artifacts protected in terms of the National Heritage	South African Heritage Resource Agency	14 April 1999

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Resources Act, 1999 (Act No.25 of 1999)	(SAHRA)	
Construction Regulations, 2014, under Section 43 of the Occupational Health and Safety Act, 1993	Department of Labour	07 February 2014
Conservation of Agricultural Resources Act (Act 43 of 1983) as amended	Department of Agriculture, Forestry & Fisheries (DAFF)	21 April 1983
Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5 &7	DEA	10 October 2012
GDARD Requirements for Biodiversity Assessments Version 3, March 2014	GDARD	2014
Red Data Plant Policy	GDARD	2001
DWA Guidelines for the utilization and disposal of wastewater sludge. Volume 3: Requirements for the on-site and off-site disposal of sludge, WRC Report No.TT349/08, March 2007	Department of Water and Sanitation (DWS)	2007
DWAF Technical Guidelines for the development of water and sanitation infrastructure: 2 nd Edition, 2004	DWS	2004
City of Tshwane Open Space Framework	City of Tshwane Metropolitan Municipality (CoTM)	December 2005
City of Tshwane Guidelines for the design and construction of water and sanitation systems	City of Tshwane Water & Sanitation Division	2010
City of Tshwane Spatial Development Framework (Region 6), 2013	CoTM Planning Department	2013
City of Tshwane Integrated Development Plan, 2013/14	CoTM Planning Department	2013/14
The South African National Roads Agency Limited and National Roads Act, 1998	South African National Roads Agency SOC Limited	1998

3. ALTERNATIVES

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

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

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

Provide a description of the alternatives considered

The appointed engineering consultants for the design of the sewer pipeline, Conic Consulting Engineers & Project Managers Pty (Ltd), have come up with four possible alternative routes for the pipeline based on design specifications and geographical factors (Refer to **Appendix A** for the layout plan of the four proposed routes). The main determining factor in the design and route of the pipeline is to follow the natural gradient (decline) of the site in line with the contour plan. Gravity fed sewer pipelines have low installation and maintenance costs compared to pump fed pipelines.

Table 1: Design specifications of the proposed pipeline

Pipeline (Gravity Outfall or Pumping Mains)	Throughput Capacity (m ³ /s)	Diameter (mm)	Length (km)	Pipeline servitude	Material	Safety Factor (1.0 to 1.7)
Gravity	0.0217	200	5.043	7m	PVC Maincore Class 6	1.5



No.	Alternative type, either alternative: site on property, properties, activity, design, technology, operational or other(provide details of "other")	Description (Refer to Appendix A for the Route Plan depicting all the proposed and alternative pipeline routes)
1	Proposed Pipeline Route 1 (indicated in a red dotted line)	<p>The proposed pipeline route starts from the main collector sewer to be located on Portion 311 of the Farm Mooiplaats 367-JR, more than 20m away outside the N4 road reserve. From the collection point, the pipeline traverses horizontally in a westerly direction towards the R223 and then turns 90 degrees north (25°46'10.41"S, 28°24'45.75"E) in a vertical alignment and turns west again, approximately 324m north (25°46'0.09"S, 28°24'47.45"E), across the R223. Upon crossing the R223, the pipeline route takes a diagonal southerly dip towards the N4 but then turns vertically north approximately 126m before the Pienaars River N4 Bridge. From there, it follows the boundary of the Pienaars floodplain for approximately 2.3km towards the R104 before it turns west and traverses over the floodplain all the way across the natural watercourse to connect with the Baviaanspoort WWTW bulk outfall sewer line traversing on the Remainder of Portion 6 of the Farm Zwartkoppies 364 – JR (25°45'19.38"S, 28°22'48.12"E). The entire pipeline route is approximately 5.219 km long, and is a gravity outfall with a throughput capacity of 21.7 litres/s as indicated in the Table 1 below.</p>
2	Alternative pipeline route 2 (indicated in a green dotted line)	<p>The second alternative route is similar to that of Alternative 1, except where it crosses the R223 it continues horizontally in a western direction before it converges again and runs in parallel with Route 1. This route option is also slightly shorter than Alternative 1, as it avoids turning south west in alignment with the gradient decline. A pump station would therefore be required immediately just after the R223 to maintain the flow pressure in the pipeline system. This means it is not the best option from an engineering perspective and also considering the high installation and maintenance costs associated with pump stations. Route 2 is also not the best option from an environmental perspective as it traverses through sensitive wetlands and riparian woodlands, as confirmed by the Ecological specialist.</p>
3	Alternative pipeline route 3 (indicated in a purple dotted line) & 4 (indicated in a dark blue dotted line)	<p>The third alternative pipeline route predominantly follows the existing road servitudes of the R223 and R104, as follows: From the main sewer outlet on Portion 311 of the farm Mooiplaats 367-JR, the outfall sewer pipeline traverses horizontally in parallel to the N4 and then turns 90 degrees up before reaching the R223 where it traverses further north and takes a slight bend to follow the road servitude until it meets up the R104. Upon reaching the R104, the route turns westerly in parallel and within the road reserve of the R104 and continues further west before it joins the crossing over Pienaars River.</p> <p>Alternative Route 4 is similar to Route 3, but does not follow the R223, instead it joins the R104 from the main sewer outlet via an existing informal gravel road indicated in yellow. This strip of road is currently informal and closed on some sections by adjacent property owners. The route also crosses a wetland just before the short formalized section joining the R104.</p> <p>A number of pump stations would be required as both routes follow a relatively steep gradient heading northwards. There are a number of existing services as well within the road servitude of the R104 which might need to be realigned or repositioned to accommodate the pipeline servitude. Both routes are therefore not the most cost effective or optimal route option from an engineering perspective, though environmentally, both routes are the best option compared to Route 1 and 2. The routes follow an existing road servitude which is already transformed. Considering the future planned road upgrades of the R104, there is risk of the pipeline route within the road reserve being rejected by the Gauteng Department of Roads and Transport.</p>
4	No-Go Option	<p>Should the proposed outfall sewer pipeline not be approved, development of the N4 industrial park will remain sluggish due to non-availability of a reliable and sustainable sewerage system. Construction of the outfall sewer line will attract investment and</p>



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	<p>further development in the area, due to the availability of sewerage services, which is normally a requirement for approval of any planned township or industrial development by the CoTM. Therefore, the non development of the sewer line will remain as a deterrent for future development and growth of the area.</p> <p>Existing industrial developments in the area will continue to rely on the septic tank system which is expensive to maintain, and if not regularly serviced, may result in surface water and localized groundwater pollution due to overflow.</p> <p>From an environmental perspective, no adverse impacts to the ecological integrity of the area will be realised mainly as a result of the construction of the pipeline through sensitive wetland and riparian areas. However, these impacts are short term and limited to the construction phase only.</p> <p>In light of the above, there no socio-economic or environmental benefits associated with the no-go option.</p>
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It should be noted that the pipeline route determination and design is an itinerary planning process which involves input from specialists and various stakeholders including the affected landowners. As such, changes to the pipeline route may occur at any given time during the preliminary design process and will only be finalised during the detailed design phase for approval by the CoTM. At this stage, the proposed pipeline is still in the preliminary design phase hence the constant changes. However, our role as an independent EAP is to ensure that any changes or deviations to the pipeline route are within acceptable limits as regulated in the EIA Regulations, 2014 and have been adequately considered and assessed in the Basic Assessment Report. It is in this regard that this amended Final BAR has taken into consideration all environmental factors and legalities pertaining to only the preliminary design phase of the pipeline.

For the purposes of this Basic Assessment Report, preliminary design means the technical design of the vertical and horizontal alignment of a pipeline including associated infrastructure, with the aim to determine the boundaries of the pipeline reserve in terms of co-ordinates and in relation to cadastral boundaries and geographical data.

Since commencing with this application for environmental authorisation, the proposed pipeline route has been shortened from 7.4 km to 5.3 km and rerouted to avoid cutting through existing industrial properties.

Refer to:

Appendix A for the latest Route Plan of the proposed and alternative pipeline routes;

Appendix C for the pipeline wetland crossing facility illustrations; and

Appendix D for all the Locality Maps.



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

N/A

NOTE: The numbering in the above table must be consistently applied throughout the application report and process

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	<input type="text"/>
Alternatives:	
Alternative 1 (if any)	<input type="text"/>
Alternative 2 (if any)	<input type="text"/>

Ha/ m²

or, for linear activities:

	Length of the activity:
Proposed activity: Route 1 (Red dotted alignment)	5.219 km
Alternatives:	
Route 2 (Green dotted alignment)	4.8 km
Route 3 (Purple dotted alignment)	5.343 km
Route 4 (Blue dotted alignment)	5.162 km

k/km

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

	Size of the site/servitude:
Proposed activity (Including all alternative routes)	7 m

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	YES <input type="checkbox"/>
If NO, what is the distance over which a new access road will be built	<input type="text"/> m

Describe the type of access road planned:

Access during construction of the pipeline will be from existing formal and informal roads wherever possible, and precautionary measures shall be taken in terms of the EMPr to minimise access by construction vehicles or machinery through ecologically sensitive areas. No new access roads have been proposed.

Include the position of the access road on the site plan.

Route 2, 3, and 4

Does ready access to the site exist, or is access directly from an existing road?	YES <input type="checkbox"/>
If NO, what is the distance over which a new access road will be built	<input type="text"/> m

Describe the type of access road planned:

Access will be from existing formal and informal roads wherever possible.

Include the position of the access road on the site plan.

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. SITE OR ROUTE PLAN

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

- the scale of the plan, which must be at least a scale of 1:2000 (scale can not be larger than 1:2000 i.e. scale can not be 1:2500 but could where applicable be 1:1500)
- the property boundaries and numbers of all the properties within 50m of the site;
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- the exact position of each element of the application 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, street lights, sewage pipelines, septic tanks, storm water infrastructure and telecommunication infrastructure;
- walls and fencing including details of the height and construction material;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites 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);
- for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- the positions from where photographs of the site were taken.
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the 32m position from the bank to be clearly indicated)

*Refer to **Appendix A** for the latest Route Plan of the proposed and alternative pipeline routes.*

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.

*Refer to **Appendix B** for the photographs taken at randomly selected points along the pipeline route.*

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.

*Refer to **Appendix C** for the facility illustrations of the proposed pipeline wetland crossing. No any other facilities such as pump stations are proposed as the proposed pipeline is a gravity fed outfall.*

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SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

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

Further:

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route times

Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

No significantly different environments occur along the proposed and alternative pipeline routes.



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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:

The proposed pipeline route traverses the following farm portions.

Farm Name	Portion
Zwartkoppies 364-JR	2
Zwartkoppies 364-JR	6
Zwartkoppies 364-JR	43
Mooiplaats 367-JR	27
Mooiplaats 367-JR	125
Mooiplaats 367-JR	126
Mooiplaats 367-JR	239
Mooiplaats 367-JR	240
Mooiplaats 367-JR	241
Mooiplaats 367-JR	249
Mooiplaats 367-JR	250
Mooiplaats 367-JR	251
Mooiplaats 367-JR	252
Mooiplaats 367-JR	253
Mooiplaats 367-JR	254
Mooiplaats 367-JR	308
Mooiplaats 367-JR	309
Mooiplaats 367-JR	311
Mooiplaats 367-JR	365

(Farm name, portion etc.)

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):
<input type="text"/>	<input type="text"/>

In the case of linear activities:

Proposed Route 1:

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

Latitude (S):	Longitude (E):
25°46'14.88"S	28°25'9.60"E
25°45'42.02"S	28°24'9.48"E
25°45'19.38"S	28°22'48.12"E

Alternative Route 2:

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

Latitude (S):	Longitude (E):
25°46'14.88"S	28°25'9.60"E
25°45'39.11"S	28°24'4.64"E
25°45'19.38"S	28°22'48.12"E



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Alternative Route 3:

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

Latitude (S):	Longitude (E):
25°46'14.88"S	28°25'9.60"E
25°45'27.74"S	28°24'20.71"E
25°45'19.38"S	28°22'48.12"E

Alternative Route 4:

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

Latitude (S):	Longitude (E):
25°46'14.88"S	28°25'9.60"E
25°45'26.13"S	28°24'16.24"E
25°45'19.38"S	28°22'48.12"E

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

Addendum of route alternatives attached



Refer to **Appendix D2** for the list of co-ordinates.

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

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

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

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used). **Refer to the Geotechnical Report in Appendix G1:**

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)

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Latitude (S):	Longitude (E):
°	°

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

Potential geotechnical constraints

A preliminary Phase 1 Geotechnical investigation was conducted, amongst other objectives, to determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to construct along the pipeline route.

- ✚ The pipeline route in general is partly underlain by carbonaceous shale, covered by a transported silty sand which varies in thickness. The Table below summarises the type of diagnostic soils found along the route.

Horizon Symbol	Material Description
A1	Moist; Grey to Black; Loose; silty medium, fine sand, with grass/tree roots; Transported
A2	Moist; Orange/Pink; loose to dense; silty medium/fine sand/gravel; weathered shale
B1	Moist; Grey/Pink/Orange; Dense with depth; Silty fine/medium chunks; Weathered shale

A-Horizons: Transported material

B-Horizons: Residual Material

- ✚ Typical soil profile comprises of Hillwash- transported silty sand cover (loose, silty sand) from the top up to 500mm, approximately (may be more close to the river) and most likely deeper, hill wash; underlain by loose to dense residual weathered shale in a silty sand/gravel matrix horizon; and underlain by a dense weathered shale formation.
- ✚ In terms of the hydrological conditions along the route, it is mainly drained by means of sheetwash in a north-western direction of the river area, and further northwards. Seepage water and /or natural water table can be expected to be encountered in the Test Pits alongside the river and dry conditions could be expected on the portion from the river to the proposed industrial development along the N4 Highway.
- ✚ Due to the general silty sand, the transported silty sand and the residual soils which is derived from the decomposition of the shale on the properties, minor collapsing problems are anticipated for the top horizons (A1 and A2 partly). Under normal conditions a silty sand horizon with a dry in-situ density of 1600 kg/m³ and lower will be regarded having potentially collapsible properties and a collapsible potential of 2.5% and more proof that collapsing properties are in existence. An engineer's solution is in such cases necessary and is to be sought for to ensure structural stability.
- ✚ The top transported and residual silty sand horizons up to a depth of approximately 900mm and in places most likely deeper is regarded as minor potential collapsible horizon. Samples for a collapse potential test shall be taken and to be done with a 200kPa load in the submerged condition, only bulk dry density and moisture tests will be done to determine the possibility for collapses as part of the Phase 2 investigations.
- ✚ No such adverse conditions totally prohibiting the construction of structures is foreseen subject to further investigations as part of second phase, but cognisance should be taken of the minor potentially collapsible conditions (Horizon A1 and A2 partly).

All the above Geotechnical findings will be confirmed, and appropriate mitigation measures recommended, through a comprehensive Phase 2 Geotechnical Investigation during the detailed design phase.

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 3)?

NO

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

7. GROUND COVER

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

Indicate the 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 % = 15	Natural veld with heavy alien infestation % = 70	Building or other structure % = 3	Landscaped (vegetation) % = 2	Bare soil % = 5
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The following vegetation units and sizes were identified in the Vegetation Assessment Report attached as *Appendix G2*.

Vegetation Units	Area (Ha) of vegetation within area of the pipeline route (50m servitude)
1. Degraded grassland	25.716
a. Primary degraded grassland	
b. Secondary grassland (old fields)	1.5
2. <i>Acacia karroo woodland</i>	9.096
a. Degraded, open variation	
b. Dense variation	5.370
c. Open <i>Acacia karroo - Botriochloa insculpta - Setaria sphacelata</i> clay grassland	9.995
3. Wetland Areas	0.655
a. <i>Stoebe vulgaris - Eragrostis gummiflua</i> hillslope seep	
b. Unchannelled valley bottom wetland	0.156
c. Channelled valley bottom wetlands associated with furrows	2.455
4. <i>Combretum erythrophyllum - Acacia karroo</i> riparian woodland associated with water courses / furrows	4.498
5. <i>Acacia tortilis</i> thickets	0.319

As indicated in the table above, large sections of the proposed sewer pipeline route traverses units of vegetation in a degraded state, with only small pockets of natural vegetation components represented in the area.

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

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

NO

If YES, specify and explain:

Refer to the Fauna Assessment Report in *Appendix G4*

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site. NO

If YES, specify and explain:

Refer to the Fauna Assessment Report in **Appendix G4**

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

If YES, specify and explain:

In terms of the Vegetation and Wetland Assessment Reports, the proposed and alternative pipeline routes predominantly traverse ecologically sensitive areas associated with riparian woodland and wetlands (refer to Figure 1 below and **Appendix D3** for the Ecological sensitivity map).

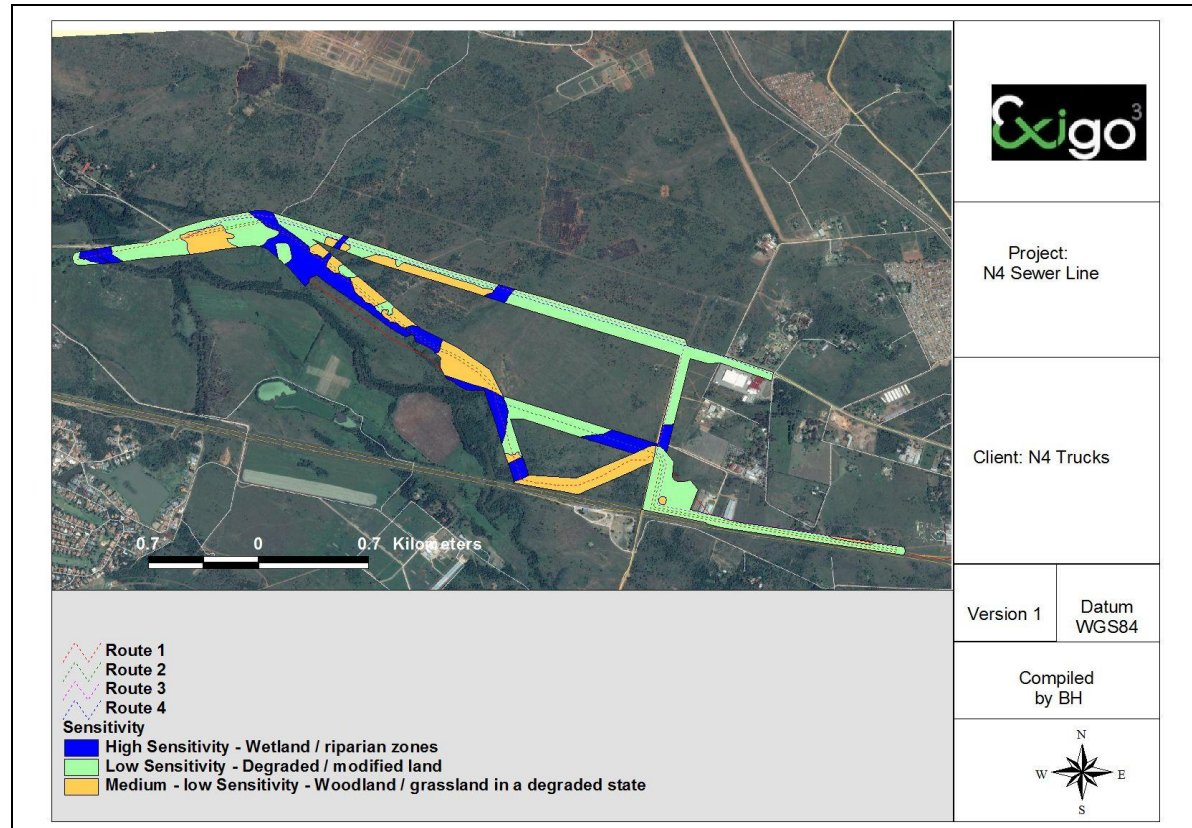


Figure 1: Sensitive ecological areas identified along the alternative pipeline routes

The following different types of wetlands were identified along the alternative pipeline routes (refer to Figure 2 below and **Appendix D4** for the delineated wetland types):

- ✚ Pienaar River's instream habitat / Channel Zone - characterized by a few hygrophilous grass species and sedge species along the shallower sections of the channel;
- ✚ Pienaar River's riparian zone - described as tall riparian woodland on alluvial soils, although the riparian zone of the tributaries represent medium tall microphyllous woodland dominated by *Acacia karroo*;
- ✚ Channelled valley bottom wetland with riparian woodland - associated with small furrows constructed many years ago for agricultural purposes, and extensively degraded through alien species invasion and exotic weeds, although wetland indicator species such as *Cyperus esculentis* occur in the areas where the water from the channel overtopples onto the surrounding grassland areas, forming a temporary wetland zone;
- ✚ Hill slope Seep Wetland - vegetation unit represent the grassland areas classified as 'Hill slope Seep Wetlands' to the east of the R223 road; and
- ✚ Unchannelled valley bottom wetland – represents the area directly north and south of the old cultivated fields, created by stormwater draining underneath the R104 towards the Pienaar River, although at present this area functions as a Hydrogeomorphic Unit.

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

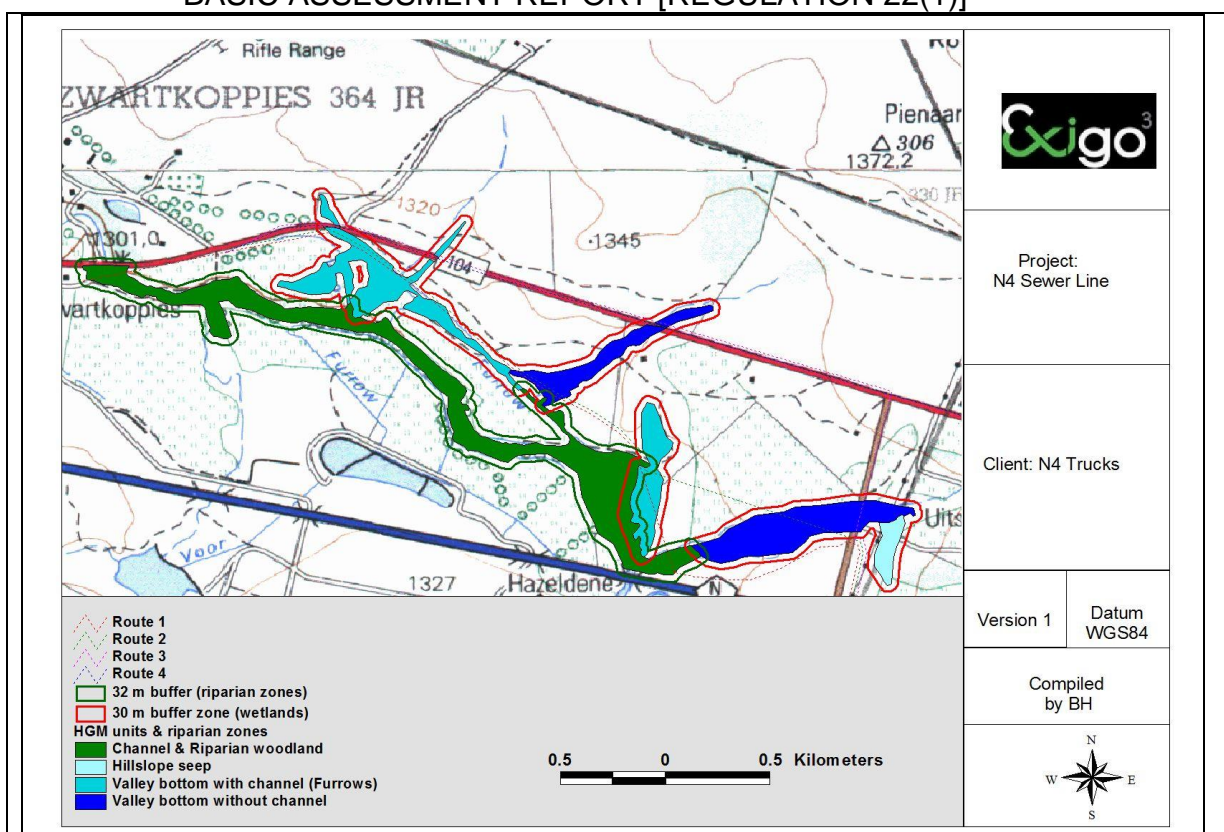


Figure 2: Types of wetlands traversed by the alternative pipeline routes

Evidence of transformation of the floristic characteristics was observed on site. Impacting activities which may have altered the expected floristic composition include previous crop cultivation, alien infestation, sedimentation, impoundments and road crossings. All of the wetlands as well as the channel and associated riparian woodland were assessed in terms of their PES and EIS.

Wetland / Water course	PES	EIS
Channel & riparian woodland	Class C: Moderately Modified	High
Channelled Valley bottom	Class E: Critically modified	Low
Hillslope seep	Class C: Moderately Modified	Moderate
Unchannelled VB wetland	Class C: Moderately Modified	Moderate

Based on the above Ecological findings, it is expected the construction of the pipeline along the preferred route will have the following negative impacts:

- + The construction will lead to the loss of individual plants such as grasses, forbs, trees and shrubs that will be cleared on the footprint area;
- + Loss of threatened, "near-threatened" and endemic taxa. The anticipated loss of some of the woodland habitats that support endemic species will result in the local displacement of endemic listed flora;
- + The construction activities can impact on surrounding vegetation by dust and altered surface run-off patterns;
- + The disturbance of the area could lead to an increase in the growth of alien vegetation;
- + Loss of threatened, "near-threatened" and endemic taxa: The anticipated loss of some of the wetland / riparian habitats that support endemic species will result in the local displacement of endemic listed flora;
- + The construction activities and associated impacts might lead to the loss of individual plants associated with wetlands or riparian zones; and



BASIC ASSESSMENT REPORT [REGULATION 22(1)]

- Habitat modification by construction activities will force wetland-dependant fauna out of the area and animal numbers will decrease. This impact could also take place because of hunting and snaring of animals in and around the wetlands.

Both Ecological Reports provide appropriate mitigation measures for the above identified adverse impacts, and these have been incorporated into the Environmental Management Programme, attached as *Appendix H*.

In terms of Fauna, the following findings were made:

- Five mammal species were observed during the assessment. All of these species are considered to be of least concern and are not listed by GDARD as Species of Conservation Concern (SCC). The study area in its present ecological state does not offer suitable habitat for any larger mammal species. However, the study area may provide habitat for common small mammals that are adept to living in areas of increased human activity. It is highly unlikely that any SCC or sensitive mammals will occur within the study area, and as such, the development of the pipeline is highly unlikely to pose a threat to mammal conservation within the study or surrounding areas.
- All avifaunal species encountered are regarded as common and widespread and the probability that any threatened or protected avifaunal species will inhabit the study area is deemed very low due to the level of anthropogenic activities. Thus, the proposed development is highly unlikely to pose a significant threat to avifaunal SCC within the region.
- Under the GDARD (2014) C-Plan version 3.3, no specialist studies for any species of reptile are required for consideration in the review of a development application.
- Under the GDARD (2014) C-Plan version 3.3, no specialist studies for any species of amphibians are required for consideration in the review of a development application.
- Representatives of commonly encountered families in the Insecta and Arachnida class were observed during the assessment. A fairly diverse invertebrate populations is present due to the dense grassland and bushveld areas, as well as the proximity to the riparian areas. No invertebrate species of concern were identified and it is doubtful that any such species will reside within the study area. Thus, the proposed development is highly unlikely to pose a threat to invertebrate conservation.
- No faunal SCC was observed during the site survey. In addition, no faunal SCC are considered likely to occur within the study area. Due to the fact that no SCC or signs thereof were identified, and the lack of suitable habitat or known occurrences of SCC within the study area, it can be concluded that the proposed development is unlikely to impact on faunal SCC conservation in the region.

Route 3 and 4 are the preferred options from an ecological point of view and avoids most of the riparian woodland and wetlands and follows the R104 from the Pienaars River. Route 4 is shorter and preferred to route 3 due to one less crossing of a wetland area. The construction of the pipeline for both route options 3 and 4 will be through degraded road servitudes and connect to already existing culverts and bridges. The potential limitations is that this route alternative is not most suitable from an engineering point of view, although it is the least sensitive from an ecological point of view.

Route 1 is the least preferred option from an ecological perspective as it crosses more wetlands and riparian zones compared to Routes 2, 3, and 4. Therefore, from an ecological point of view the preferred routes in order of preference are Route 4, Route 3, Route 2, and Route 1.

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

YES


1. Vegetation & Wetland Assessments

Name of the specialist:	Exigo Sustainability (Pty) Ltd (Dr. BJ Henning)	
Qualification(s) of the specialist:	Pr.Sci.Nat (PhD plant Ecology; MSc Botany - Soil Science related)	
Postal address:	Postnet Suite 74, Private Bag X07, Arcadia	
Postal code:	0007	
Telephone:	012 751 2160	Cell: 082 939 7067



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E-mail:	buks@exigo3.com	Fax:	086 607 2406
Are any further specialist studies recommended by the specialist?			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:	March 2015
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2. Fauna Assessment

Name of the specialist:	Scientific Aquatic Services (Stephen van Staden)		
Qualification(s) of the specialist:	MSc. Environmental Management, BSc. (Honours) Zoology (Aquatic Health); BSc Zoology Geography and Environmental Management		
Postal address:	91 Geldenhuis Road , Malvern East Ext 1		
Postal code:	2007		
Telephone:	011 616 7893	Cell:	
E-mail:	admin@sasenvironmental.co.za	Fax:	086 724 3132
Are any further specialist studies recommended by the specialist?			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:	February 2015
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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

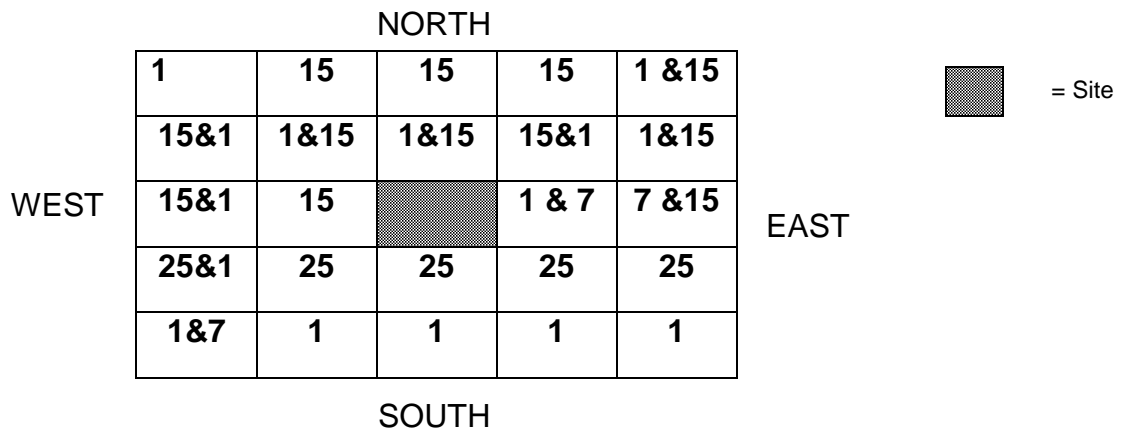
Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

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):				

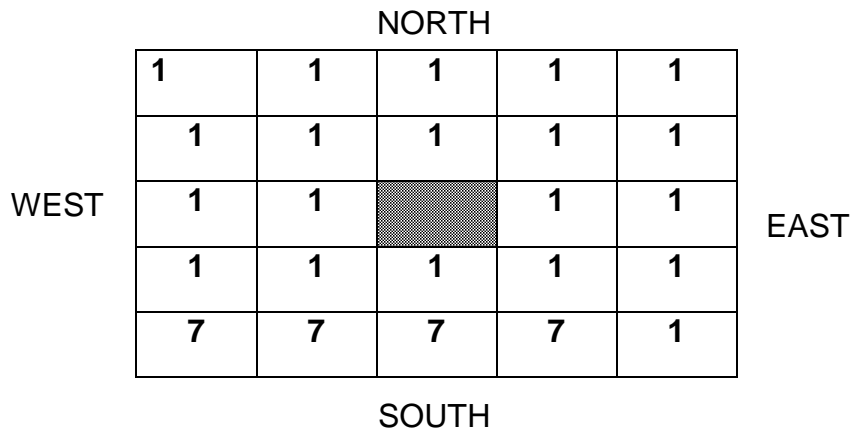
BASIC ASSESSMENT REPORT [REGULATION 22(1)]

1. Start Point of the proposed pipeline Route 1 (25°46'14.88"S, 28°25'9.60"E)

NOTE: Each block represents an area of 250m X250m



2. Mid-point of the proposed pipeline Route 1 (25°45'42.02"S, 28°24'9.48"E)



3. End point of the proposed pipeline route (25°45'19.38"S, 28°22'48.12"E)

BASIC ASSESSMENT REPORT [REGULATION 22(1)]







	NORTH					
	8	1	7, 8 & 21	1	1	
	8	1	1	1	1	
WEST	8	1		1	7	EAST
	1	1	1	1	7	
	35 & 1	7	7	7	7	
	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
If yes indicate the type of reports below

YES

-  Phase 1 Geotechnical investigation (Refer to **Appendix G1**);
-  Vegetation Assessment (Refer to **Appendix G2**);
-  Wetland Assessment (Refer to **Appendix G3**);
-  Fauna Assessment (Refer to **Appendix G4**);
-  Heritage Impact Assessment (Refer to **Appendix G5**); and
-  Palaeontological Assessment (Refer to **Appendix G6**).

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 area traversed by the proposed and alternative pipeline routes is predominantly previous cultivated agricultural land dominated by degraded secondary grasslands with a few strips of natural riparian vegetation towards the Pienaars River. The immediate area along a section of the pipeline route in parallel to the N4 is zoned light industrial including the area adjacent to the R223 and towards the R104. The entire western area from the R223 to where the proposed pipeline crosses the Pienaars River is predominantly agricultural land, with Hazeldean Farm located on some Portions of the Farm Zwartkoppies 364-JR . In a nutshell, the area traversed by the proposed and alternative pipeline routes is predominantly industrial and agricultural land.

Need and Desirability Assessment

The proposed outfall sewer pipeline is part of the sewerage services infrastructure for the N4 light industrial park development currently being implemented in Phases on Portions 119 to 122, 240 and 365 of the Farm Mooiplaats 367-JR, Barendshoek 630-JR and a Portion of Portion 9 of the Farm Donkerhoek 370-JR. Refer to **Appendix A** for the A3 size Route Plan showing the proposed outfall sewer pipeline in relation to the planned N4 industrial park development. The N4 light industrial park development was granted environmental authorisation by the Gauteng Department of Agriculture and Rural Development (GDARD) on 23/09/2009 following a full Scoping and Environmental Impact Assessment process. An engineering services report for the proposed N4 industrial park development was conducted by Hans Brink & Associates CC Civil Engineering Consultants, as part of the EIA and township application process (refer to **Appendix I1** for the N4 Industrial Park -Engineering Services Report).

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According to the services report, dated 11 June 2009, the plans for the N4 industrial park bulk sewer network were prepared by Richard Hirst and Gerrie van Heerden in consultation with Kungwini Local Municipality master plan of the area. This involved the construction of a Phase 1 pipeline to service initial developed areas and extension of the pipeline in phases depending on the need for services in other subsequent sections of the industrial park. The development of the Phase 1 pipeline, which formed part of the Kungwini Master Plan, was divided into two sections. The first section of the pipeline planned by Snowey Owl developers, was to be constructed up to manhole K. Thereafter, the consortium of Donkerhoek developers was supposed to construct the pipeline at their cost up to manhole L for Kungwini side and up to manhole N for Nokeng side of the N4 industrial development. Refer to **Appendix I1** for the sewer line plans by Richard Hirst dated 25 June 2008.

However, due to the incorporation of Kungwini Local Municipality into the City of Tshwane Metropolitan Municipality (CoTM) and the land ownership changes, the proposed pipeline route has since changed in line with the CoTM Sewer Master Plan and future development rights in the area. The proposed pipeline route is in alignment with the CoTM Sewer Master Plan (refer to **Appendix E11(a)**).

In order to ensure the N4 industrial Park development is sustainable and meets the CoTM requirements, the provision of engineering services such as the internal sewerage reticulation system and bulk sewer lines is essential prior to any development. According to the services report, a sewer reticulation system designed to CTM standards will be constructed to take up the effluent at each industrial stand which feed into the sewer reticulation network and ultimately into the proposed bulk sewer outfall pipeline. The design of the pipeline was based on the following:

- ✚ *The total amount of sewerage calculated as follows; a maximum of 70% coverage and of this, maximum of 2,0% will be office parks. For dry industrial at 300 liter/day per 100 m² - and office at 800 liter/day per 100m². The calculated flow is thus 61.3 kiloliter/day, for the Nokeng portion. The peak flow (at 2.5 peak factor), will be 7.1 liter/sec, for the Nokeng section only.*
- ✚ *The individual owners of factories etc. will have to comply with rules for effluent disposal as laid down by the CoTM, this will be part of the purchase agreement. Specific conditions as to the release of industrial waste into the sewerage network system will be included in the purchasing agreements, so as to control the feeding of polluted materials into the sewerage network system.*
- ✚ *Standard plastic sewer pipes with standard fittings with pre-cast manhole inverts and concrete manhole rings (with steps), and concrete manhole covers, will be used. The rest of the detail, to be as for CoTM.*
- ✚ *The sewer reticulation system will be taken over by Kungwini (now CoTM) and each owner will pay for his sewer connection to Nokeng the monthly fee for this as determined by Kungwini (now CoTM).*

The proposed outfall sewer pipeline will connect to the existing Bavianspoort WWTW bulk outfall sewer pipeline traversing on the Remainder of Portion 6 of the Farm Zwartkoppies 364-JR in Silverlakes. Mr Anton Scholtz from the CoTM confirmed by email that the proposed N4 industrial park outfall sewer pipeline is in line with the sewer master plan of the area, and both the existing Bavianspoort WWTW and outfall sewer line have enough capacity for additional sewerage inflows from the proposed N4 industrial park outfall sewer pipeline (**Appendix E11(a)**). Although subject to written confirmation by the CoTM Water and Sanitation Division, it can be confirmed for now that the planned outfall sewer pipeline is in line with the CoTM sewerage master plan of the area.

CoTM Spatial Development Framework (Region 5 & 6), 2012

In terms of the CoTM SDF for Region 5 & 6 (2012) the pipeline route traverses in areas earmarked for future development as part of the Hazeldean Farm precinct. Therefore, there is a

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

need for engineering services infrastructure such as the proposed outfall sewer pipeline in order to attract both public and private sector investment in the area. The N4 industrial park development is in line with the SDF as indicated in the Regional SDF maps attached as **Appendix I2**.

According to the CoTM IDP 2011-2016, the waste water system in the City of Tshwane consists of a bulk system and an internal collector system, and discharges to ten waste water treatment works with a combined capacity of 547.2 ML per day through approximately 345km of bulk outfall sewers. The Bavianspoort WWTW services the north eastern region and the proposed outfall sewer pipeline is within the Bavianspoort Drainage Area

Most of the CoTM's capital expenditure for wastewater engineering services and infrastructure is spent in the North Eastern Region. The reason for this, according to the IDP 2011-2016, is that most of the water and sanitation backlog eradication projects are situated in this region. "The Division is therefore in the process to address some of these constraints through an intensive program to upgrade/extend the WWTW over the next 5 years", as indicated in the Table below for the Bavianspoort WWTW.

WWTW	Current Capacity ML/day	Current load ML/day	Future Capacity ML/day
Bavianspoort	58	53	88

Furthermore, in terms of the IDP 2011-2016, the CoTM system of choice is waterborne sanitation in formalised urban areas and on-site dry sanitation in rural areas. The N4 industrial park development is located within the urban edge, which means a formalised waterborne sanitation system is required by the CoTM for the development, of which the proposed outfall sewer pipeline fulfils this requirement.

Based on the above, it can be concluded that there is a need for engineering services infrastructure such as the proposed outfall sewer pipeline in order to attract further development in the area. More importantly, it contributes to engineering services infrastructure in the area necessary for ensuring sustainable development through an efficient and effective sanitation system.

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

No comments received from SAHRA despite the Heritage and Palaeontological Reports successfully uploaded on the SAHRIS website during the Draft BAR public review period in March 2015.

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.

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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

	NO
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If YES, explain:

N/A

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

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

According to the Heritage Impact Assessment Report attached as **Appendix G5**, no heritage resources were documented along and within the wider area of the proposed alternative pipeline routes. It is further confirmed in the Heritage Report, *“the proposed N4 Industrial Park Outfall Sewer pipeline on the farms Zwartkoppies 364-JR, Mooiplaats 367-JR, and Barendshoek 630-JR will have no impact on archaeological heritage resources”*.

The report makes the following conclusion: *“The project should be allowed to proceed from a culture resources management perspective, provided that mitigation measures provided in this Heritage Report (monitoring), and endorsed by the relevant Heritage Resources authority, are implemented where applicable, and provided that no subsurface heritage remains are encountered during construction”*. In brief, the following findings were made:

- ✚ No Stone Age scatters or occurrences were observed in any of the survey area;
- ✚ No Iron Age (Farmer Period) occurrences were observed in any of the survey area;
- ✚ No Historical / Colonial Period occurrences were observed in any of the survey area; and
- ✚ No graves or other heritage features were observed in the survey area.

In addition to the Heritage Impact Assessment study, a desktop Palaeontological Assessment was conducted by BM Geological Services (refer to **Appendix G6**) to ascertain the possible occurrence of Palaeontological resources or artefacts of heritage significance along the proposed pipeline route and its wider area (30m). The report makes the following conclusion:

The project area is completely underlain by rocks of the late Achaean to early Proterozoic Silverton Formation, Pretoria Group, Transvaal Supergroup. *“No fossil materials are known to occur within the Silverton Formation. The effects of the required construction operations to the geological strata underlying the project area will be restricted to the late Achaean to early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup. The Silverton Formation, which occur at surface and underlie the entire project area known to be unfossiliferous. Thus the probability and significance of any negative impact upon the palaeontological heritage of the area is assessed as being nil”*.

Will any building or structure older than 60 years be affected in any way?
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO
	NO

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

It should be noted that the Heritage and Palaeontological Reports are based on the initial proposed pipeline route and have not been amended accordingly based on the new alternative pipeline routes. This is because both specialist reports covered a wider geographical area beyond the proposed pipeline route including the area traversed by the alternative routes. Both specialist findings are therefore relevant and applicable to all the alternative pipeline routes and not limited to the proposed pipeline route only.

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SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The Environmental Assessment Practitioner must follow any relevant guidelines adopted by the competent authority in respect of public participation and must at least –

- 1(a) Fix a site notice at a conspicuous place, on the boundary of a property where it is intended to undertake the activity which states that an application will be submitted to the competent authority in terms of these regulations and which provides information on the proposed nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations on the application may be made;

*Refer to **Appendix E1** for the Site Notices.*

- 1(b) inform landowners and occupiers of adjacent land of the applicant's intention to submit an application to the competent authority;

*Refer to the Interested and Affected Parties (I&APs) database in **Appendix E9**.*

- 1(c) inform landowners and occupiers of land within 100 metres of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of the applicant's intention to submit an application to the competent authority;

*Refer to the I&APs database in **Appendix E9** for the list of landowners and occupiers within 100 meters from the centreline of the proposed pipeline route .*

- 1(d) inform the ward councillor and any organisation that represents the community in the area of the applicant's intention to submit an application to the competent authority;

*Refer to the I&APs database in **Appendix E9** for details of the Ward Councillors.*

- 1(e) inform the municipality which has jurisdiction over the area in which the proposed activity will be undertaken of the applicant's intention to submit an application to the competent authority; and

*Refer to **Appendix E11(b)** for a list of municipal departments/divisions informed.*

- 1(f) inform any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and

*Refer to **Appendix E11(b)** for a list of the organs of state informed*

- 1(g) place an advertisement in one local newspaper and any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these regulations.

*Refer to **Appendix E3** for all the newspaper adverts placed in the Pretoria News*

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 (GDARD).

Has any comment been received from the local authority?

YES

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

1. Anton Scholtz - City of Tshwane Water and Sanitation Division (23/03/2015)

Annexure E11(a) has reference. Note that the size of the pipe will not remain a 200mm for the total length, the mail sent indicated that the beginning of the pipe may be a 200mm. The rest of the line must be discussed with the Planning and design section of Council.

Noted, and engagements with the relevant section of Council will be held once the pipeline route has been finalised as part of the design phase.

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2. T. Mphephu - City of Tshwane Environmental Planning & Open Space Management Section (20/04/2015)

The Department recommends that the following issues be taken into consideration:

- a) All recommendations and mitigation measures in the report and specialist studies in the attached appendices must be adhered to and implemented as part of the design, planning, construction and operational phases of the proposed development.
Noted, and these have been incorporated in the EMPr.
- b) Any activities occurring within the wetland, riparian and river boundaries, it is the responsibility of the applicant to comply with the Water Use legislation and apply for water-use licences and authorisation from Department of Water and Sanitation (DWS) according to the National Water Act where necessary. Comments from DWS should be obtained and attached in the Final Basic Assessment Report.
Noted. The applicant has appointed Menco Environmental to apply to the Department of Water and Sanitation for the Water Use Authorisation in terms of Section 21(c) and (j). Despite numerous requests to the Department for comments on the draft BAR, no such comments have been received to date.
- c) Any form of waste material generated during construction period must be disposed of at a facility registered in terms of Section 20(b) of the National Environmental Management: Waste Act, Act No.59 of 2008, if it cannot be responsibly recycled or reused on site or offsite. No dumping may take place within the open spaces surrounding the study area. Such activity will lead to the recovery of costs from the contractor.
Noted, and included in the EMPr.
- d) The Wetland and Riparian Delineation Report compiled by Exigo Sustainability Company, dated March 2015, indicates that two potential route alternatives (Alternative 1 and 2) were identified to avoid some of the riparian woodland areas, wetlands and Critical Biodiversity Areas and Ecological Support Areas as classified by GDARD Conservation plan. The Department supports the proposed alternative 1 alignment for this section of the pipeline as presented in Figure 11 of the report. The Department recommends that the proposed alternative 1 alignment be considered and investigated to ensure the continued effective and efficient ecological functioning and environmental goods and service rendering of the resources, without compromising its integrity.
Noted. Although Alternative Route 1 suggested by the ecological specialist avoids sensitive riparian woodlands and wetlands, it is not the most sustainable and effective route from an engineering perspective as pump stations will be required to maintain the flow pressure over a steep gradient. In addition, a section of the pipeline route cuts across an existing property earmarked for future development. As indicated in the Wetland and Ecological reports, most of the identified impacts are limited to the construction phase only and measures will be taken to ensure the continued effective and efficient ecological functioning of environmental goods and services disturbed during construction.
- e) All alien invasive plant species should be eradicated on the study area according to the Conservation of Agricultural Resources Act (Act No.43 of 1983) after completion of activity. An Invasive species control plan should be implemented at least every 3 months after construction and should be included within the final approved EMP.
Noted, and included in the EMPr.
- f) All construction vehicles will only be permitted to travel on existing roads and servitudes, to limit the ecological footprint of the proposed activities. During construction phase, no vehicles will be allowed to indiscriminately drive through the surrounding wetland areas/riparian or associated buffer zones. This shall be included within the final EMP.
Noted, and included in the EMPr.
- g) The construction and crossing of wetland areas, rivers and spruit areas must be completed within the dry months (winter) when the system is dormant, as far as possible. This will ensure the least impact on the sensitive environmental areas. The disturbed areas will immediately be rehabilitated after construction of each section has been completed.
Noted, and included in the EMPr.
- h) The proposed activity should ensure that connectivity of the wetland features are maintained to ensure linear protection of the water quality within the system and ensuring the continuity of habitat resources.

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<p>i)</p> <p>j)</p> <p>k)</p> <p>l)</p> <p>m)</p> <p>n)</p> <p>o)</p> <p>p)</p> <p>q)</p> <p>r)</p> <p>s)</p> <p>t)</p>	<p><i>Noted, and included in the EMPr.</i></p> <p>The extent of the damage by the proposed construction activities should be minimal, the wetlands/riparian areas must be rehabilitated immediately after any disturbance caused due to the construction related activities and the banks adjacent to the construction site should be stabilised.</p> <p><i>Noted, and included in the EMPr. For further details, refer to the Wetland Rehabilitation Plan under Section 10 of the Wetland Assessment Report, attached as Appendix G3.</i></p> <p>A spill contingency plan must be compiled in the event of a spillage of chemicals, fuel or other hazardous substances during the construction phase.</p> <p><i>Noted, and included in the EMPr.</i></p> <p>All pipelines and associated equipments to be used for the proposed activity must comply with all relevant South African National Standards (SANS).</p> <p><i>Noted, and included in the EMPr.</i></p> <p>Habitat destruction from construction works, vehicle, machinery or any other construction requirements should not occur in natural areas that are situated outside the permitted construction areas.</p> <p><i>Noted. All construction activities will be limited to demarcated areas only.</i></p> <p>Where new gravel access roads need to be constructed, adequate drainage and soil erosion controls must be installed and maintained. As far as possible, access roads must follow the contour on steep slopes, rather than being aligned directly down steep slopes.</p> <p><i>No new access roads are planned at this stage, and construction vehicles will use existing roads and pathways wherever possible.</i></p> <p>The proposed development footprint must be clearly demarcated before any construction activities may take place. All construction and associated activities must be strictly confined to within demarcated area.</p> <p><i>The proposed construction footprint will be identified and pegged before the start of construction, and no construction activities or vehicles are to be permitted outside this area.</i></p> <p>The use of chemical ablution facilities and the construction camp during construction period must not cause any pollution to water resources neither it should be health hazard to the general public. Further, these must be situated at least 50m away from any rivers/stream/wetlands/flood lines of watercourses. This shall be included within the final EMP.</p> <p><i>Noted, and included in the EMPr.</i></p> <p>Should archaeological artefacts or skeletal material be revealed in the area during construction activities, such activities should be halted, and the relevant heritage authority notified in order for an investigation and evaluation of the find(s) to take place.</p> <p><i>Noted, and included in the EMPr.</i></p> <p>No wastewater and/or effluent that may be generated during construction or operation phases may be discharged to the environment (including the freshwater bodies, groundwater or land surrounding the development). There must be no return of culture water to the environment.</p> <p><i>Noted. Monitoring of the pipeline for any effluent leakages will be conducted as part of the approved Operation & Maintenance Plan.</i></p> <p>All disturbed areas of the wetlands must be re-vegetated using either specified indigenous seed mix where appropriate and/or vegetation removed from other stable sites within the wetland.</p> <p><i>Noted. Refer to the Wetland Rehabilitation Plan under Section 10 of the Wetland Assessment Report, attached as Appendix G3.</i></p> <p>All activities on the site must comply with the Tshwane Municipality's By-Laws.</p> <p><i>Noted, and included in the EMPr.</i></p> <p>The proposed activity must be constructed according to the finalised and approved EMP. The EMP should include all the above recommendations. The approved finalised EMP is a legally binding document. An Environmental Control Officer (ECO) should be appointed for the proposed construction phase of the development to enforce the approved EMP. The appointed ECO details should be included within the EMP.</p> <p><i>Noted, refer to Appendix H for the EMPr.</i></p>
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If "NO" briefly explain why no comments have been received

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N/A

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.

All the affected landowners located along and within 100m of the preferred pipeline route have been notified and registered as interested and affected parties (I&APS), refer to **Appendix E9** for the I&APs database. Concerns raised by the affected landowner on the Remaining Extent of Portions 250 and 251 of the Farm Mooiplaats 367-JR have been addressed by realignment of the pipeline route to follow the southern boundary of the property.

Has any comment been received from stakeholders?

YES

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application): *Refer to **Appendix E10** for the correspondence received*

1. Carla Davis (Traffic Engineer) N4 Trans African Concessions (Pty) Limited

The drawings attached do not give a clear indication on the distance of the proposed services from the road reserve. Please note that SANRAL's Act, Act 7 of 1998 indicates that approval is required for any service within the building line of a national road, even if outside of the proclaimed road reserve. In proclaimed township areas, this is normally 20m, while in rural areas, it is 60m from the road reserve fence line. Kindly provide us with an updated map also indicating the N4 road reserve coordinates to be able to determine the intended position of the services.

The updated layout plan indicating the requested information was provided to Carla Davis by appointed pipeline design engineers, Conic Civil Engineers (Pty) Ltd. In addition, the N4 Trans African Concessions (TRAC) and SANRAL were provided with copies of the draft BAR for review within the regulated 30 days timeframe, and further notified of the availability of the final BAR. TRAC responded as follows, "TRAC is satisfied that a formal application will be directed to TRAC/SANRAL to apply formally for the service parallel to the N4 if intended within the building line".

2. P van Zyl - property owner for Portions 249, 250, 251 and 43 of the Farm Mooiplaats 367-JR
The proposed sewer pipeline layout over my property is unacceptable. I suggest re-routing it around my property so that it follows the borders.

*This was forwarded to the design engineers for consideration and the pipeline route has since been realigned to follow the southern boundary of the property, and no longer traverses through any existing developed property. Refer to **Appendix A**.*

3. Christiaan Kool on behalf of Anack Beleggings (Pty) Ltd

I refer to the Draft Basic Assessment Report on the above mentioned sewer pipeline dated 05/03/2015.

You have already recorded my comment and objection against the sewer pipe line on the said Report. It is however incorrectly listed under the name P van Zyl, and should be listed under my name as follows:

Christiaan Kool on behalf of Anack Beleggings (Pty) Ltd.

Noted, and corrected.

Please find attached a copy of our registration document with our original comments on it.

Furthermore I would like to point out that my property has already been subdivided and industrial rights awarded to it.

Noted.

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Another concern I would like to raise is if the proposed sewer pipe line runs along my border, how will it affect my building restrictions in terms of building lines from the sewer pipeline and/or my border? I will appreciate it if the engineer can discuss this matter with me.

As indicated above and in the final amended route plan, the pipeline route has been realigned to within 30m of the building line on the southern boundary of the property, and Conic Civil Engineers have confirmed that this will not affect or restrict any developments on the property.

Kindly note that Mr. P van Zyl is one of the people who bought a subdivided property from me.

Noted.

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

It should be noted that since the proposed pipeline route is still in the preliminary design phase, further consultative engagements will be held with the affected landowners during the final design phase as part of the pipeline servitude agreements or negotiations.

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation 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 inadequate.

The practitioner must record all comments and respond to each comment of the public / interested and affected party before the application 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.

Refer to Appendix E6 for the Comments & Response Report

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 to those persons detailed in 1(b) to 1(f) above

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from persons detailed in Point 2 and 3 above

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

Appendix 10 – Comments from I&APs on the application

Appendix 11 - Other

Refer to Appendix E for all the above listed appendices.



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SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

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

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

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? YES NO

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

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

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

Will the activity produce solid waste during its operational phase? YES NO

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

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

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity? YES NO

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

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? YES NO

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? YES NO

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

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

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? *The proposed outfall sewer is for both domestic and industrial effluent.* YES NO



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If yes, what estimated quantity will be produced per month?
The total amount of sewerage was calculated as follows; a maximum of 70% coverage and of this, maximum of 2,0% will be office parks. For dry industrial at 300 liter/day per 100 m² - and office at 800 liter/day per 100m². The calculated flow is thus 61.3 kiloliter/day, for the Nokeng portion. The peak flow (at 2.5 peak factor), will be 7.1 liter/sec, for the Nokeng section only.

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)? Refer to **Appendix E11(a)** for the email confirmation

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

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

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

61.3 m ³ /day	
YES	<input type="checkbox"/>
NO	<input type="checkbox"/>
m ³	

N/A

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

Will the activity produce effluent that will be treated and/or disposed of at another facility? *The proposed pipeline is for the conveyance of domestic and industrial effluent to a municipal waste water treatment facility.*

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

If yes, provide the particulars of the facility:

Facility name:	Baviaanspoort Waste Water Treatment Works		
Contact person:	City of Tshwane Metropolitan Municipality – Water and Sanitation Division		
Postal address:	P.O Box 1022, Pretoria		
Postal code:	0001		
Telephone:	012 358 9078	Cell:	
E-mail:	frederikvw@tshwane.gov.za	Fax:	012 358 9132

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

An integrated Industrial Waste Management Plan (IWMP) is recommended for the N4 industrial park development, and must include measures for the optimal reuse or recycling of wastewater. The IWMP must encourage the use of innovative technologies in reducing the amount of water used in industrial processes thereby reducing wastewater discharge.

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?
The proposed pipeline is for the conveyance of domestic and industrial effluent to a municipal waste water treatment facility.

If yes, what estimated quantity will be produced per month?
The total amount of sewerage was calculated as follows; a maximum of 70% coverage and of this, maximum of 2,0% will be office parks. For dry industrial at 300 liter/day per 100 m² - and office at 800 liter/day per 100m². The calculated flow is thus 61.3 kiloliter/day, for the Nokeng portion. The peak flow (at 2.5 peak factor), will be 7.1 liter/sec, for the Nokeng section only.

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

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

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

YES	<input type="checkbox"/>
NO	<input type="checkbox"/>
61.3 m ³ /day	
YES	<input type="checkbox"/>
NO	<input type="checkbox"/>

N/A

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

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

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

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

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

N/A

2. WATER USE

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

municipal

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate



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the volume that will be extracted per month:

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

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

If yes, list the permits required

Water Use Authorisation in terms of Section 21 (c) & (i) of the National Water Act, 1998 (Act No. 36 of 1998)

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

Menco Environmental are currently in the process of preparing the application for submission to the Department of Water and Sanitation.

YES

NO

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

3. POWER SUPPLY

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

The proposed pipeline is a gravity fed outfall and no pump stations are proposed at this stage. Should any pump stations be required, these will be powered by electricity from the Eskom grid.

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

Existing developments in the area are already connected to the Eskom electricity grid.

4. ENERGY EFFICIENCY

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

Energy efficient pumps will be considered should such a need for pump stations arise.

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

Alternative energy sources such as standby generators to power the pump stations in the event of electricity cuts shall be considered should such a need arise.

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SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, 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.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

1. Landowner concerns on Portion 250 and 249 of the Farm Mooiplaats 367-JR of the implications associated with the pipeline route through their existing industrial property.
2. N4 TRAC concerns about the pipeline route within the building line of a national road (N4).

Summary of response from the practitioner to the issues raised by the interested and affected parties

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

1. This has been addressed by Conic Engineering in consultation with the affected landowner.
2. Updated Route Plan was included in the draft and final BAR. N4 TRAC to formally comment during the final design phase when the final pipeline route design is ready for approval by the CoTM.

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

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





The Significance Assessment Methodology used is in accordance to the DEAT (2006) Guideline Document 5 (Assessment of Impacts). The mentioned document states that the significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature, duration, intensity, extent and probability of identified impacts. Furthermore the significance of an impact is the product of a probability rating and a severity rating. A detailed description of the mentioned methodology follows:

SIGNIFICANCE

Significance is the product of *probability* and *severity*.

PROBABILITY (P)

Probability describes the likelihood of the impact actually occurring, and is rated as follows:




- | | |
|---|---|
| <ul style="list-style-type: none">  <i>Improbable</i> -  <i>Probable</i> -  <i>Highly probable</i> -  <i>Definite</i> - | <ul style="list-style-type: none"> Low possibility of impact to occur due to design or history. Rating: 2 Distinct possibility that impact will occur. Rating: 3 Most likely that impact will occur. Rating: 4 Impact will occur regardless of any prevention measures. Rating: 5 |
|---|---|

SEVERITY RATING (SR)

The *severity rating* is calculated from the *factors* allocated to *intensity* and *duration*. Intensity and duration factors are awarded to each impact, as described below.

INTENSITY FACTOR (I)

The *intensity factor* is awarded to each impact according to the following method:

- | | |
|--|---|
| <ul style="list-style-type: none">  <i>Low intensity</i> -  <i>Medium intensity</i> -  <i>High intensity</i> - | <ul style="list-style-type: none"> nature and/or man made functions not affected (minor process damage or human/ wildlife injury could occur). Factor 1 environment affected but natural and/or manmade functions and processes continue (Some process damage or human/ wildlife injury may have occurred). Factor 2 environment affected to the extent that natural and/or human- |
|--|---|

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made functions are altered to the extent that it will temporarily or permanently cease (Major process damage or human/wildlife injury could occur). **Factor 4**

DURATION (D)

Duration is assessed and a **factor** awarded in accordance with the following:

- ✚ **Short term** - ≤1 to 5 years. **Factor 2**
- ✚ **Medium term** - 5 to 15 years. **Factor 3**
- ✚ **Long term-** impact will only cease after the operational life of the activity has ended, either because of natural process or by human intervention. **Factor 4**
- ✚ **Permanent-** mitigation, either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient. **Factor 4**

SEVERITY FACTOR (SF)

The **severity rating** is obtained from calculating a **severity factor**, and comparing the severity factor to the rating in the table below. For example:

$$\begin{aligned}
 \text{The Severity factor} &= \text{Intensity factor} \times \text{Duration factor} \\
 &= 2 \times 3 \\
 &= 6
 \end{aligned}$$

A severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per *Table 1*.

TABLE 1: SEVERITY RATINGS

RATING	FACTOR
Low Severity (Rating 2)	Calculated values 2 to 4
Medium Severity (Rating 3)	Calculated values 5 to 8
High Severity (Rating 4)	Calculated values 9 to 12
Very High severity (Rating 5)	Calculated values 13 to 16
Severity factors below 3 indicate no significant impact	

SIGNIFICANCE RATING

A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating.

The significance rating should influence the development project as described below:

- ✚ **Low significance (calculated Significance Rating 4 to 6)**
 - **Positive** and **negative impacts** of low significance should have no significant influence on the proposed development project.
- ✚ **Medium significance (calculated Significance Rating ≥7 to 12)**
 - **Positive impact:**
Should weigh towards a decision to continue
 - **Negative impact:**
Should be mitigated before project can be approved.
- ✚ **High significance (calculated Significance Rating ≥ 13 to 18)**
 - **Positive impact:**
Should weigh towards a decision to continue, should be enhanced in final design.
 - **Negative impact:**
Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least a low significance rating.

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<p>✚ Very High significance (calculated Significance Rating ≥ 19 to 25)</p> <ul style="list-style-type: none"> - Positive impact: Continue - Negative impact: If mitigation cannot be implemented effectively, proposal should be terminated.
--

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.

A. All the alternative pipeline routes

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
CONSTRUCTION PHASE			
Beneficial Impacts			
Removal of alien/invasive plant species and establishment of indigenous vegetation	<p>6 Low P – 2 I – 2, D – 3, SF – 6 SR – 3</p>	<ul style="list-style-type: none"> ✚ Rehabilitation of all cleared areas must be done in accordance to the Rehabilitation Plan in the Environmental Management Programme (EMPr) attached as Appendix H. ✚ The Rehabilitation Plan must as far as possible make use of indigenous trees and plants. The use of exotic species must be limited. ✚ Any indigenous groundcovers and shrubs should be removed prior to construction activities and located and maintained in an on-site nursery and replanted within disturbed areas after construction is complete. ✚ All classified Invader Species in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) to be identified, eradicated and controlled. ✚ Eradication of exotic invader plant species by means of an appropriate method, as specified by the ECO. ✚ Dead weeds/exotic invader species must be discarded and disposed of at a landfill site 	<p>12 Medium P – 4 I – 2, D – 4, SF – 8 SR – 3</p>
Skills development and job opportunities	<p>10 Medium P – 5 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Direct and indirect jobs will be created during construction of the pipeline. Businesses in the material supply chain will also benefit. ✚ As far as reasonably possible people from surrounding communities must be employed by the principal construction 	<p>15 High P – 5 I – 2, D – 4, SF – 8 SR – 3</p>



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		<ul style="list-style-type: none"> contractor and sub-contractors. This should be included as a contractual obligation in the main contractor's appointment. 	
Adverse Impacts			
<p>Vegetation clearance along the pipeline servitude</p>	<p>15 High P – 5 I – 2, D – 4, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> The servitude of the pipeline (7 m) must be acquired over properties along the route of the pipeline, and clearly demarcated prior to any construction activities. The removal of vegetation should only be limited to the pipeline servitude. Contracts with the main and sub-contractors to include penalties related to environmental damage outside the servitude area. Construction programme to indicate servitude areas to be cleared in sequential stages for the duration of construction. Vegetation clearance and excavation of trenches should be done in phases along the pipeline route. Trenches must be backfilled and compacted to appropriate compaction densities once installation of the pipeline has been completed. The position of the site camp should be determined and fenced off from the remaining property to contain the spread of material, etc. The area of the construction camp must be rehabilitated with plants harvested during site clearance or new indigenous plants which specifically occur in the surroundings of the construction area. Where rehabilitation of cleared areas is planned, topsoil must be preserved for this purpose The top 20 cm of soil must be stripped as fertile top soil and stockpiled aside at specifically designated areas to be used in the rehabilitation of the site in the final phase of construction. Suitable storage areas must be identified along the servitude, in consultation with the ECO, prior to commencement of construction. It is important that the footprint of 	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>disturbance by heavy machinery during construction be limited, in order to ensure a quick recovery of the site.</p> <ul style="list-style-type: none"> ✚ Where embankments higher than 1,200mm are created, these should be contoured to approximate the natural form of the landscape. ✚ Access roads for earthmoving equipment and delivery of construction material must be clearly designated. ✚ The use of machinery in ecologically sensitive areas such as wetlands must be limited as far as possible. ✚ No blasting is to be undertaken on site. ✚ Regular site inspections are to be conducted to ensure compliance, complemented by monthly monitoring reports. 	
<p>Disturbance in ecological processes and functioning, loss of habitat and therefore the loss of biodiversity and disturbance to migration routes of animals</p>	<p>15 High P – 5 I – 2, D – 4, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> ✚ The principal contractor must identify and demarcate the extent of the construction footprint and associated Work Areas as indicated on the approved Pipeline Layout Plan using danger tape with steel droppers. ✚ All environmentally sensitive areas indicated on the Pipeline Layout Plan are “no-go areas” and must be cordoned off with danger tape. ✚ The developer and contractor shall liaise with the Flora specialist and ECO during the pre-construction phase to agree on acceptable limits of disturbance to areas of natural vegetation adjacent to work areas. ✚ During pipeline construction, sensitive habitats must be avoided by construction vehicles and equipment, wherever possible, in order to reduce potential impacts. Only necessary damage must be caused and, for example, unnecessary driving around in the veld or bulldozing natural habitat must not take place; ✚ Use existing facilities (e.g., old access roads, degraded areas) to the extent possible to minimize 	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>

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		<ul style="list-style-type: none"> the amount of new disturbance. ✚ Ensure protection of important resources by establishing protective buffers to exclude unintentional disturbance. All possible efforts must be made to ensure as little disturbance as possible to the sensitive habitats on site during construction; ✚ Minimise the extent of the Works Site footprint as much as is possible. ✚ Maintain the demarcation line, and ensure that no personnel or construction materials move outside the designated footprint. 	
<p>Wetland crossing construction - altered hydrology, erosion and sedimentation</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ The proposed wetland crossing for the pipeline must be authorised by the Department of Water and Sanitation in terms of Section 21 (c) and (i) of the National Water Act prior to construction. ✚ Construction must be scheduled to take place during dry seasons when flows are lowest where reasonably possible. Natural in-stream hydrology is to be used to determine which months constitute the low flow months. ✚ The contractor must ensure during construction of the wetland crossing that the structure is non-erosive, stable and may not induce any flooding. Accumulation of debris, blockage, erosion of abutments and overflow must be inspected regularly and damaged areas repaired immediately. ✚ Adequate erosion and sedimentation control measures must be instituted for river crossing excavations or embankments. ✚ Minimise the use of heavy equipment in unstable areas around the stream embankments. ✚ Repair all erosion damage as soon as possible and in any case not later than six months before the termination of the Maintenance Period to allow for sufficient rehabilitation growth. ✚ Ensure that the wetland crossing results in minimal disruption to flow patterns, both upstream and 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>downstream of the crossing, and do not cause damming of the water at the crossing.</p>	
<p>Potential permanent loss of wetland / riparian zones and their associated functions</p>	<p>15 High P – 5 I – 2, D – 4, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> ✚ Construction must be scheduled to take place during dry seasons when flows are lowest where reasonably possible. Natural in-stream hydrology is to be used to determine which months constitute the low flow months. ✚ The vegetation associated with the wetland / riparian areas identified on site have a high sensitivity with a high conservation priority. No major alteration of these important drainage areas is recommended, especially considering it to form part of an important catchment. The potential to impact on the wetland habitat is high and therefore a sufficient buffer zone of 30 meters for wetlands and 32 meters for riparian zones are applicable. ✚ No activity must take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within 500m radius from the boundary of any wetland or 100m from a watercourse or borehole, unless authorised by the Department of Water and Sanitation. ✚ The manholes or pump stations of the pipeline should be placed at least 30m away from the watercourse to ensure that no spillages occur into the watercourse should there be a problem with the sewer reticulation system. Manholes located within the 1:100 year floodline or delineated riparian habitat, whichever is the greatest, must be capsulated in concrete to hold a pre-determined capacity to avoid spillage into the watercourse. ✚ All construction and maintenance activities should be conducted in such a way that minimal damage is caused to the wetland or riparian zone. During construction, wetland habitats must be avoided by construction 	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>vehicles and equipment, wherever possible, in order to reduce potential impacts. Only necessary damage must be caused and, for example, unnecessary driving around in the veld or bulldozing natural habitat must not take place.</p> <ul style="list-style-type: none"> ✚ Work in rivers, streams and wetlands should preferably be done during the low flow or dry season; 	
<p>Soil compaction and increased risk of sediment transport and erosion</p>	<p>15 High P – 5 I – 2, D – 4, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> ✚ Install erosion control measures before construction commences. ✚ Install temporary drains and minimize concentrated water flows. Control storm water velocity where necessary with temporary energy dissipater structures. Divert run-off around trench excavations or disturbed areas. ✚ Revegetate or stabilise all disturbed areas as soon as possible. Indigenous trees can be planted in the buffer zone of the proposed development to enhance the aesthetic value of the site and stabilize soil conditions. ✚ Locate stockpiles away from concentrated flows and divert run-off around them. ✚ The following sediment control measures are recommended: <ul style="list-style-type: none"> ▪ Sediment filters: use materials such as fine mesh or geofabric to filter run-off prior to discharge. ▪ Sediment traps: temporary sedimentation basins. ▪ Drop inlet filters: e.g. hay bales and silt fences, which prevent sediment entry into the drainage system. 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>
<p>Noise and dust pollution generated during construction activities, which could be of nuisance to surrounding people in the area</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Ensure compliance to Provincial Noise Control requirements as outlined in the Provincial Notice, 5479 of 1999: Gauteng Noise Control Regulation during construction. ✚ Ensure dust emissions generated during construction activities are within acceptable dustfall rates published in the National Dust Control Regulations, 2013. ✚ No construction work to be 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>conducted at night unless if such an arrangement has been made in consultation with the ECO.</p> <ul style="list-style-type: none"> ✚ Unless otherwise specified, construction work to be conducted Monday to Friday between 7:00 – 17:00 and on Saturdays between 08:00 – 15:00 ✚ No construction work to be undertaken on Sundays and Public Holidays in order to minimise the disturbance caused by noise emanating from the construction site. ✚ Dust suppression measures such as spraying of the construction site should be implemented where necessary to minimise dust emissions. ✚ Traffic controllers must be positioned at strategic points along the access road to ensure the safe flow of construction vehicles and other road users. ✚ Construction vehicles operating in mud conditions should be cleaned on exit to prevent mud deposition along tarred access roads leading to the construction area. ✚ Dispersive material in trucks should be dampened or covered; ✚ Access by heavy machinery where there no access roads should be restricted as much as possible. 	
<p>Traffic disruption and damage to existing roads</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Ensure that only authorised roads and access routes are used. ✚ Vehicles may not leave the designated roads and tracks and turnaround points will be limited to specific sites. ✚ Maintain all access routes and roads adequately in order to minimise erosion and undue surface damage. Repair rutting and potholing and maintain storm water control mechanisms. ✚ Enforce speed limits at all times, both on public roads and on-site roads. Unless otherwise specified, the speed limit on construction roads is 50km/h. ✚ Allow for safe pedestrian and cycling access and crossing where necessary. ✚ Ensure adequate and correct 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>road signage along the main access road.</p> <ul style="list-style-type: none"> ✚ Traffic controllers should be stationed at busy traffic points along the access road to ensure the safe flow of construction vehicles and other road users. 	
<p>Establishment of material stockpile areas and other storage areas for building material</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Stockpiles not to exceed a height of 2m. ✚ Stockpiles to be monitored on an ongoing basis for erosion and alien/invasive plant control. ✚ After the stockpiled material has been removed, the site should be reinstated to its original condition – stockpiles to be limited to the areas of construction, no stockpiling is to take place beyond the demarcated construction site. ✚ No foreign material generated / deposited during construction shall remain on site. ✚ Areas affected by stockpiling should be landscaped, topsoiled, grassed and maintained at the contractor's cost until clearance from the Site Agent is received. ✚ Stockpiles may take the form of windrows. ✚ To prevent erosion, material stockpiled for long periods (2 weeks) should be retained in a bermed area to avoid contact with stormwater run-off. ✚ No vehicles shall be allowed access onto the stockpiles after they have been placed. ✚ Stockpiles must not be contaminated with oil, diesel, petrol, litter or any other material, which may inhibit the later growth of vegetation in the soil. 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>
<p>Temporary sanitation (chemical toilet facilities) could contaminate soil and groundwater quality</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Adequate on-site chemical sanitation systems, at least one toilet for every 8 workers, must be provided within walking distance to all construction workers. Strict penalties in re-numeration must be applied for workers that use other surrounding open areas for this purpose. ✚ Chemical toilets along the construction work area should be located outside the 1:100 year flood line and 500m away from any wetland area. 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<ul style="list-style-type: none"> ✚ Toilets must be located within the construction camp on gentle gradient. ✚ Toilets shall be serviced once a week to prevent spillages ✚ Under no circumstances may ablutions occur outside of the provided facilities. ✚ No washing or bathing in any natural water bodies shall be allowed. 	
Crime may increase as a result of contract work in the area	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ No construction activities to be allowed after normal working hours during weekdays and Saturdays, and anytime on Sundays or Public Holidays. ✚ Principal construction contractor to consider the recruitment of local unskilled labour first prior elsewhere. ✚ Adequate access control and security measures to be provided at the construction camp. 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>
Potential temporary displacement of fauna species due to disturbance caused by construction activities	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No.71 of 1962). ✚ No fauna are to be trapped, hunted or killed on the development site or adjacent properties. ✚ If any bird, mammal, amphibian or reptile is found during construction, these animals must be relocated to undisturbed areas or to conservation areas close by. ✚ The main Contractor shall advise workers of the penalties associated with the needless destruction of wildlife, as set out in the Animals Protection Act, 1962 (Act 71 of 1962). ✚ All areas of increased ecological sensitivity beyond the development footprint should be designated as No-Go areas and be off limits to all unauthorised vehicles and personnel. Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the proposed development activities. ✚ Should any Species of Conservation Concern or other threatened or protected faunal species be noted within the development footprint areas, 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>these species should be relocated to similar habitat within or in the vicinity of the construction area, with the assistance of a suitably qualified specialist.</p> <ul style="list-style-type: none"> ✚ Informal fires in the vicinity of construction camp or area should be prohibited for the duration of the construction phase. ✚ All disturbed habitat areas must be rehabilitated and reseeded with an indigenous seed mixture as soon as possible (preferably during the wet season) to ensure that faunal habitat ecology is re-instated. 	
<p>Improper waste management during construction</p>	<p>12 Medium P – 4 I – 4, D – 2, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> ✚ All building waste generated during construction must be managed in terms of the Gauteng Building and Demolition Waste Guidelines, 2009, as part of the overall Integrated Waste Management Plan in the EMPr (<i>Appendix H</i>). ✚ An area must be designated for the temporary storage of all waste material from the construction site. Appropriate measures should be taken to divert stormwater away from the waste storage area. ✚ None re-usable/recyclable building rubble and solid material must be disposed at a registered waste facility. ✚ The contractor should ensure all waste disposal certificates are kept on file for record purposes and as proof should these be required. ✚ Littering is strictly prohibited and appropriate receptacles should be available at convenient points of the construction site . ✚ Domestic waste generated on site during construction to be collected in waste skips. Waste skips containing food waste to be covered. ✚ General waste should be managed in terms of NEM: Waste Act 2008 (Act 59 of 2008) and relevant Municipal Waste Management By-Laws ✚ No material must be dumped in surrounding areas. 	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>

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		<ul style="list-style-type: none"> ✚ Adequate on-site chemical sanitation systems (one toilet for every 8 workers) must be provided within walking distance to all construction workers. Strict penalties in re-numeration must be applied for workers that use other surrounding open areas for this purpose. ✚ Solid construction waste not posing a pollution hazard should be used on site as backfill material as much as possible. Should no backfilling material be required, this waste should either be taken to a recycling facility or disposed at a registered landfill facility. ✚ No waste material may be burnt on-site. ✚ Litter patrols must take place once a week to ensure the site as well as the property is kept free of litter. ✚ Waste shall be separated into recyclable and non-recyclable waste. Bins shall be clearly marked to ease management of waste and recycling. ✚ The contractor must adhere to all the relevant laws and regulations applicable to the disposal of construction waste and rubble. ✚ The contractor shall provide sufficient closed containers on site, as well as waste skips, which must be placed in the crew camp, to handle the amount of litter, wastes, and builder's wastes generated on site. ✚ Containers shall be emptied once weekly by a licensed waste contractor and disposed of at a registered landfill site. No solid waste or any materials used may be disposed of on site. ✚ No rubble or discarded building material should remain in a non-designated area for more than one week. ✚ An area must be designated for mixing of concrete, and must take place on an impervious surface such as a concrete slab, metal or plastic sheeting which is provided with cut-off drains or berms to contain any contaminated run-off. 	
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		<ul style="list-style-type: none"> ✚ Contain water and slurry from cement and concrete mixing operations as well as from batching area wash bays. Direct such waste water into a settlement pond or sludge dam for later disposal. ✚ Liquid waste consists mainly of used oil, contaminated fuel, and lubricants, as well as waste paint etc. Liquid wastes must be collected in original containers and stored inside a surfaced or bunded storage area. The bunded surface area volume should be equal to 110% of the total volume of liquid stored. ✚ All hazardous solid and liquid waste to be disposed of at a class H:H registered landfill site only. ✚ All concrete that is spilled outside these areas must be promptly removed by the Contractor and taken to an approved dumpsite. ✚ After all the concrete mixing is complete all waste concrete must be removed from the batching area and disposed of at an approved dumpsite. ✚ No concrete residue is to be washed off into rivers, streams or wetlands. 	
<p>Unsupervised and misuse of fire on site could impact negatively on the environment</p>	<p>8 Medium P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ Ensure compliance with the NEM: Air Quality Act (Act No 39 of 2004). ✚ No open fires must be allowed on site. ✚ Heavy smoke may not be released into the air. ✚ No smoking is allowed outside of the site camp. ✚ Fire extinguishers must be provided at the site camp, where it is easily accessible. ✚ Fire extinguishers must be serviced, full and in good working order. ✚ The contractor's Health and Safety Plan must include particulars in terms of fire fighting and training. 	<p>4 Low P – 2 I – 2, D – 2, SF – 4 SR – 2</p>
<p>Possible damage/ loss of subterranean artefacts and archaeological sites</p>	<p>6 Low P – 3 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ The relevant heritage resources authority and the archaeologist must be informed as a matter of urgency should any human remains be exposed on the 	<p>4 Low P – 2 I – 2, D – 2, SF – 4 SR – 2</p>

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		<p>terrain or any other graves be located.</p> <ul style="list-style-type: none"> ✚ Should archaeological structures/ artefacts be found during the construction phase, these may not be removed, destroyed or interfered with prior to approval by SAHRA. ✚ Should any archaeological artefacts/ or heritage sites be unearthed during construction, all construction activities in that area must immediately stop and the archaeological specialist and SAHRA informed within 24 hours. ✚ In terms of the National Heritage Resources Act (No. 25 of 1999), graves older than 60 years (not in a municipal graveyard) are protected. ✚ Human remains younger than 60 years should only be handled by a registered undertaker or an institution declared under the Human Tissues Act. 	
OPERATIONAL PHASE			
Beneficial Impacts			
Job opportunities and local economic development	<p>8 Medium P – 4 I – 1, D – 4, SF – 2 SR – 2</p>	<ul style="list-style-type: none"> ✚ The operational maintenance of the pipeline will create either direct or indirect job opportunities. ✚ First preference should be given to local engineering service providers in the operational maintenance and repair of the pipeline. ✚ The proposed development will increase skills development and also local employment in the area. Both short-term and long-term employment will be created in this case. ✚ The proposed outfall sewer pipeline will contribute to services infrastructure in the area thereby attracting private investors and development in the area 	<p>15 High P – 4 I – 2, D – 2, SF – 4 SR – 2</p>
Improved sanitation services infrastructure in the area	<p>4 Low P – 2 I – 2, D – 2, SF – 4 SR – 2</p>	<ul style="list-style-type: none"> ✚ The operation of the proposed outfall sewer pipeline will ensure the provision of adequate sanitation services in the area thereby reducing any potential health and environmental risks associated with non-municipal connected sanitation systems. 	<p>12 Medium P – 4 I – 2, D – 4, SF – 8 SR – 3</p>
Adverse Impacts			
Potential sewer spillage or	15 High	✚ The Project Engineer and	6 Low

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<p>overflow due to blockages or poor maintenance of the pipeline</p>	<p>P – 4 I – 2, D – 2, SF – 4 SR – 2</p>	<p>Resident Engineer in consultation with the developer must compile a practical Operations and Maintenance Plan (OMP) for the pipeline.</p> <ul style="list-style-type: none"> ✚ The OMP must be approved by the Department of Water and Sanitation and City of Tshwane Water and Sanitation Division. ✚ The OMP must include: <ul style="list-style-type: none"> ▪ Measures for early detection of leakages or blockages, and for checking the integrity of the pipeline; and ▪ An emergency response plan for any potential damage to the pipeline or severe leakage. ✚ The contracted operations and maintenance engineer must ensure the sewer pipeline is regularly monitored and maintained as per the OMP, EMP, and applicable conditions of the Environmental and Water Use Authorisations. ✚ In the event of a major sewerage spillage, a suitable qualified team of experts should be consulted to draw up a rehabilitation plan. ✚ The sewerage flowing into the pipeline must be regularly monitored for wastewater quality by conducting tests at least once every two (2) years to monitor the COD levels. 	<p>P – 2 I – 2, D – 4, SF – 8 SR – 3</p>
<p>Build up of odour (H₂S) and corrosive acids (H₂SO₄) formed as a result of bacterial action</p>	<p>6 Low P – 2 I – 2, D – 4, SF – 8 SR – 3</p>	<ul style="list-style-type: none"> ✚ According to the CoT Guidelines for the design and construction of water and sanitation systems, 2010, turbulence at junctions and in manholes may cause bad odours, which must be reduced to a minimum by: <ul style="list-style-type: none"> ▪ avoiding situations that may lead to hydraulic jumps, such as ramps and sudden changes from steep to flat grades - where one grade is five or more times flatter than the other grade in the mains; and ▪ carefully and correctly shaping channels and benching in manholes. ✚ Engineering control measures should therefore be implemented 	<p>4 Low P – 2 I – 2, D – 2, SF – 4 SR – 2</p>

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		to prevent the build up of gases and corrosive acids in the pipeline.	
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B. Other Alternative pipeline routes

No major adverse environmental impacts are anticipated as a result of the construction, installation and operation of the pipeline along Alternative Routes 3 and 4, as the routes predominantly occur within an existing and already transformed road servitude. Alternative pipeline Routes 1 and 2 follow a similar alignment and environmental setting, despite Route 2 horizontal alignment upon crossing the R223. The environmental impacts associated with both route alternatives are therefore similar in every aspect.

Comparative Assessment

Based on the above impact assessment of all the four alternative routes, alternative Routes 3 and 4 have the least adverse impact on the environment in contrast to alternative Routes 1 and 2. This is because alternative Routes 3 and 4 predominantly follow existing road servitudes which are already transformed and have existing structures such as bridge culverts that can be utilised to convey the pipeline. However, there are two major factors which makes Routes 3 and 4 not feasible from an engineering and cost perspective.

- ✚ Both routes take on a relatively steep gradient to the north towards the R104, which necessitates the installation of pump stations. This increases the installation, operational and maintenance costs of the pipeline.
- ✚ In addition, existing services along the pipeline route will have to be relocated or realigned thereby adding to the construction and installation costs.

It should be noted that ownership of the pipeline will eventually be transferred to the City of Tshwane in the long term, and operational and maintenance costs are most likely to increase in the long term due to increase in effluent flows linked to future growth and development in the area.

Route 1 is the applicant's and project engineers preferred option from all the other three alternatives because it is the most sustainable, effective and efficient route option from an engineering perspective. Although there are more adverse environmental impacts associated with this route option, these can be avoided or effectively mitigated where possible. Furthermore, most of the adverse environmental impacts identified are short term and limited to the construction phase of the pipeline. Potential impacts during the operational lifetime of the pipeline can be effectively mitigated through strict adherence to and implementation of the Operations and Maintenance Plan.

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

✚ Phase 1 Geotechnical investigation (<i>Appendix G1</i>);
✚ Vegetation & Wetland Assessment (<i>Appendix G2 and G3 respectively</i>)
✚ Fauna Assessment (<i>Appendix G4</i>);
✚ Heritage Impact Assessment (<i>Appendix G5</i>); and
✚ Desktop Palaeontological Assessment (<i>Appendix G6</i>).

Specialist	Preferred Alternative Route	Reasons
Geotechnical investigation	All routes	No such adverse conditions totally prohibiting the construction of structures is foreseen subject to further investigations as part of second phase, but cognisance should be taken of the minor potentially collapsible conditions (Horizon A1 and A2 partly).
Vegetation & Wetland	Route 3 and 4	Route 3 and 4 are the preferred options from an

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Assessment		ecological point of view and avoids most of the riparian woodland and wetlands and follows the R104 from the Pienaars River. Therefore, from an ecological point of view the preferred routes in order of preference are Route 4, Route 3, Route 2, and Route 1
Fauna Assessment	Route 3 and 4	Route Alternative 3 and 4 are considered to be favourable, as these routes will limit impacts on wetland and riparian features in the area, which are considered to be of increased importance in terms of faunal habitat and species diversity. Route Alternative 1 and 2 are located within close proximity to the wetland and riparian features within the area, and as such there is an increased risk that construction and operational activities will have a negative impact on faunal habitat and species therein.
Heritage Impact Assessment	All routes	No heritage resources have been documented in the proposed N4 Industrial Park Outfall Sewer pipeline footprint area. All the proposed alternative pipeline routes on the farms Zwartkoppies 364-JR, Mooiplaats 367-JR, and Barendshoek 630-JR will have no impact on archaeological heritage resources. The project should be allowed to proceed from a culture resources management perspective, provided that mitigation measures provided in this assessment (monitoring), endorsed by the relevant Heritage Resources authority, are implemented where applicable, and provided that no subsurface heritage remains are encountered during construction.
Desktop Palaeontological Assessment	All routes	No fossil materials are known to occur within the Silverton Formation. The effects of the required construction operations to the geological strata underlying the project area will be restricted to the late Achaean to early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup. The Silverton Formation, which occur at surface and underlie the entire project area known to be unfossiliferous. Thus the probability and significance of any negative impact upon the palaeontological heritage of the area is assessed as being nil".

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

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

The biophysical impacts associated with the decommissioning of the pipeline are more or less similar to those identified for the construction phase of the proposed pipeline route. Furthermore, the impacts are of a similar magnitude as the decommissioning phase also involves excavation of the pipeline. Therefore the table below only assesses additional impacts related to the safe removal of the pipeline and its supporting infrastructure.

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Proposal

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Beneficial Impacts			
Potential job opportunities	10 Medium P – 5 I – 2, D – 2, SF – 4 SR – 2	<ul style="list-style-type: none"> ✚ As far as reasonably possible unskilled and semi-skilled workers from the surrounding communities must be employed by the contractor and sub-contractors. This should be included as a contractual obligation. 	15 High P – 5 I – 2, D – 4, SF – 8 SR – 3
Adverse Impacts			
Potential sewerage spillage	8 Medium P – 4 I – 1, D – 4, SF – 2 SR – 2	<ul style="list-style-type: none"> ✚ Appropriate control measures must be taken to ensure any trapped effluent in the pipeline is completely and safely drained off, without polluting the soil or surrounding environment. 	6 Low P – 2 I – 2, D – 4, SF – 8 SR – 3
Potential health risks due to inhalation of Hydrogen Sulphides (H₂S), or contact with corrosive sulphuric acid (H₂SO₄) formed as a result of bacterial action	6 Low P – 2 I – 2, D – 4, SF – 8 SR – 3	<ul style="list-style-type: none"> ✚ Suitable protective clothing and equipment should be provided to workers involved in the removal of the sewer pipeline. ✚ Any accidental contact must be immediately treated as instructed by the safety officer. 	4 Low P – 2 I – 2, D – 2, SF – 4 SR – 2
Inappropriate disposal of building rubble and waste material from demolition	12 Medium	<ul style="list-style-type: none"> ✚ Where feasible, waste material must be sorted, separated and recycled. ✚ All material that cannot be recycled or re-used must be collected and disposed of at a licensed building rubble disposal site. ✚ All the disassembled components of the pipeline must be stored on a bunded surface and recyclable material separated into an appropriately marked receptacle. 	4 Low
Degradation of disturbed/excavated areas during decommissioning	10 Medium	<ul style="list-style-type: none"> ✚ The Rehabilitation Plan in the EMP_r must be adhered to during decommissioning. ✚ All disturbed areas should be rehabilitated in accordance to the Rehabilitation Plan, and inspected by a specialist upon completion of the rehabilitation work. 	4 Low

Alternative Routes 2, 3, and 4: Same as above.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:



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

Same as above.

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 of the pipeline along the proposed route will have the following cumulative impacts on the existing biophysical environment, based on specialist findings.

- ✚ Construction activities will potentially contribute to the further deterioration of the wetlands or riparian zones, whether it is through direct or indirect impacts. Some clearance of vegetation will occur. Any loss of the wetland habitat will also result in permanent loss or displacement of the plants, invertebrates, birds and small mammals dependant on the wetland vegetation for feeding, shelter and breeding purposes.
- ✚ The use of heavy machinery during the construction process will result in the compaction of soil, resulting in decreased infiltration of rain water and increased surface run-off volumes and velocities leading to a greater erosion risk in the area. Soil compaction is likely to occur over some parts of the proposed pipeline route.
- ✚ The construction carries the risk of alien invasive species being imported to the site, and the high levels of habitat disturbance also provide opportunities for such species to establish themselves, since most indigenous species are less tolerant of disturbance. The risk is that seeds of noxious plants may be carried onto the site along with materials that have been stockpiled elsewhere at already invaded sites.

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.

Alternative Route 1 and 2

Environmental effects as a result of the proposed pipeline development can be grouped into construction and operational phase related impacts;

a. Construction Phase

This is the phase in which most of the adverse impacts will occur, and these include:

- ✚ Loss of and damage to natural vegetation including faunal habitat;
- ✚ Increased soil erosion and sedimentation along wetlands and water courses (especially crossings) and erodible soils;
- ✚ Potential soil and water pollution, due to oil and fuel leakages from construction vehicles and machinery;
- ✚ Spread and establishment of alien invasive species;
- ✚ Direct wetland destruction; and
- ✚ Soil erosion and sedimentation.

Positive impacts associated with the construction of the pipeline include:

- ✚ Alien and invasive species control and eradication along the construction footprint;
- ✚ Employment and skills opportunities for the surrounding community;
- ✚ Business opportunities for local construction material suppliers; and
- ✚ Upgrade and maintenance of existing access roads.

b. Operational Phase

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Negative impacts associated with the operation of the pipeline include:

- ✚ Potential spillage or overflow of sewerage due to pipeline defects or blockages, and subsequent pollution of surface and ground water resources;
- ✚ Continued habitat destruction in ecologically sensitive areas by maintenance personnel and vehicles or machinery; and
- ✚ Odour emissions from potential sewerage spills.

Positive impacts associated with the operation of the pipeline include:

- ✚ Improved sanitation system in the area due to reliable sewerage services infrastructure;
- ✚ The pipeline development will attract further investment in the area by private developers due to the availability of sewerage services; and
- ✚ Contribute to municipal revenue through wastewater discharge levies.

Alternative Route 3 and 4

Construction related impacts on the ecological integrity of the area are considered much lower to negligible, though all the positive impacts will remain the same as above. All the operational related impacts are the same as above.

No-go (compulsory)

There no environmental or socio-economic benefits associated with the no-go option as the site will continue degrading due to infestation by alien and invasive plants. Furthermore, the N4 industrial park will remain undeveloped due to the lack of sewerage services infrastructure. The investment potential of the area will remain subdued with limited prospects for any future development.

Although the ecological integrity of the area would have been preserved, there is no guarantee that this will remain as such in the long-term considering the growing pressure for development in the area.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal (Route 1 and 2):

Based on the above impact assessment and specialist findings, the construction of the pipeline along the proposed route will adversely impact the existing ecological habitat mainly through vegetation clearance, and destruction by construction vehicles and machinery. Although alternative pipeline routes which avoid ecologically sensitive areas are proposed, the project engineers are not in favour of these options due to sustainability concerns considering the high installation and operational costs associated with a pump fed sewer pipeline.

For alternative (Route 3 and 4):

The proposed alternative pipeline routes will have less negative impacts on the biophysical environment compared to the preferred route option, and are the least ecologically sensitive as confirmed by the findings of the ecological specialists. However, both routes are not the most efficient and cost effective from an engineering perspective.

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.

Based on the above impact summary, alternative Routes 3 and 4 have the least adverse impact on the environment in contrast to alternative Routes 1 and 2. This is because alternative Routes 3 and 4 predominantly follow existing road servitudes which are already transformed and have existing structures such as bridge culverts that can be utilised to convey the pipeline. However, there are two major factors which makes Routes 3 and 4 not feasible from an engineering and cost perspective.

- ✚ Both routes take on a relatively steep gradient to the north towards the R104, which necessitates the installation of pump stations. This increases the installation, operational and maintenance costs of the pipeline.

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- ✚ In addition, existing services along the pipeline route will have to be relocated or realigned thereby adding to the construction and installation costs.

It should be noted that ownership of the pipeline will eventually be transferred to the City of Tshwane in the long term, and operational and maintenance costs are most likely to increase in the long term due to increase in effluent flows linked to future growth and development in the area.

Route 1 is the applicant's and project engineers preferred option from all the other three alternatives because it is the most sustainable, cost effective and efficient route option from an engineering perspective. Although there are more adverse environmental impacts associated with this route option, these can be avoided or effectively mitigated where possible. Furthermore, most of the adverse environmental impacts identified are short term and limited to the construction phase of the pipeline. Potential impacts during the operational lifetime of the pipeline can be effectively mitigated through strict adherence to and implementation of the Operations and Maintenance Plan.

Following the above impact assessment and based on specialist findings, the adverse environmental impacts associated with the construction and operation of the pipeline along the proposed route can be effectively mitigated against provided the conditions of the Environmental Management Programme (EMPr) (*Appendix H*) are strictly adhered to. A comprehensive Rehabilitation Plan prepared by the Ecological specialists is attached in the EMPr.

7. RECOMMENDATION OF 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).

YES

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

N/A

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:

Based on the findings of this Basic Assessment report, no environmental fatal flaws are anticipated as a result of the construction and operation of the sewer pipeline along the proposed alternative routes. All the significant adverse environmental impacts identified will mainly occur during the construction phase and can be effectively mitigated provided the construction activities are strictly conducted in accordance to the EMPr in *Appendix H*. The proposed pipeline route (Route 1) is therefore supported subject to the following conditions:

- ✚ The proposed sewer pipeline must be designed, constructed, and operated according to the CoTM requirements.
- ✚ A Water Use Licence in terms of Section 21 (c) and (i) is required prior to commencing with any construction activities. The proposed sewer pipeline wetland crossing must be designed, constructed, and operated in accordance to the Department of Water and Sanitation requirements or Water Use Licence conditions.
- ✚ In addition to the Water Use Licence conditions, construction of the sewer pipeline through ecologically sensitive areas should be undertaken in terms of the recommendations and mitigation measures made in the Vegetation and Wetland Assessment reports attached as *Appendix G2* and *Appendix G3* respectively.
- ✚ Measures should be taken, wherever practical or feasible, to avoid the use of heavy construction vehicles or machinery in ecologically sensitive areas during the construction phase.
- ✚ EMPr conditions and mitigation measures for all the project phases must be strictly adhered to.
- ✚ The foundation for the pipe bedding and backfill material must meet the required



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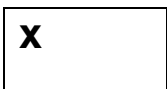
- Geotechnical specifications or standards.
- + Notwithstanding any other requirements, guidelines or standards as determined by the relevant authorities. The design, construction, installation, and operation of the proposed sewer pipeline should be informed by at least the following guidelines:
 - Department of Water Affairs and Forestry Technical Guidelines for the development of water and sanitation infrastructure, 2nd Edition, 2004.
 - Department of Water Affairs Guidelines for the utilisation and disposal of wastewater sludge: Vol.3 - Requirements for the on-site and off-site disposal of sludge, 2007.
 - City of Tshwane Guidelines for the design and construction of water and sanitation systems, 2010.
 - + In addition, the design, construction, installation and operation of the outfall sewer pipeline must meet the applicable SANS specifications.
 - + A construction method statement for all construction activities within the 1:100 year Floodline of a watercourse or 500m radius of a wetland, appended to the EMPr, must be approved by the Department of Water and Sanitation as part of the Water Use Licence, prior to any construction activities.
 - + Servitude or wayleave agreements with the affected property owners or service providers along the pipeline route must be secured prior to commencing with any construction activities.
 - + Noise levels and dust emissions during the construction phase must be kept at minimum in compliance with the applicable provincial and municipal regulations or by-laws
 - + A waste hierarchy approach as explained in the EMPr must be implemented for all waste streams produced on-site during construction.
 - + Practical measures should be taken to limit construction activities within a 10m servitude of the proposed pipeline route, and minimise disturbance in ecologically sensitive areas as much as possible.
 - + The construction footprint and all disturbed areas must be rehabilitated in accordance to the Rehabilitation Plan compiled by the Ecological specialists, and attached in the EMPr.
 - + Should any subsurface paleontological, archaeological or historical material or heritage resources be exposed during construction activities, all activities should be suspended and the archaeological specialist notified immediately.
 - + The Project Engineer and Resident Engineer in consultation with the developer must compile an Operations and Maintenance Plan (OMP) for the pipeline to be approved by the CoTM.
 - + The approved OMP must amongst other requirements include:
 - Measures for early detection of leakages or blockages, and for checking the integrity of the pipeline;
 - An emergency response plan for any potential damage to the pipeline or severe spillage; and
 - Appropriate engineering control measures for containing spillages particularly in wetland areas.

8. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

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

EMPr attached

Refer to *Appendix H*



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SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

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

Appendix A: Route Plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix D1: Locality Maps

Appendix D2: List of Geographical coordinates

Appendix D3: Ecological Sensitivity Maps

Appendix D4: Wetland Delineation Map

Appendix E: Public participation information

Appendix E1 – Proof of site notice

Appendix E2 – Written notices issued to those persons detailed in 1(b) to 1(f) above

Appendix E3 – Proof of newspaper advertisements

Appendix E4 – Communications to and from persons detailed in Point 2 and 3 above

Appendix E5 – Minutes of any public and/or stakeholder meetings

Appendix E6 - Comments and Responses Report

Appendix E7 –Comments from I&APs on Basic Assessment (BA) Report

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

Appendix E9 – Copy of the register of I&APs

Appendix E10 – Comments from I&APs on the application

Appendix E11 - Other

Appendix 11(a): CoTM confirmation email on sewerage inflow capacity

Appendix 11(b:) List of municipal departments/divisions and organs of state informed

Appendix 11(c):Proof of distribution of the amended FBAR to all relevant stakeholders and Government Departments

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

Information not yet available.

Appendix G: Specialist reports

Appendix G1: Phase 1 Geotechnical Investigation

Appendix G2: Vegetation Assessment

Appendix G3: Wetland Assessment

Appendix G4: Fauna Assessment

Appendix G5: Heritage Impact Assessment

Appendix G6: Desktop Palaeontological Assessment

Appendix H: EMPr

Appendix I: Other information

Appendix I1: N4 Industrial park Sewerage Services Report

Appendix I2: CoTM SDF for Region 5 & 6

CHECKLIST

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



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