PROPOSED LANSERIA OUTFALL SEWER PIPELINE IN JOHANNESBURG, GAUTENG PROVINCE.

BASIC ASSESSMENT REPORT

DRAFT

JUNE 2017

PREPARED FOR: JOHANNESBURG WATER (SOC) LTD

Environmental, Social and OHS Consultants

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Title and Approval Page

Project Name:	Proposed Lanseria outfall sewer pipeline in Johannesburg, Gauteng Province.
Report Title:	Basic Assessment Report
Authority Reference:	N/A
Report Status	Draft

Client	Johannesburg Water (SOC) Ltd

Prepared By:	Nemai Consulting		
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Report Reference:	10625-20170612-Draft BAR		R-PRO-REP|20170216

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Amendments Page

Date:	Nature of Amendment	Amendment Number:
21/05/2017	Internal Review	00
30/05/2017	Client Review	01
19/06/2017	Public Review	02

GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

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

Kindly note that:

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

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

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

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

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

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

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

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

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

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

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

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

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

DEPARTMENTAL DETAILS

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

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

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

(For official use only)

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

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

[redacted]

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

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

A closure plan is required for the decommissioning or closure of the proposed development. With regards to the Outfall Sewer, this is not envisioned at this stage for this proposed development and thus doesn't apply. The Zandspruit Pump Station will be decommissioned once the Outfall Sewer is operational, however the decommissioning of the Zandspruit Pump Station will not form part of this application. A separate EIA Process will be conducted at a later stage for this application due to the lack of information for the closure plan at this stage.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? Yes

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

If no, state reasons for not attaching the list.

[redacted]

Have State Departments including the competent authority commented? No

If no, why?

The Draft BAR has been placed for a 30-day review period from 19 June 2017 to 18 July 2017 and thus any comments on the BAR from State Departments will be received during this review period and included in the Final BAR to be submitted to GDARD.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Proposed Lanseria Outfall Sewer Pipeline

Project description

Johannesburg Water (JW) has appointed Nemai Consulting as the Independent Environmental Assessment Practitioner (EAP) to conduct the Environmental Impact Assessment (EIA) Process for the proposed Lanseria Outfall Sewer Pipeline in Johannesburg, Gauteng Province.

The Lanseria outfall sewer basin is located in the north-western part of the City of Johannesburg Metropolitan Municipality (CoJ). Significant pressure exists for the development of the largely undeveloped Lanseria area, largely triggered by the extension of the CoJ urban development boundary in 2008. Future land use includes mixed residential, commercial and industrial developments.

JW are currently undertaking the design of a regional Lanseria Waste Water Treatment Works (WwTW) in which the EIA Process is currently considering two sites. The proposed Lanseria WwTW will treat wastewater from a large area as defined by the Johannesburg Water Masterplan for this area, mainly to the west of the existing Northern WwTW. The Lanseria WwTW will be constructed in three phases of 50 mega litre (Ml)/day each, with an ultimate design capacity of 150 Ml/day.

The Lanseria Outfall Sewer is located in the JW Lanseria Sewage Drainage Basin, in the northern part of the City of Johannesburg Metropolitan Municipality. The proposed development entails the design and construction of a new outfall sewer that will convey sewage from the existing Zandspruit Sewer Pump station to the future Lanseria WwTW (options are available to both site alternatives) (**Figures 1** and **2**). Along this route, new collector sewers (which do not form part of this appointment) will further contribute to the flow in the outfall sewer. The construction of the Lanseria outfall sewer will provide an opportunity for JW to decommission some of the existing sewer pumping stations in the drainage area.

The Lanseria Outfall Sewer is between 12 and 19.5km (depending on the route alternative). The upstream section of the alternative pipeline alignments (40% to 50% of the total pipe length) runs within an area which is characterised by smallholdings, low-density residential developments and small to large commercial concerns. This section of the alternative pipeline alignments follows the Klein Jukskei River and the Jukskei River. The remainder of the alternative pipeline alignments traverse through areas such as Northern Farms, Blair Atholl Golf Estate, some industrial developments, notably the Lion Park Quarry and the Lanseria International Airport.

As part of the Basic Assessment (BA) Process, Nemai Consulting will be considering alternative route alignments for the outfall sewer as follows:

- Route to WwTW Site 1 (**Figure 3**):
  - Alternative 1 - Gravitational Route (12 600m in length)
  - Alternative 2 - Gravitational Route (13 800m in length)

- Route to WwTW Site 2 (**Figure 4**):
  - Alternative 1 - Gravitational Route (19 161m in length)
  - Alternative 2 - Pumped and Gravitational Route (12 865m in length)
  - Alternative 3 - Tunnelled Route (planned to tunnel underneath the Lanseria Airport) (13 752m in length)

An overview map of the location of all the alternative pipeline routes and the proposed WwTW sites is provided in **Figure 1**. The specific pipeline alternatives to each site can be seen in **Figures 3** and **4**. A3 copies of the locality maps are contained in **Appendix A** while A3 copies of the alternative layout drawings are contained in **Appendix C**.

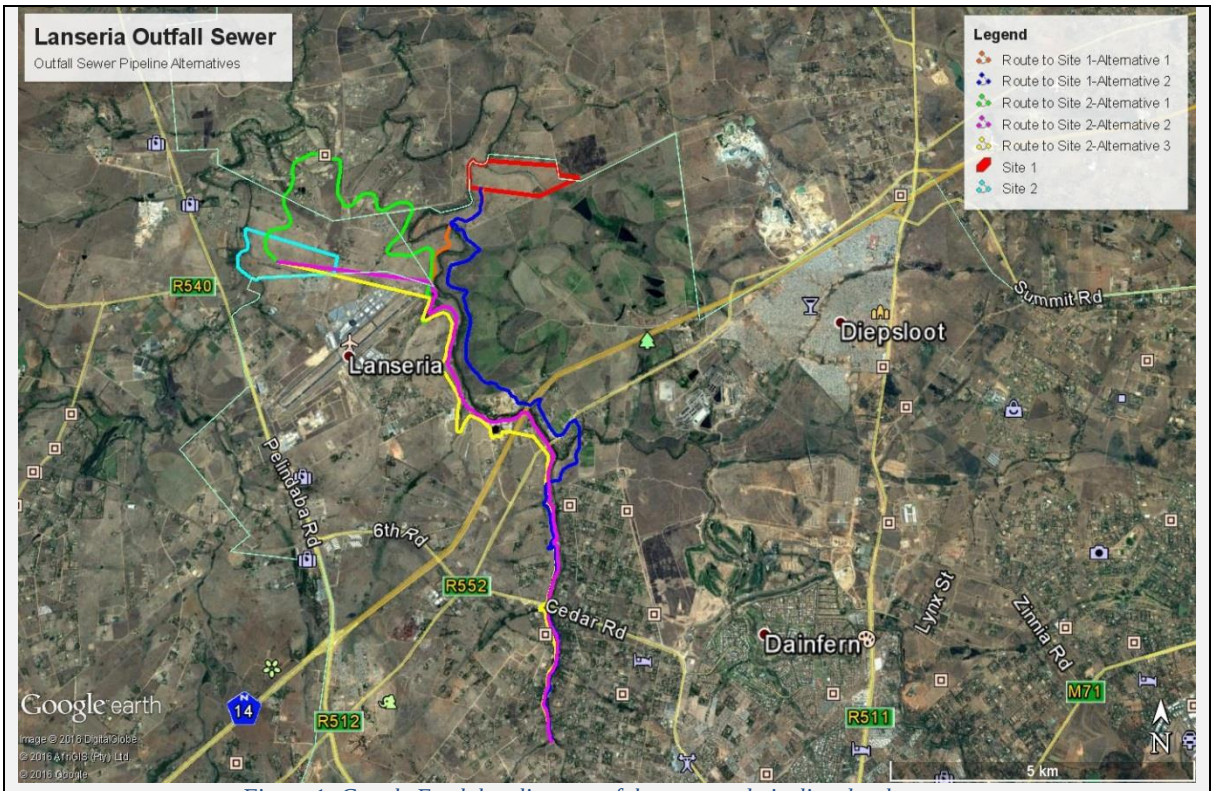


Figure 1: Google Earth locality map of the proposed pipeline developments

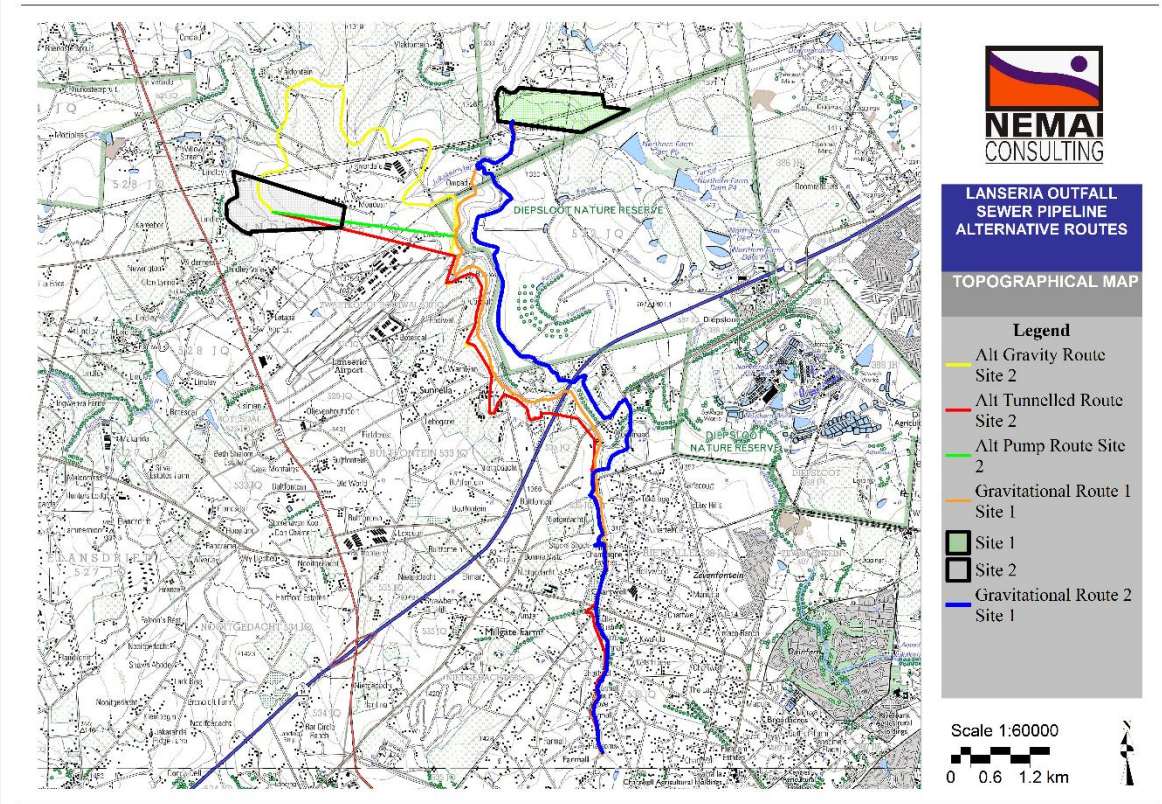


Figure 2: Locality map

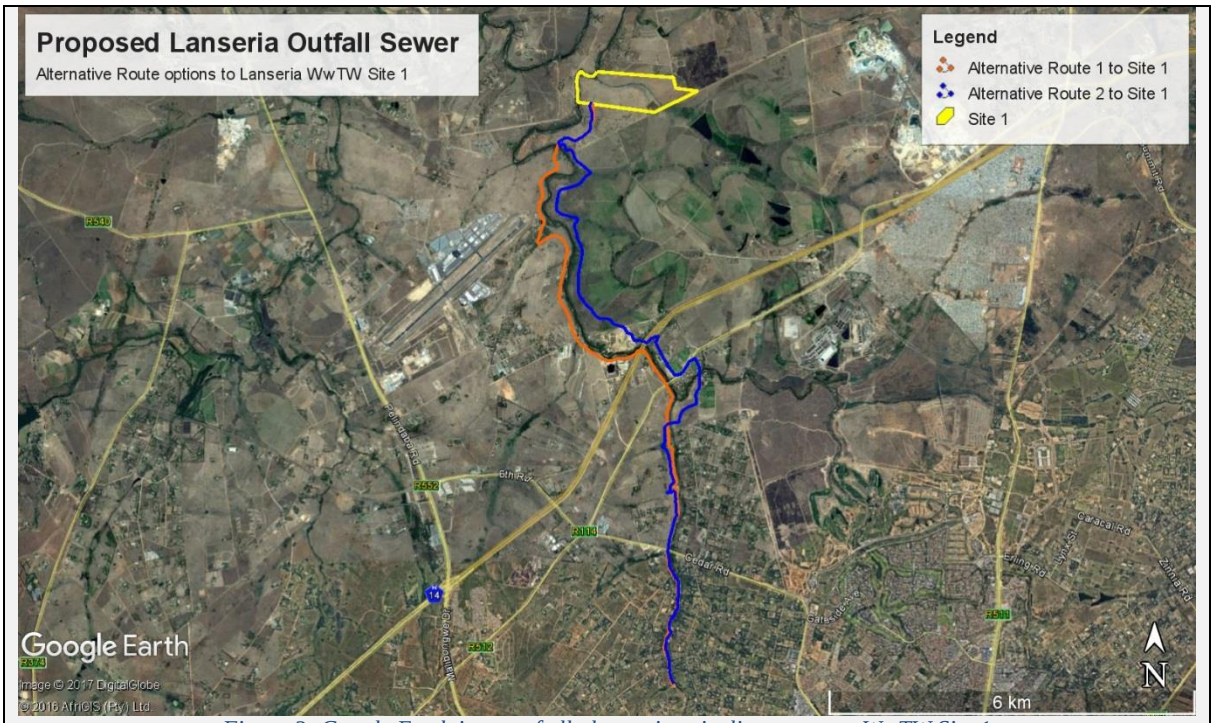


Figure 3: Google Earth image of all alternative pipeline routes to WwTW Site 1

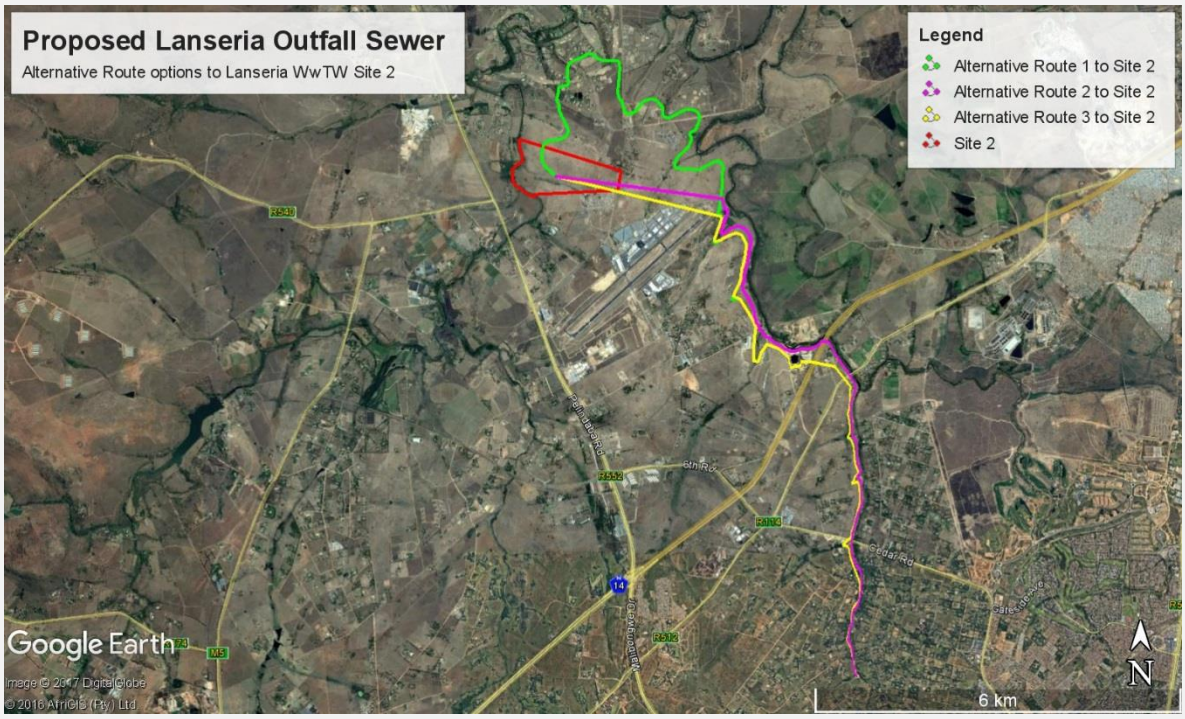


Figure 4: Google Earth image of all alternative pipeline routes to WwTW Site 2

Select the appropriate box

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

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

YES	
X	

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

A water use license is needed according to the National Water Act (Act No. 36 of 1998) which needs to be submitted to the Department of Water and Sanitation (DWS).

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

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

	NO
	X

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:
Applicable Legislation		
National Environmental Management Act (Act No. 107 of 1998 as amended).	National and Provincial	27 November 1998
Constitution of the Republic of South Africa (Act No. 108 of 1996)	National and Provincial	18 December 1996
Amended 2014 Environmental Impact Assessment Regulations, promulgated in terms of Section 24(5) of NEMA	National and Provincial	07 April 2017, As Amended
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	National and Provincial	07 June 2004
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	National and Provincial	10 October 2002
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	National and Provincial	18 February 2003
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	National and Provincial	11 September 2004
National Water Act (Act No.36 of 1998)	National and Provincial	26 August 1998
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	National and Provincial	21 April 1983
National Forests Act (Act No. 84 of 1998)	National and Provincial	30 October 1998
National Environmental Management Waste Act (Act No. 59 of 2008)	National and Provincial	10 March 2009
National Heritage Resources Act (Act No.25 of 1999)	National and Provincial	28 April 1999
Hazardous Substances Act (Act No. 05 of 1973)	National	14 April 1973
Occupational Health and Safety Act (Act No. 85 of 1993)	National and Provincial	23 June 1993
Applicable Policies and Guidelines		
Gauteng Provincial Environmental Management Framework	Provincial	May 2015
Gauteng Spatial Development Framework	Provincial	01 February 2011
Gauteng Ridges Policy	Provincial	23 June 2006
Gauteng Red Data Policy	Provincial	September 2001
Gauteng Conservation Plan	Provincial	December 2010

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

Legislation, policy of guideline	Description of compliance
National Environmental Management Act (Act No. 107 of 1998 as amended)(NEMA).	NEMA is the overarching framework for environmental legislation. An application for Environmental Authorisation (EA) for the proposed Lanseria Outfall Sewer Pipeline is submitted in terms of GN R. 982 of the amended 2014 EIA Regulations, 07 April 2017, promulgated under NEMA.
Constitution of the Republic of South Africa (Act No. 108 of 1996)	This EIA process for the proposed Outfall Sewer in Lanseria focusses on the minimization of all environmental impacts resulting from the construction and operation phases of the proposed project in order to fulfil the requirements of Section 24 of the constitution
Amended 2014 Environmental Impact Assessment Regulations, promulgated in terms of Section 24(5) of NEMA	The compilation for the Basic Assessment Report and associated Environmental Management Plan is in adherence to the National Environmental Management Act, 1997 (Act No. 107 of 1998). Activities listed in GN R. 983 and R.985 have been applied for.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The Act provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA. Areas of high biodiversity need to be protected. Should any protected plants be found on site, these will be managed in consultation with GDARD
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	This act allows for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and natural landscapes. Alternative routes traverse parallel or along areas governed by this act and all guidelines stipulated in the act will be incorporated in the EMPr to ensure these areas are managed accordingly.
National Water Act (Act No.36 of 1998)	The objectives of the National Water Act, 1998 (Act No. 36 of 1998) have been addressed in the Water Use License Application. Mitigation and management measures have been compiled in this Basic Assessment Report for the protection of

	natural water resources.
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	The objectives of this act are to make provision for the conservation of the natural agricultural resources of South Africa, through the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the eradication of weeds and invader plants that may be identified in the surrounding environment of the proposed project. The Act was taken cognisance of in the development of the EMPr.
National Forests Act (Act No. 84 of 1998)	This act promotes the sustainable management and development of forests and allows for special measures for the protection of forests and trees. A Permit will need to be obtained from DAFF if protected trees are to be cut, disturbed, damaged, destroyed or removed.
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	This Act sets out the requirements with which applicants for prospecting rights, mining rights and mining permits must comply in Sections 16, 22 and 27 of the MPRDA. A Mining Permit will not be required as there will be no material required from newly opened borrow pits for the proposed Lanseria Outfall Sewer, these will be commercially provided.
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	No listed activities are triggered in terms of GNR. 893 printed in terms of the National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004). The EMPr focuses on the minimisation of any emissions resulting in deterioration of the air quality during the construction phases.
National Environmental Management Waste Act (Act No. 59 of 2008)	No waste management license would be required for the construction or operational phases of the proposed activity. Only a limited amount of solid construction waste will be stored and handled on the site, before being hauled away and dumped at the nearest registered landfill site.
National Heritage Resources Act (Act No.25 of 1999)	The Act aims to promote the good management of the national heritage resources. According to the Act the South African Heritage Resources Agency (SAHRA) must be notified during the early planning phases of a project for any development that meet certain criteria. The Agency has been notified as required. Any artefacts uncovered during the construction phase will be reported to SAHRA as provided for in the EMPr.
Occupational Health and Safety Act (Act No. 85 of 1993)	The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of machinery; the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work. The EMPr provides for measures to ensure that objectives of the Act are met on this site
Hazardous Substances Act (Act No. 05 of 1973)	Provisions for the control of substances which may cause injury or ill-health to or death of human beings. During construction, hazardous substances will be dealt with following guidelines in the act as well as on site management and mitigation measure from the EMPr.
Gauteng Provincial Environmental Management Framework	The Gauteng Provincial Environmental Management Framework has been used to assist in the determination of impacts and mitigation measures.
Gauteng Spatial Development Framework	The CoJ Regional SDF (2011) has a number of subareas, including the Lanseria area which falls under the Administrative Region A. The Regional Development Framework along with the Lanseria Development Framework 2020 will be considered in this report.
Gauteng Ridges Policy	Conservation of ridges and the area immediately surrounding the ridges, which provide habitat for a wide variety of fauna and flora, some of which are Red List, rare or endemic species or, in the case of certain of the plant species, are found nowhere else in South Africa or the world. The proposed alternative pipeline developments occurs on Class 1, 2, 3 and 4 Ridges.
Gauteng Red Data Policy	The purpose of these guidelines is to promote the conservation of Red List Plant Species in Gauteng, which are species of flora that face risk of extinction in the wild. By protecting Red List Plant Species, conservation of diverse landscapes is promoted which forms part of the overall environmental preservation of diverse ecosystems, habitats, communities, populations, species and genes in Gauteng. A terrestrial specialist study was included as part of the basic assessment in order to assess whether the study area contains species of importance.
Gauteng Conservation Plan	The Gauteng Conservation Plan was taken cognisance of in ensuring the protection of the surrounding ecology by preventing the sterilisation of soils and biodiversity.

3. ALTERNATIVES

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

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

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

Please describe the process followed to reach (decide on) the list of alternatives below
The start point of the proposed Lanseria Outfall Sewer is the existing Zandspruit Pump Station. The end point of the proposed Lanseria Outfall Sewer is the proposed Lanseria WwTW. However, two site alternatives for the WwTW are being assessed as part of the EIA Process for the proposed Lanseria WwTW. Therefore, alternative routes for the Lanseria Outfall Sewer need to be considered to each WwTW site alternative. A few options to each site have been considered, the reasons are detailed in the table below.

Alternative Route 1 to Site 1	
Advantages	Disadvantages
• Fully gravitational flow; • Shorter length of pipeline; and • The vertical natural ground profile is good.	• Major river crossing (Jukskei River).
Alternative Route 2 to Site 1	
Advantages	Disadvantages
• Fully gravitational flow; • Shorter length of pipeline; and • The vertical natural ground profile is good.	• Traverses the Diepsloot Nature Reserve (Northern Farms) • Crosses Klein-Jukskei and Jukskei River
Alternative Route 1 to Site 2	
Advantages	Disadvantages
• Fully gravitational; • No pump station construction or operation costs; • Accessible pipeline for maintenance purposes; and • Minor installation technicality.	• Pipeline crosses through Blair Athol Golf Estate and Monaghan Farms Estate; • Longer length of pipeline (costly); • Two above ground sections of pipe; and • Extremely low gradients in sections of the route.
Alternative Route 2 to Site 2	
Advantages	Disadvantages
• Shorter length of pipeline; • Pipeline does not pass through the Blair Athol Golf Estate and Monaghan Farms Estate; and • Invert level at pump station is not a constraint on the gravitational section of pipeline.	• Cost of pump station construction and ongoing energy demands; • Construction of pump station is time consuming; • Environmental and technical issues when pump stations fail; • Extremely low gradients in sections of the route.
Alternative Route 3 to Site 2	
Advantages	Disadvantages
• Shorter pipeline length; and • Route does not pass through the Blair Athol Golf Estate and Monaghan Farms Estate.	• Financial implications of tunneling under the Lanseria International Airport; • Possible disruption to operations of the Lanseria Airport; • Time consuming; • Special equipment needed for launching pad; • Pipe cover depth of up to 50m; • Maintenance on pipeline would be cumbersome; and • Dual pipe system is needed.

Provide a description of the alternatives considered

ALTERNATIVE OUTFALL SEWER PIPELINE ROUTES TO SITE 1:

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	Alternative route 1	The gravitational pipeline route starts at the existing Zandspruit pump station, where it traversers along the Western side of the Klein Jukskei River and the Jukskei River, passing the Lanseria Airport and then crosses the Jukskei river and traverses North East where it ends north of Northern Farms at the proposed Lanseria WwTW Site 1.
2	Alternative route 2	This gravitational alternative pipeline route traverses along a similar path as route 1, however it crosses the Klein Jukskei river

		and moves along the Eastern side of the river, traversing within the Diepsloot Nature Reserve (Northern Farms) all the way to the proposed Site 1 WwTW.

ALTERNATIVE OUTFALL SEWER PIPELINE ROUTES TO SITE 2:

1	Alternative route 1	The gravitational pipeline route follows the same route as the above mentioned alternatives, however as it passes Lanseria Airport, it then traverses through Monaghan Farms and Blair Atholl Golf Estate, where it turns back towards the proposed Lanseria WwTW Site 2.
2	Alternative route 2	The pumped pipeline route follows the same route as the aforementioned routes, however it traverses left as soon as it passes the Lanseria Airport and then moves along a straight line towards Site 2. This pipeline is pumped however uses a gravitational pipeline up to Lanseria, but from that point a pump station will be needed to pump to Site 2.
3	Alternative route 3	The tunnelled alternative pipeline route follows the same route as the aforementioned alternatives, however when it reached the Lanseria treatment site, it traverses below ground in a tunnel towards the proposed Site 2, underneath the Airport all the way to the site, however it relies on gravity.

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

[redacted]

4. PHYSICAL SIZE OF THE ACTIVITY

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

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	[redacted]
Alternatives:	
Alternative 1 (if any)	[redacted]
Alternative 2 (if any)	
	Ha/ m^2

or, for linear activities:

ALTERNATIVE PIPELINE ROUTES TO SITE 1

	Length of the activity:
Proposed activity	[redacted]
Alternatives:	
Alternative Route 1	12600 m
Alternative Route 2	13800 m
	m/km

ALTERNATIVE PIPELINE ROUTES TO SITE 2

	Length of the activity:
Proposed activity	[redacted]
Alternatives:	
Alternative Route 1	19161 m
Alternative Route 2	12865 m
Alternative Route 3	13572 m
	m/km

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

ALTERNATIVE PIPELINE ROUTES TO SITE 1

	Size of the site/servitude:
Proposed activity	[redacted]
Alternatives:	
Alternative 1	12600m x 50m= 630000 m^2
Alternative 2	12865m x 50m= 690000 m^2
	Ha/m^2

ALTERNATIVE PIPELINE ROUTES TO SITE 2

	Size of the site/servitude:
Proposed activity	[redacted]
Alternatives:	
Alternative 1	19161m x 50m= 958050 m^2

Alternative 2	12865m x 50m= 644000 m^2
Alternative 3	13572m x 50m= 680000 m^2
	Ha/m^2

5. SITE ACCESS

ALTERNATIVE ROUTES 1 AND 2 TO SITE 1

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

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

Describe the type of access road planned:

All alternative outfall sewer routes to Site 1 have existing roads that will be used for access during construction phase. For further information on all possible access routes, refer to the Traffic Impact Assessment (TIA) provided in **Appendix I3.**

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

ALTERNATIVE ROUTES 1, 2 AND 3 TO SITE 2

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

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

Describe the type of access road planned:

All alternative outfall sewer routes to Site 2 have existing roads that will be used for access during construction phase. For further information on all possible access routes, refer to the TIA provided in **Appendix I3.**

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

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

Section A 6-8 has been duplicated **5** Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

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

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

Refer to **Appendix A1**

R1S1 – Refers to Alternative Route 1 to Site 1
R2S1 – Refers to Alternative Route 2 to Site 1
R1S2 – Refers to Alternative Route 1 to Site 2
R2S2 – Refers to Alternative Route 2 to Site 2
R3S2 – Refers to Alternative Route 3 to Site 2

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

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

Refer to **Appendix A2**

R1S1 – Refers to Alternative Route 1 to Site 1
R2S1 – Refers to Alternative Route 2 to Site 1
R1S2 – Refers to Alternative Route 1 to Site 2
R2S2 – Refers to Alternative Route 2 to Site 2
R3S2 – Refers to Alternative Route 3 to Site 2

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**

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**

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

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

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route [redacted] times

Instructions for completion of Section B for location/route alternatives

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

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

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

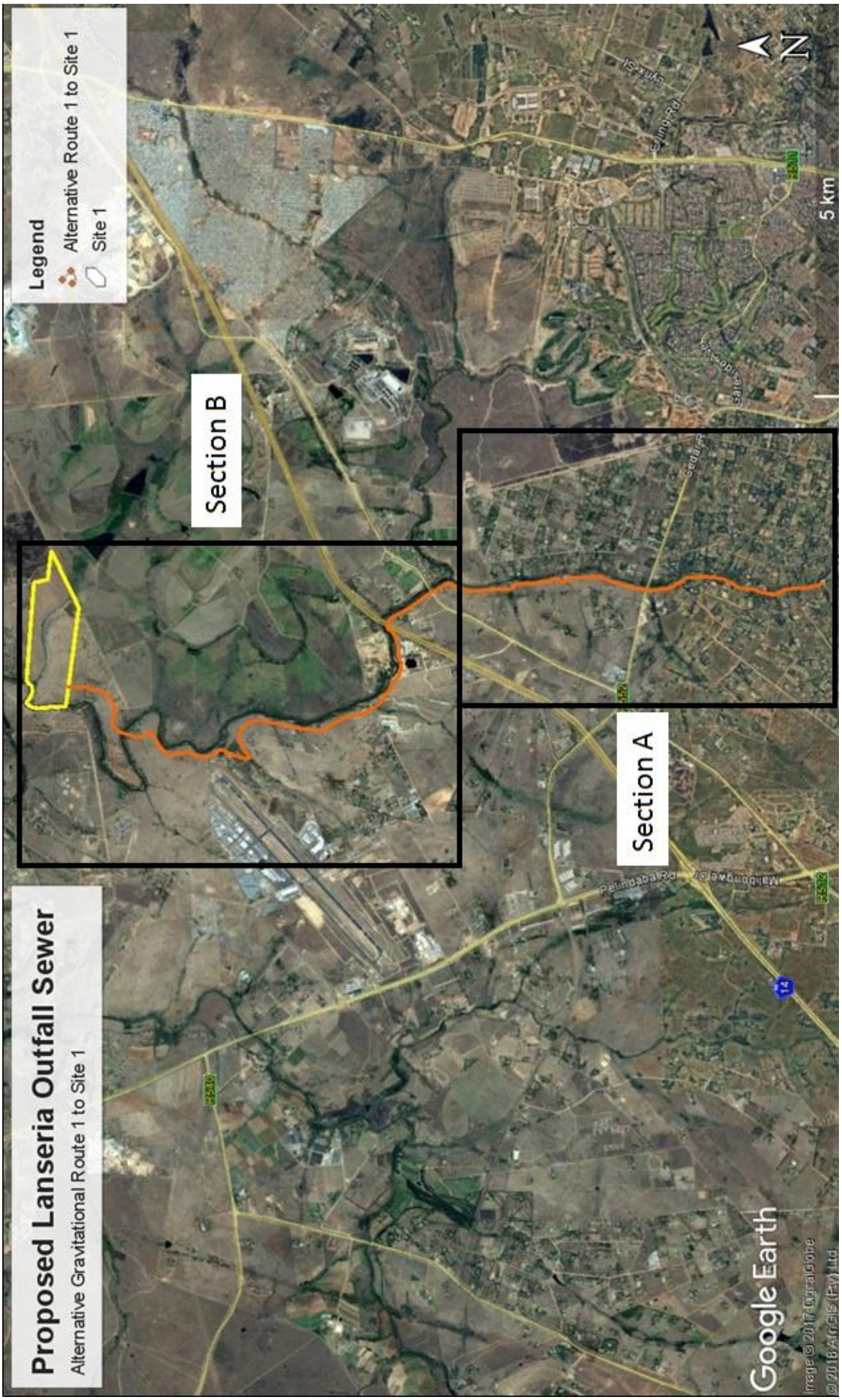
Section B is to be completed and attachments order in the following way

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

Section B - Section of Route **11** (complete only when appropriate for above)

Section B – Location/route Alternative No. **5** (complete only when appropriate for above)

ALTERNATIVE ROUTE 1 TO SITE 1 (GRAVITATIONAL):



SECTION A

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

Alternative:

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

In the case of linear activities:

Alternative 1 – Section A:

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

Latitude (S):	**Longitude (E):**
25.998272º	27.962483º
25.975914º	27.962066º
25.955504º	27.962312º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 1 TO SITE 1 (SECTION A)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**

	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	5	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	4	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	2	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	3	3	0	0	0	0	0
	T	0	J	Q	0	0	2	1	0	0	0	0	0	0	1	4	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:15 – 1:10 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 50	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =30	Veld dominated by alien species % = 0	Landscaped (vegetation) % =5
Sport field % =0	Cultivated land % =0	Paved surface (hard landscaping) % = 5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 3 Ridges along the start of the route, as well as the Chartwell conservancy. This section of the alternative route traverses 5 wetlands.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe			
Qualification(s) of the specialist:	M.Sc. (Botany)			
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg			
Postal code:	2194			
Telephone:	011 781 1730	Cell:	082 783 6724	
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731	
Are any further specialist studies recommended by the specialist?				NO **X**
If YES, specify:				
If YES, is such a report(s) attached?				
If YES list the specialist reports attached below				

Signature of specialist: 

Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland			5. Koppie or ridge
	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	
			29. Graveyard	
			34. Small Holdings	

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

NORTH

	5,34	**1, 7, 34**	**34**	**1, 2, 34**	**34**
	5, 34	**1, 7, 34**	**34**	**2, 5, 34**	**34**
WEST	**34**	**12,13, 14, 34**		**2, 13, 14, 34**	**34** EAST
	5, 34	**29, 34**	**34**	**2, 34**	**34**
	34	**34**	**34**	**2, 34**	**34**

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

A small informal burial ground is located along the first part of this section that traverses through Farmall. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west. This route however falls outside the recommended 20m buffer for the identified graves, thus a permit will not be applied for. Please refer to the Heritage Impact Assessment (HIA) in **Appendix G4.**

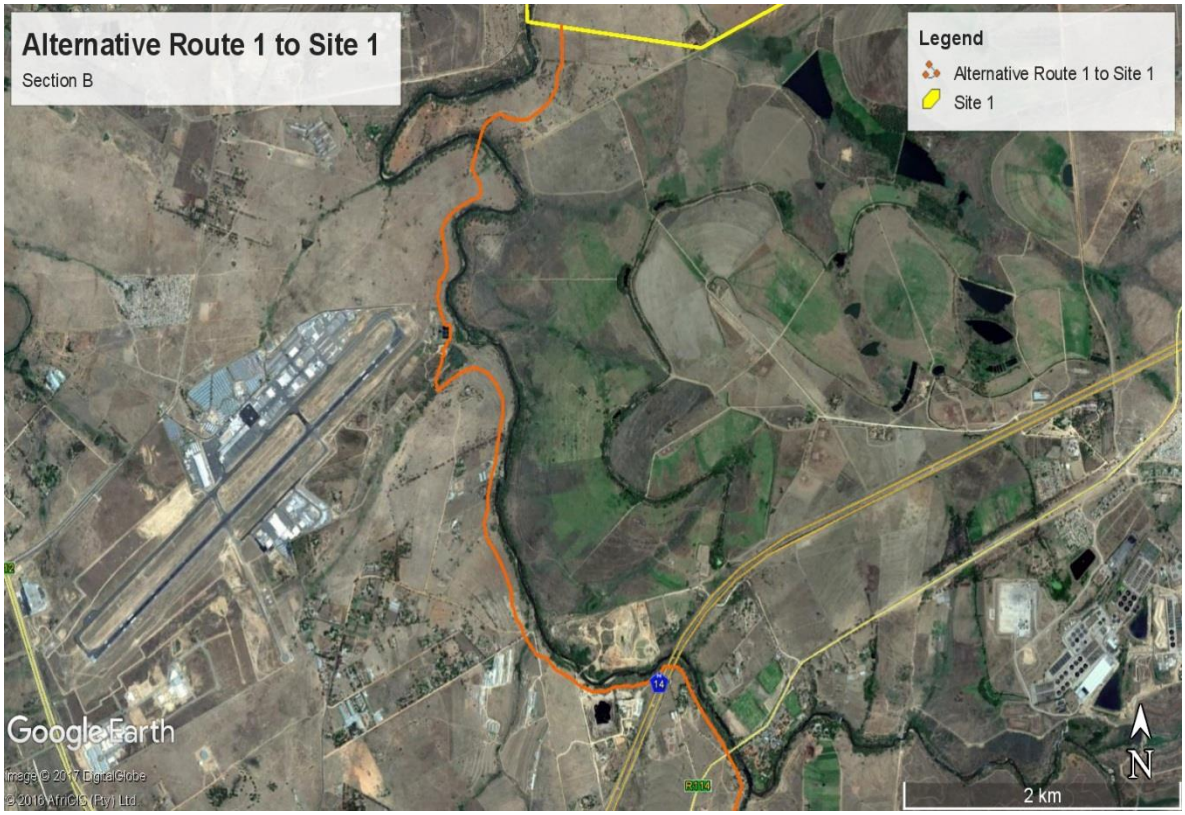
If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

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

A small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west. This route however falls outside the recommended 20m buffer for the identified graves, thus a permit will not be applied for. Please refer to the HIA in **Appendix G4.**

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

SECTION B



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 1 – Section B:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.955504º	27.962312º
• Middle point of the activity	25.933095º	27.944924º
• End point of the activity	25.912013º	27.949267º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	6
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	4
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	9	5

ALT 1 TO SITE 1	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**1**	**3**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**3**	**0**	**0**	**0**	**5**	**0**
(SECTION B)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**3**	**0**	**0**	**0**	**5**	**3**
	T	**0**	**J**	**Q**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**2**
	T	**0**	**J**	**Q**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**0**	**0**	**0**	**0**	**0**	**3**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**0**	**0**	**0**	**0**	**0**	**8**
	T	**0**	**J**	**Q**	**0**	**1**	**1**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	**3**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	**8**	**0**	**0**	**0**	**2**	**7**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**0**	**3**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**3**	**4**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**3**	**3**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**3**	**2**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**2**	**0**	**0**	**0**	**3**	**1**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

	NO **X**

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 65	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =5	Landscaped (vegetation) % =0
Sport field % =0	Cultivated land % =15	Paved surface (hard landscaping) % =5	Building or other structure % =0	Bare soil % =0

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

YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 1 Ridges along the route, Diepsloot Nature Reserve which is adjacent to this route. This section of the route crosses 3 wetlands, and a river. Thus Alternative 1 for Site 1 will traverse nine (9) wetlands and the Jukskei River in total. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg. The top section of this route also falls within the Magaliesberg Biosphere Buffer Zone, where activities within the buffer zone involve conservation and maintenance of ecosystems, nature based recreation, eco-tourism, primary dwellings, new developments and small resorts coupled to conservation areas that are compliant with the EIA Regulations.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731

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

If YES, specify:

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

If YES list the specialist reports attached below

Signature of specialist:  Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area		5. Koppie or ridge
6. Dam or reservoir	7. Agriculture			
		13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities

	22. Airport[N]			25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]				
			34. Small Holdings	
Other land uses (describe):	36. Quarry			

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

NORTH

7	**1, 2, 34**	**34**	**7, 34**	**1,7, 34**
5,22	**5, 34**	**1, 2, 7,34**	**2, 3, 5**	**3**
7,22	**6,22, 26**		**2, 3, 36**	**3**
7,13,14, 34	**7,14,**	**1,2**	**2, 3, 36**	**3, 15**
7, 34	**7,15, 34**	**25**	**2,19, 20**	**11,13, 19, 20**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

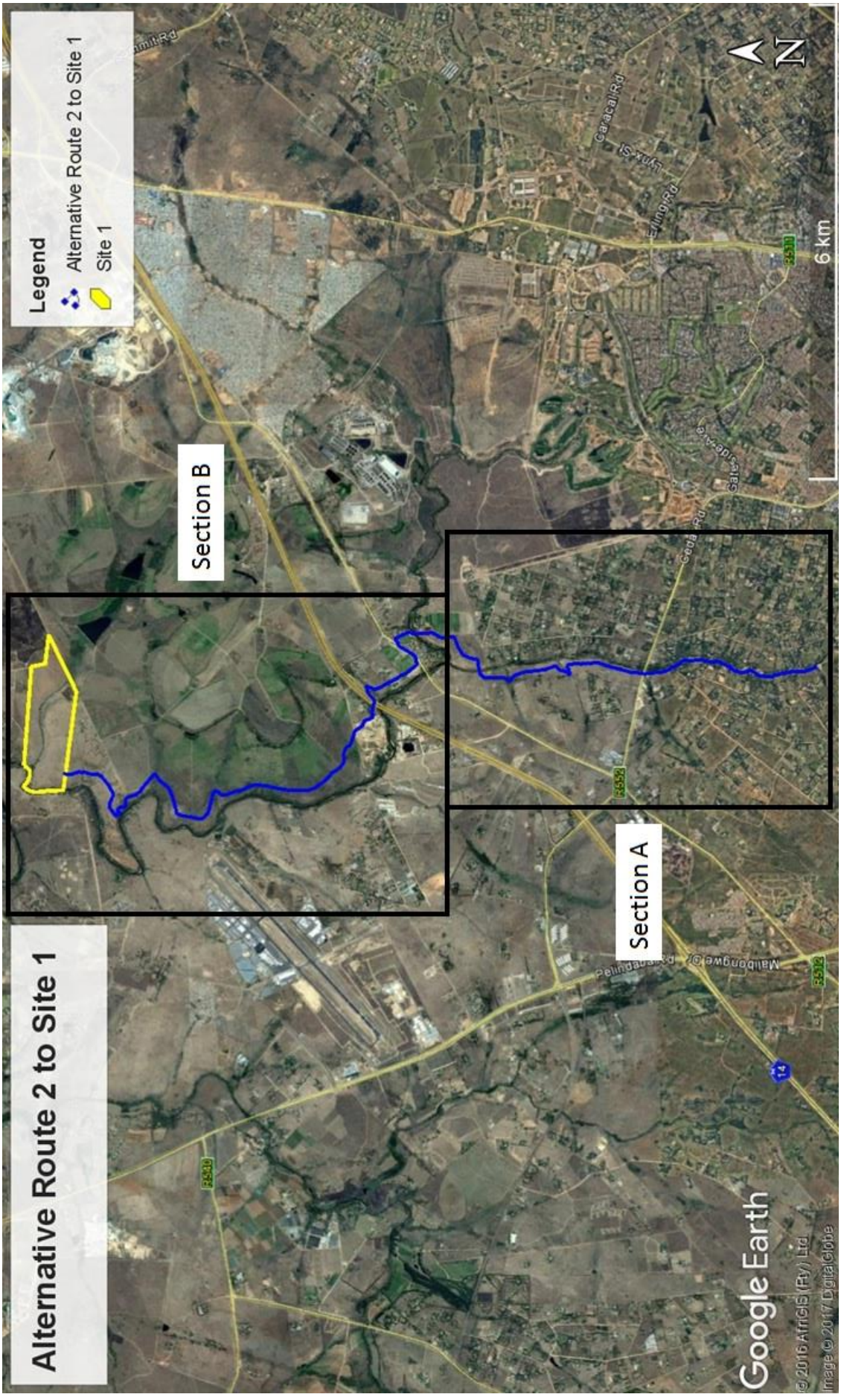
Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? If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

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

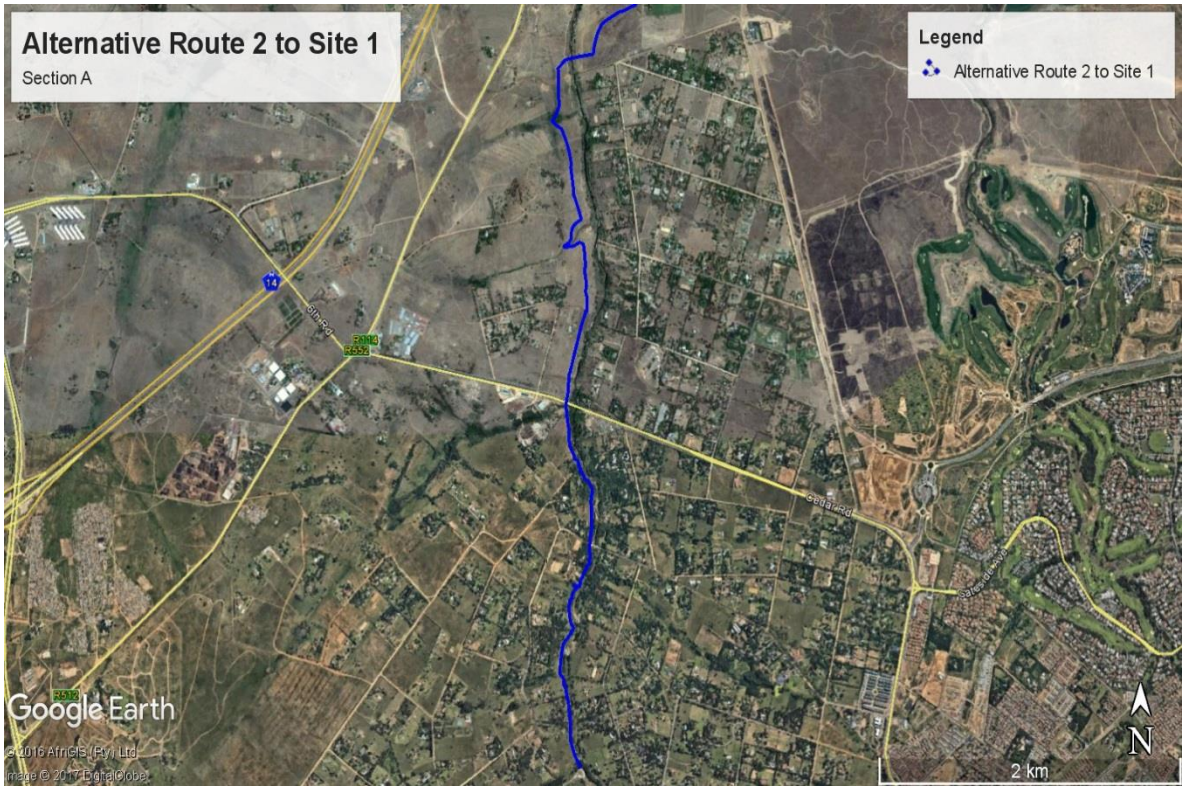
Briefly explain the findings of the specialist if one was already appointed:

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

ALTERNATIVE ROUTE 2 TO SITE 1 (GRAVITATIONAL):



SECTION A:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 2 – Section A:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.998272º	27.962483º
• Middle point of the activity	25.972665º	27.963141º
• End point of the activity	25.956383º	27.966287º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 2 TO SITE 1 (SECTION A)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**

	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	4	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	2	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	3	3	0	0	0	0	0
	T	0	J	Q	0	0	2	1	0	0	0	0	0	0	1	4	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	2	4

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:15 – 1:10 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 50	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =30	Veld dominated by alien species % = 0	Landscaped (vegetation) % =5
Sport field % =0	Cultivated land % =0	Paved surface (hard landscaping) % = 5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 3 Ridges along the start of the route, as well as the Chartwell conservancy. This section of the alternative route traverses 5 wetlands.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731

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

If YES list the specialist reports attached below

Signature of specialist:		Date:	22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland			5. Koppie or ridge
	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	
			29. Graveyard	
			34. Small Holdings	

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

NORTH

5,34	**1, 7, 34**	**34**	**1, 2, 34**	**34**
5, 34	**1, 7, 34**	**34**	**2, 5, 34**	**34**
34	**12,13, 14, 34**		**2, 13, 14, 34**	**34**
5, 34	**29, 34**	**34**	**2, 34**	**34**
34	**34**	**34**	**2, 34**	**34**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
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Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
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(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

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

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

This proposed route is found close to two heritage sites:

Near the beginning of this section, the proposed pipeline traverses a small informal burial ground. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north on the western side opposite Chartwell North, the pipeline traverses a small informal burial ground that consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west.

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:

This proposed route is found close to two heritage sites:

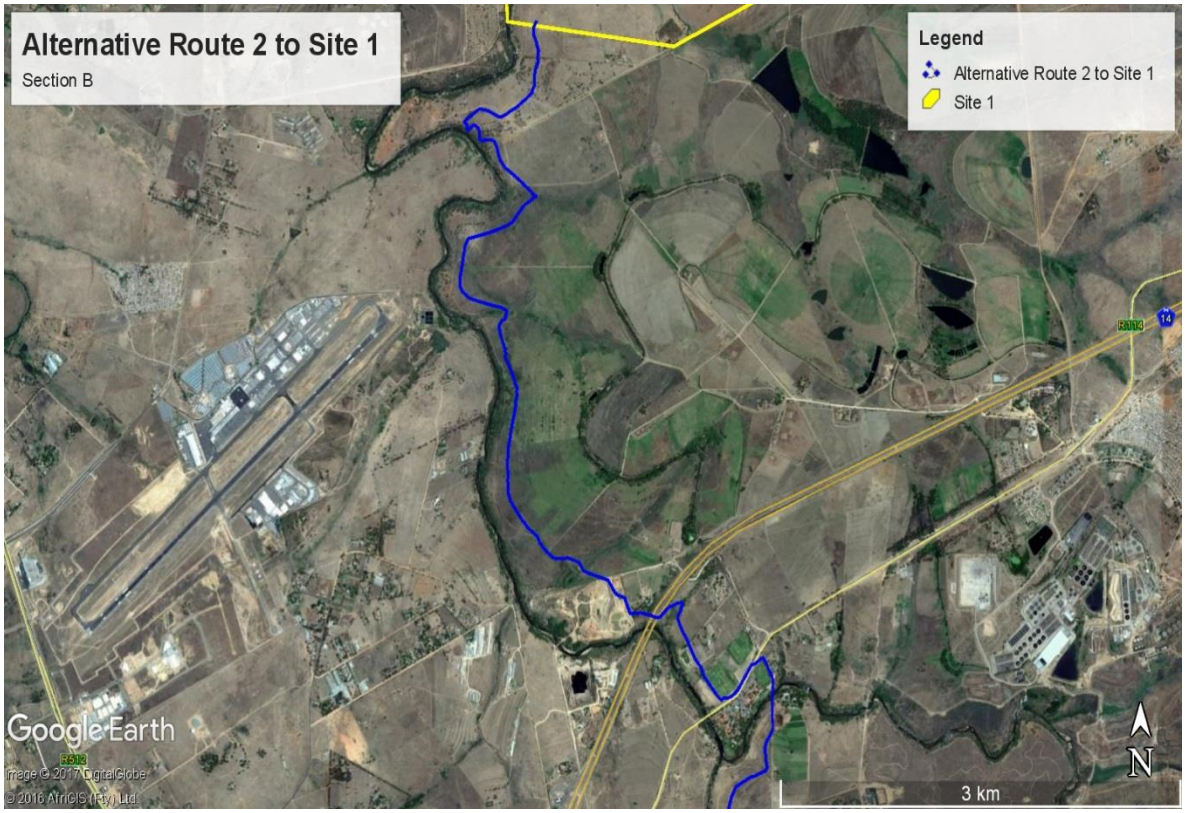
Near the beginning of the section that traverses Farmall on the western side, the pipeline moves through a small informal burial ground. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north on the western side opposite Chartwell North, the pipeline traverses a small informal burial ground that consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west.

Please refer to the HIA in **Appendix G4.**

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

SECTION B:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 2 – Section B:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.956383º	27.966287º
• Middle point of the activity	25.938071º	27.946842º
• End point of the activity	25.911845º	27.948987º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT 2 TO SITE 1 (SECTION B)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**7**	**9**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**2**	**4**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**6**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**1**	**7**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**8**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**9**

	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	4
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	3	4
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	3	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	3	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	3	1

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		Plain **X**	Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 15	Natural veld with scattered aliens % =50	Natural veld with heavy alien infestation % =20	Veld dominated by alien species % = 0	Landscaped (vegetation) % = 0
Sport field % =5	Cultivated land % = 0	Paved surface (hard landscaping) % =5	Building or other structure % = 0	Bare soil % =5

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

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 Ridge along the route, and traverses the Diepsloot Nature Reserve which are protected area under the Gauteng Ridge Policy and NEMPAA. This section crosses 4 wetlands, as well as the Jukskei River and the Klein Jukskei River. Thus alternative 2 for Site 1 will traverse nine (9) wetlands in total, including both the Jukskei and Klein-Jukskei Rivers will be traversed. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg. The top section of this route also falls within the Magaliesberg Biosphere Buffer Zone, where activities within the buffer zone involve conservation and maintenance of ecosystems, nature based recreation, eco-tourism, primary dwellings, new developments and small resorts coupled to conservation areas that are compliant with the EIA Regulations.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731

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

If YES list the specialist reports attached below

Signature of specialist:		Date:	22/05/2017

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

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6. Dam or reservoir	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities
	22. Airport[N]			25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]				
			34. Small Holdings	
	35. Quarry			

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

NORTH

	2, 34	**2, 7, 34**	**2**	**1, 7, 34**	**3**
	22, 27	**2**	**7, 34**	**3**	**3**
WEST	**7, 34**	**2, 13, 14, 35**		**1,3**	**34** EAST
	7, 34	**2, 35**	**2**	**1**	**34**
	34, 14	**2, 34**	**2, 25**	**19, 20**	**19,20**

SOUTH

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

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(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

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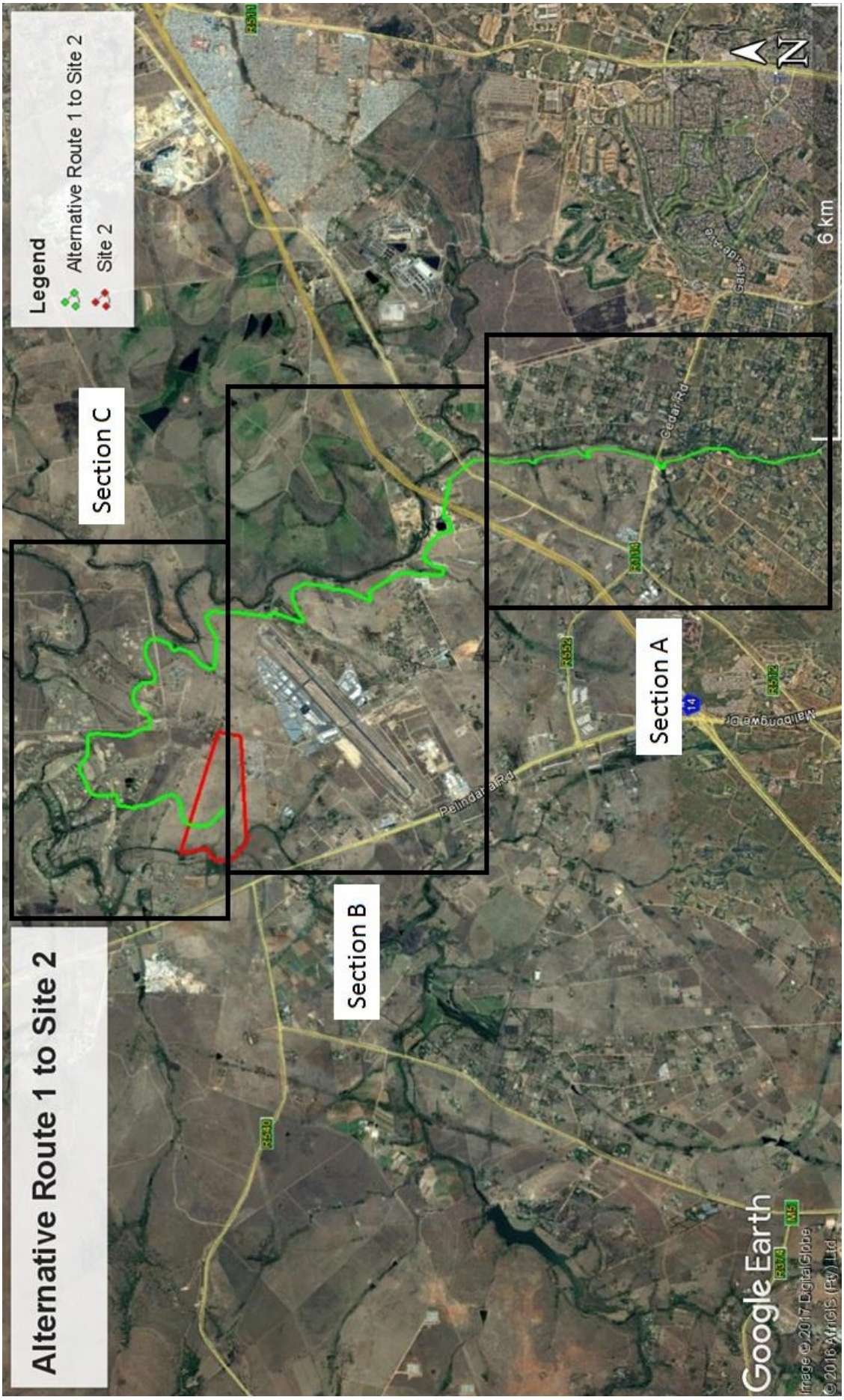
Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? If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

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

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

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

ALTERNATIVE ROUTE 1 TO SITE 2 (GRAVITATIONAL)



SECTION A:

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 1 – Section A:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.998272º	27.962483º
• Middle point of the activity	25.977488º	27.961667º
• End point of the activity	25.955346º	27.961400º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 1 TO SITE 2 (SECTION A)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**

	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	4	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	2	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	3	3	0	0	0	0	0
	T	0	J	Q	0	0	2	1	0	0	0	0	0	0	1	4	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:15 – 1:10 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 50	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =30	Veld dominated by alien species % = 0	Landscaped (vegetation) % =5
Sport field % =0	Cultivated land % =0	Paved surface (hard landscaping) % = 5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 3 Ridges along the start of the route, as well as the Chartwell conservancy. This section of the alternative route will traverse 5 wetlands.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe			
Qualification(s) of the specialist:	M.Sc. (Botany)			
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg			
Postal code:	2194			
Telephone:	011 781 1730	Cell:	082 783 6724	
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731	
Are any further specialist studies recommended by the specialist?			NO X	
If YES, specify:				
If YES, is such a report(s) attached?			NO X	

If YES list the specialist reports attached below

Signature of specialist:  Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland			5. Koppie or ridge
	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	
			29. Graveyard	
			34. Small Holdings	

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

NORTH

5,34	**1, 7, 34**	**34**	**1, 2, 34**	**34**
5, 34	**1, 7, 29, 34**	**34**	**2, 5, 34**	**34**
34	**12,13, 14,25, 34**		**2, 13, 14, 25, 34**	**34**
5, 34	**29, 34**	**34**	**2, 34**	**34**
34	**34**	**34**	**2, 34**	**34**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

This proposed route is found traverses two heritage sites:

Near the beginning of this section in Farmall, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north, a small informal burial ground is traversed by the proposed pipeline. It consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west.

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:

This proposed route is found close to two heritage sites:

Near the beginning of this section, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north, a small informal burial ground is traversed by the proposed pipeline. It consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west. Due to the proposed pipeline falling within 20m buffer, a permit will be required.

Please refer to the Heritage Impact Assessment (HIA) in **Appendix G4.**

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)? If yes, please attached the comments from SAHRA in the appropriate Appendix		NO **X**
	YES **X**	

SECTION B:

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 1 – Section B:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.955346º	27.961400º
• Middle point of the activity	25.945129º	27.944981º
• End point of the activity	25.927483º	27.940086º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 1 TO SITE 2 (SECTION B)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**6**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**5**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**5**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**4**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**9**	**6**

	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	9	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	1	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	3	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	3	0	0	0	5	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	3	0	0	0	5	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	3
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	3	0	0	0	0	2
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	2	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	1	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	0	0	0	0	0	0
	T	0	J	Q	0	1	1	8	0	0	0	0	0	1	8	3	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	7

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Plain **X**	Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 65	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =0	Veld dominated by alien species % =5	Landscaped (vegetation) % = 0
Sport field % =0	Cultivated land % =15	Paved surface (hard landscaping) % =5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 1 Ridge along the route, which is a protected ridge under the Gauteng Ridge Policy. This section traverses 3 wetlands. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg. The top section of this route also falls within the Magaliesberg Biosphere Buffer Zone, where activities within the buffer zone involve conservation and maintenance of ecosystems, nature based recreation, eco-tourism, primary dwellings, new developments and small resorts coupled to conservation areas that are compliant with the EIA Regulations.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	Avhafarei@nemai.co.za	Fax:	011 781 1731

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

If YES list the specialist reports attached below

Signature of specialist:  Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area		5. Koppie or ridge
6. Dam or reservoir	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities
	22. Airport[N]			25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]				
			34. Small Holdings	
Other land uses (describe):	36. Quarry			

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

NORTH

7	**1, 2, 34**	**34**	**7, 34**	**1,7, 34**
5,22	**5, 34**	**1, 2, 7,34**	**2, 3, 5**	**3**
7,22	**6,22, 26**		**2, 3**	**3**
7,13,14, 34	**7,14, 31, 36**	**1,2**	**2, 3**	**3, 15**
7, 34	**7,15, 34**	**25**	**2,19, 20**	**11,13, 19, 20**

WEST

EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

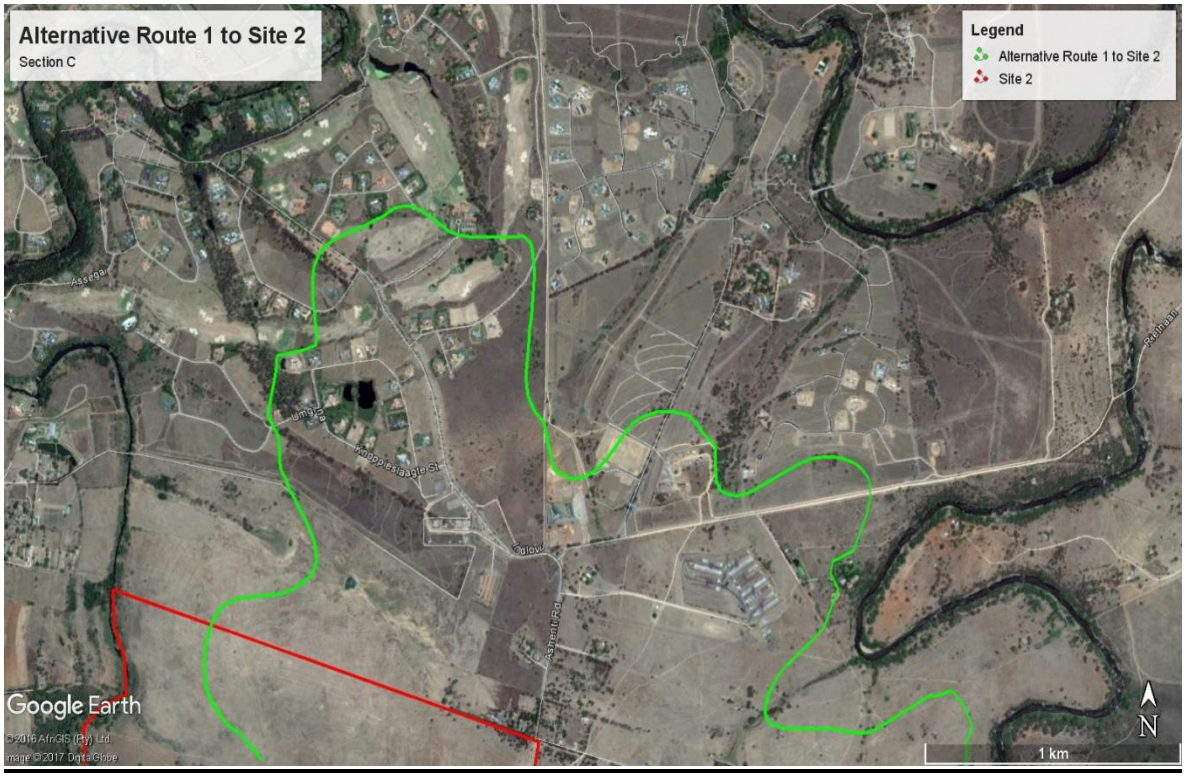
Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? If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

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

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

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

SECTION C:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 1 – Section C:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.927483º	27.940086º
• Middle point of the activity	25.913943º	27.926604º
• End point of the activity	25.924323º	27.912709º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT 1 TO SITE 2 (SECTION C)	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	0	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	1	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	2	0	0	0	0	4
	T	0	J	Q	0	1	8	1	0	0	0	0	0	2	3	6	0	0	0	0	0

	T	0	J	Q	0	1	8	1	0	0	0	0	0	2	3	7	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	8	0	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	7	9	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	5	9	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	6	0	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	6	2	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	6	9	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	6	8	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	7	1	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	7	2	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	7	3	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	1	7	7	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	4	9	4	0	0	0	3	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	4	9	4	0	0	0	2	9
	T	0	J	Q	0	1	6	4	0	0	0	0	0	5	0	4	0	0	0	0	0
	T	0	J	Q	0	1	6	4	0	0	0	0	0	4	5	4	0	0	0	0	0
	T	0	J	Q	0	1	6	4	0	0	0	0	0	0	0	9	0	0	0	0	0
	T	0	J	Q	0	1	6	4	0	0	0	0	0	5	0	3	0	0	0	0	0
	T	0	J	Q	0	1	6	4	0	0	0	0	0	4	6	3	0	0	0	0	0
	T	0	J	Q	0	1	6	4	0	0	0	0	0	0	1	0	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	0	7	6	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	0	8	1	0	0	0	0	0
	T	0	J	Q	0	1	8	1	0	0	0	0	0	0	6	8	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	0	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**	Valley **X**		Undulating plain/low hills **X**	

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

b) are any caves located on the site(s)

	NO **X**

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

	NO **X**

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 45	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =5	Veld dominated b y alien species % =10	Landscaped (vegetation) % =15
Sport field % =5	Cultivated land % =0	Paved surface (hard landscaping) % =10	Building or other structure % =0	Bare soil % =0

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

YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

YES	
X	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as a large Class 1 Ridge along the route. This section of the route traverses 7 wetlands. Thus alternative 1 to Site 2 does not traverse any river systems, but a total of 15 wetlands will be traversed. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg. The top section of this route also falls within the Magaliesberg Biosphere Buffer Zone, where activities within the buffer zone involve conservation and maintenance of ecosystems, nature based recreation, eco-tourism, primary dwellings, new developments and small resorts coupled to conservation areas that are compliant with the EIA Regulations.

Was a specialist consulted to assist with completing this section

YES	
X	

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731

Are any further specialist studies recommended by the specialist?

	NO **X**

If YES, specify:

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

	NO **X**

If YES list the specialist reports attached below

Signature of specialist: 

Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area		5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential		10. Informal residential
	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities
21. Golf course/polo fields				25. Major road (4 lanes or more)[N]

	29. Graveyard	30. Archeological site
	34. Small Holdings	

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

NORTH

8, 21, 34	**8, 21, 34**	**8, 34**	**1, 34**	**34**
8, 21, 34	**8, 21, 34**	**8, 21,34**	**34**	**1, 34**
8, 21, 34	**6, 13, 21, 34**		**1, 34,20**	**2, 7, 34**
1, 7, 34	**1, 7, 34**	**13, 19, 20**	**13, 19, 20**	**2, 7, 34**
1, 7, 34	**1, 10, 34**	**7, 34**	**14, 15**	**2, 7, 34**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

This proposed route section is found close to two heritage sites:

At the first site, a possible grave occurs at this location. A rock packed feature occurs with an east to west orientation which is typical of graves. The feature occurs under a small clump of trees.

The second site, the remains of a small stone walled structure occurs at this location. The structure is rectangular in shape and consists of stone packed walls which have collapsed. There are two small rooms, one of about 5x5 m and a second room attached which measures about 2x1 m

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:

This proposed route section is found close to two heritage sites:

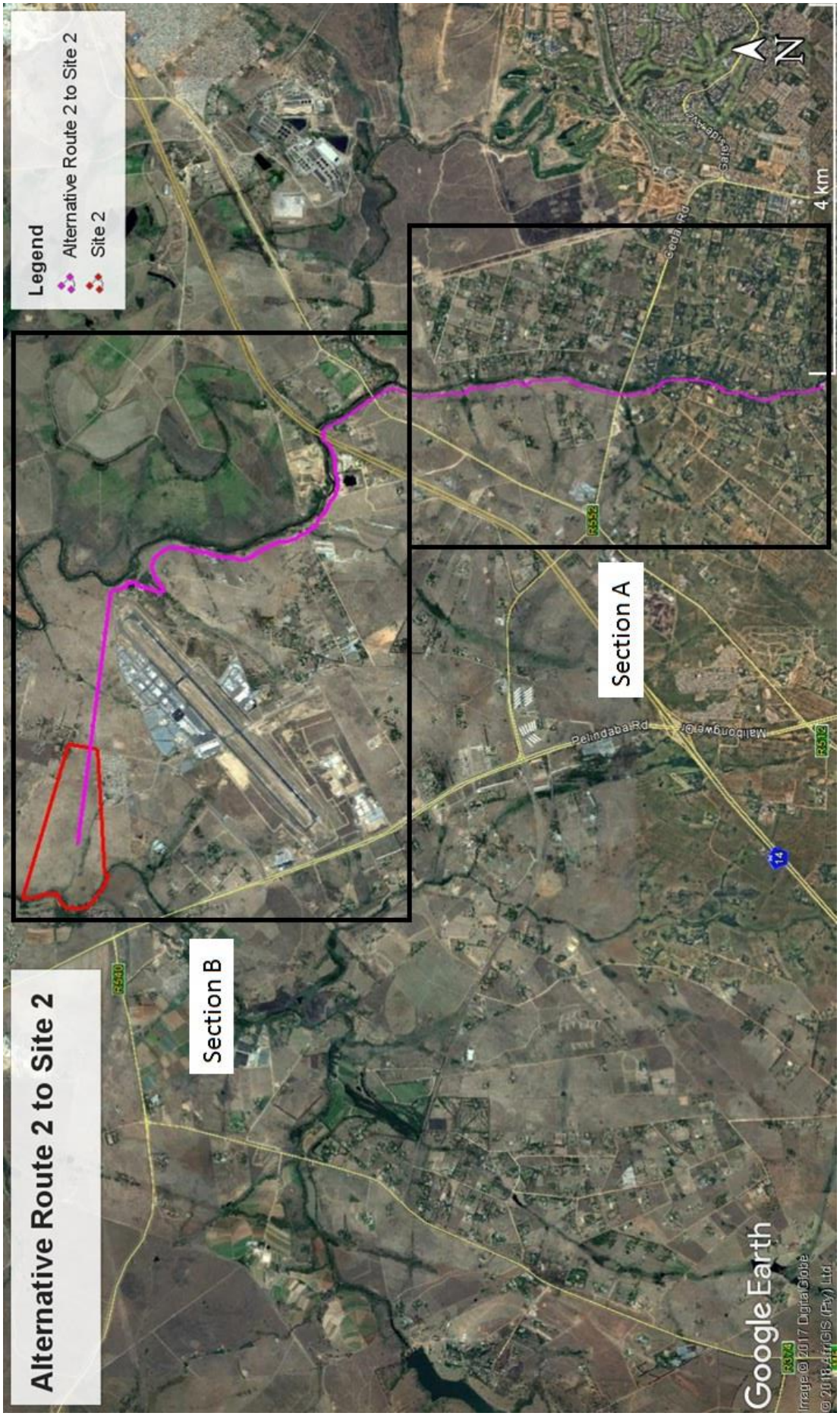
At the first site, a possible grave occurs at this location. A rock packed feature occurs with an east to west orientation which is typical of graves. The feature occurs under a small clump of trees.

The second site, the remains of a small stone walled structure occurs at this location. The structure is rectangular in shape and consists of stone packed walls which have collapsed. There are two small rooms, one of about 5x5 m and a second room attached which measures about 2x1 m. These structures will be traversed by the pipeline thus a permit is required.

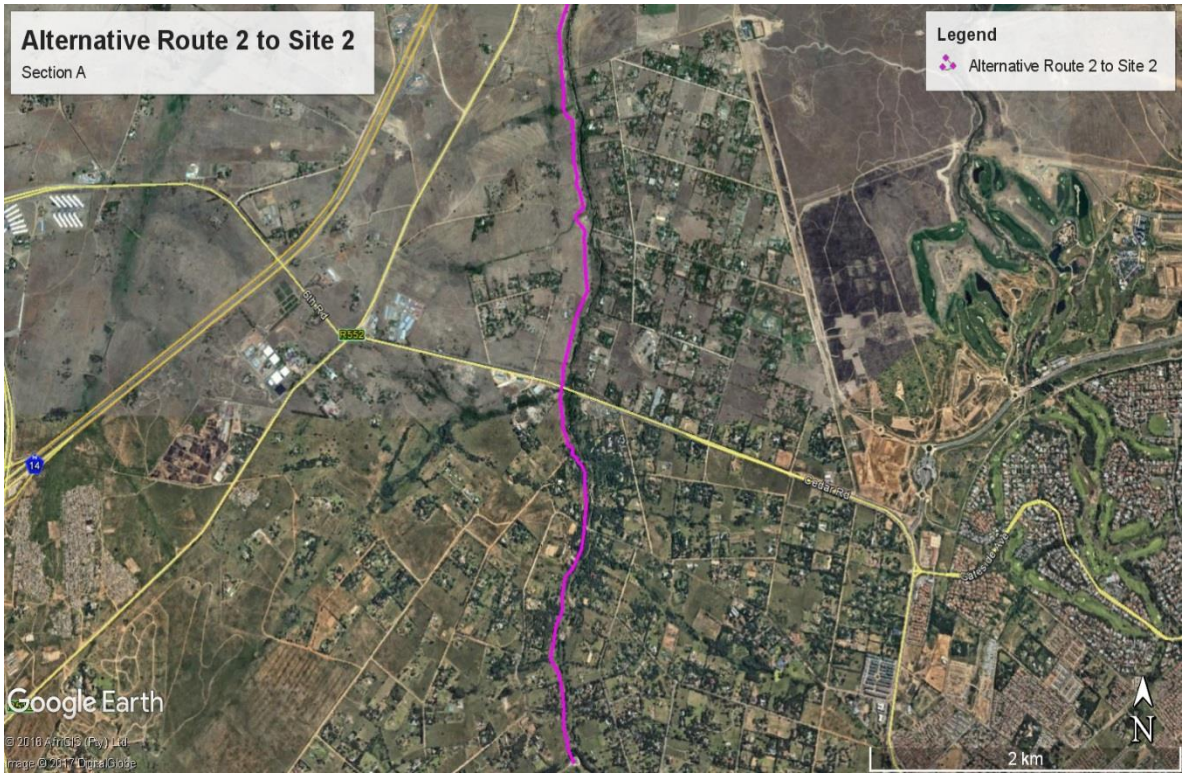
Please refer to the HIA in **Appendix G4.**

Will any building or structure older than 60 years be affected in any way?	YES **X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If yes, please attached the comments from SAHRA in the appropriate Appendix	YES **X**

ALTERNATIVE ROUTE 2 TO SITE 2 (GRAVITATIONAL AND PUMPED):



SECTION A:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 2 – Section A:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.998272º	27.962483º
• Middle point of the activity	25.977094º	27.961903º
• End point of the activity	25.956559º	27.961840º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 2 TO SITE 2 (SECTION A)	T	0	J	Q	0	0	0	9	0	0	0	0	0	1	2	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	1	0	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	9	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	8	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	7	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	6	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	5	0	0	0	0	0

	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	4	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	2	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	3	3	0	0	0	0	0
	T	0	J	Q	0	0	2	1	0	0	0	0	0	0	1	4	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:15 – 1:10 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 50	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =30	Veld dominated by alien species % = 0	Landscaped (vegetation) % =5
Sport field % =0	Cultivated land % =0	Paved surface (hard landscaping) % = 5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 3 Ridges along the start of the route, as well as the Chartwell conservancy. This section of the route will traverse 6 wetlands.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe
Qualification(s) of the specialist:	M.Sc. (Botany)

Postal address:	147 Bram Fischer Drive, Ferndale, Randburg			
Postal code:	2194			
Telephone:	011 781 1730	Cell:	082 783 6724	
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731	
Are any further specialist studies recommended by the specialist?				NO **X**
If YES, specify:	[redacted]			
If YES, is such a report(s) attached?				NO **X**

If YES list the specialist reports attached below

[redacted]

Signature of specialist: _____ Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	[redacted]		5. Koppie or ridge
[redacted]	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	
			29. Graveyard	
			34. Small Holdings	

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

NORTH

5,34	**1, 7, 34**	**34**	**1, 2, 34**	**34**
5, 34	**1, 7, 34**	**34**	**2, 5, 34**	**34**
34	**12,13, 14,25, 34**		**2, 13, 14, 25, 34**	**34**
5, 34	**29, 34**	**34**	**2, 34**	**34**
34	**34**	**34**	**2, 34**	**34**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

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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.

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

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Total	**100%**	**100%**	**100%**

Education
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Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
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(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

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

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

This proposed route is found close to one heritage site:

Near the beginning of this section, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

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:

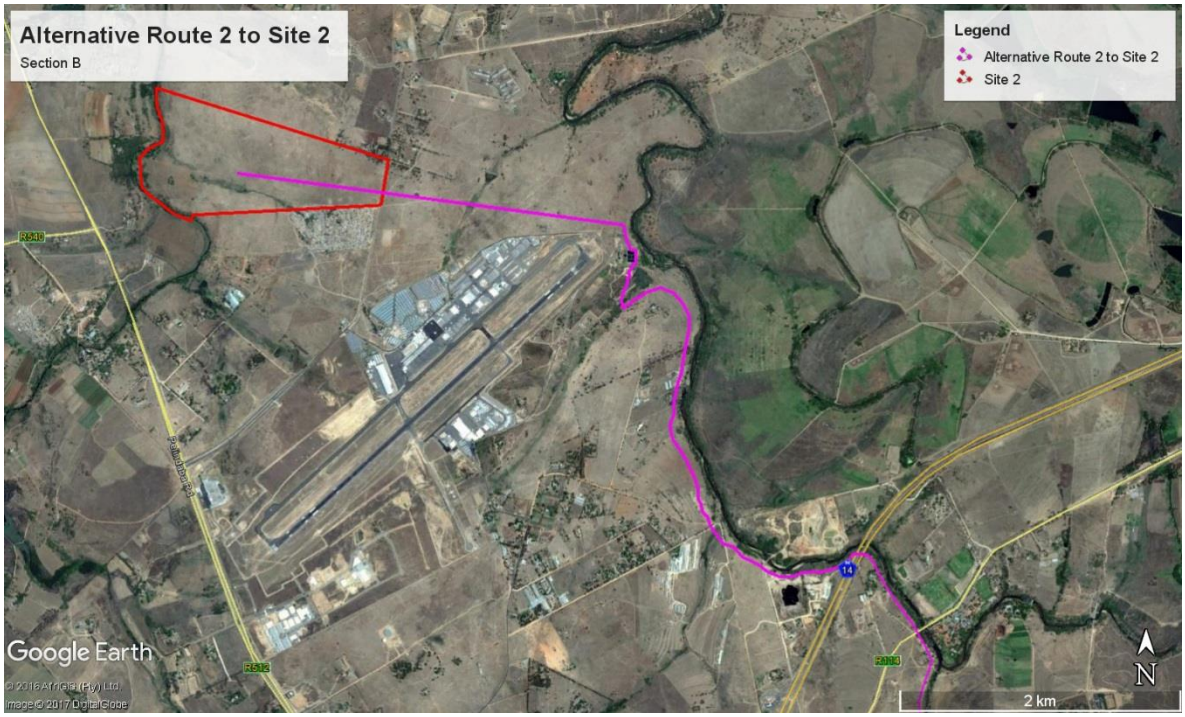
This proposed route is found close to one heritage site:

Near the beginning of this section, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Please refer to the Heritage Impact Assessment (HIA) in **Appendix G4.**

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

SECTION B:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 2 – Section B:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.956559º	27.961840º
• Middle point of the activity	25.934986º	27.944886º
• End point of the activity	25.924290º	27.912735º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 2 OF SITE 2 (SECTION B)	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	4	4
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	9	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	1	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	3	0	0	0	5	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	3	0	0	0	5	3
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	3	0	0	0	0	2

	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	2	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	1	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	0	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	8
	T	0	J	Q	0	1	1	8	0	0	0	0	0	1	8	3	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	2	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	6	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	7	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	0	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		Plain **X**	Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 40	Natural veld with scattered aliens % =35	Natural veld with heavy alien infestation % =5	Veld dominated b y alien species % =0	Landscaped (vegetation) % =0
Sport field % =0	Cultivated land % =10	Paved surface (hard landscaping) % =5	Building or other structure % =0	Bare soil % =5

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

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 1 Ridge along the route, governed under the Gauteng Ridges Policy. This section of the route will traverse 4 wetlands. Thus alternative 2 to Site 2 does not traverse any river systems, but a total of 10 wetlands will be traversed, which are CoJ and NFEPA wetlands. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg.

Was a specialist consulted to assist with completing this section			YES **X**	
If yes complete specialist details				
Name of the specialist:	Avhafarei Ronald Phamphe			
Qualification(s) of the specialist:	M.Sc. (Botany)			
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg			
Postal code:	2194			
Telephone:	011 781 1730	Cell:	082 783 6724	
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731	
Are any further specialist studies recommended by the specialist?				NO **X**
If YES, specify:				
If YES, is such a report(s) attached?				NO **X**
If YES list the specialist reports attached below				

Signature of specialist:  Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities
	22. Airport[N]			25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]		29. Graveyard	30. Archeological site
			34. Small Holdings	
Other land uses (describe):	35. Quarry			

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

NORTH

7, 34	**1, 2, 34**	**34**	**7, 34**	**1,7, 34**
5,9,22,	**5, 10, 34, 22**	**1, 2, 7,34**	**2, 3, 5**	**3**
7,22,34	**6,22,**		**2, 3, 26**	**3**
7,13,14, 34	**7,14, 31**	**1,2**	**2, 3**	**3, 15**
7, 34	**7,15, 34**	**25**	**2,19, 20, 25,35**	**11,13, 19, 20**

WEST EAST

SOUTH

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

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

Have specialist reports been attached	YES	
	X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

This proposed route section is found close to one heritage site:

The section which traverses parallel to the Lanseria Airport, contains the remains of a small dwelling. Only the foundation and a few bricks remain. The structure occurs between small clumps of trees and is about 5x5m.

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.

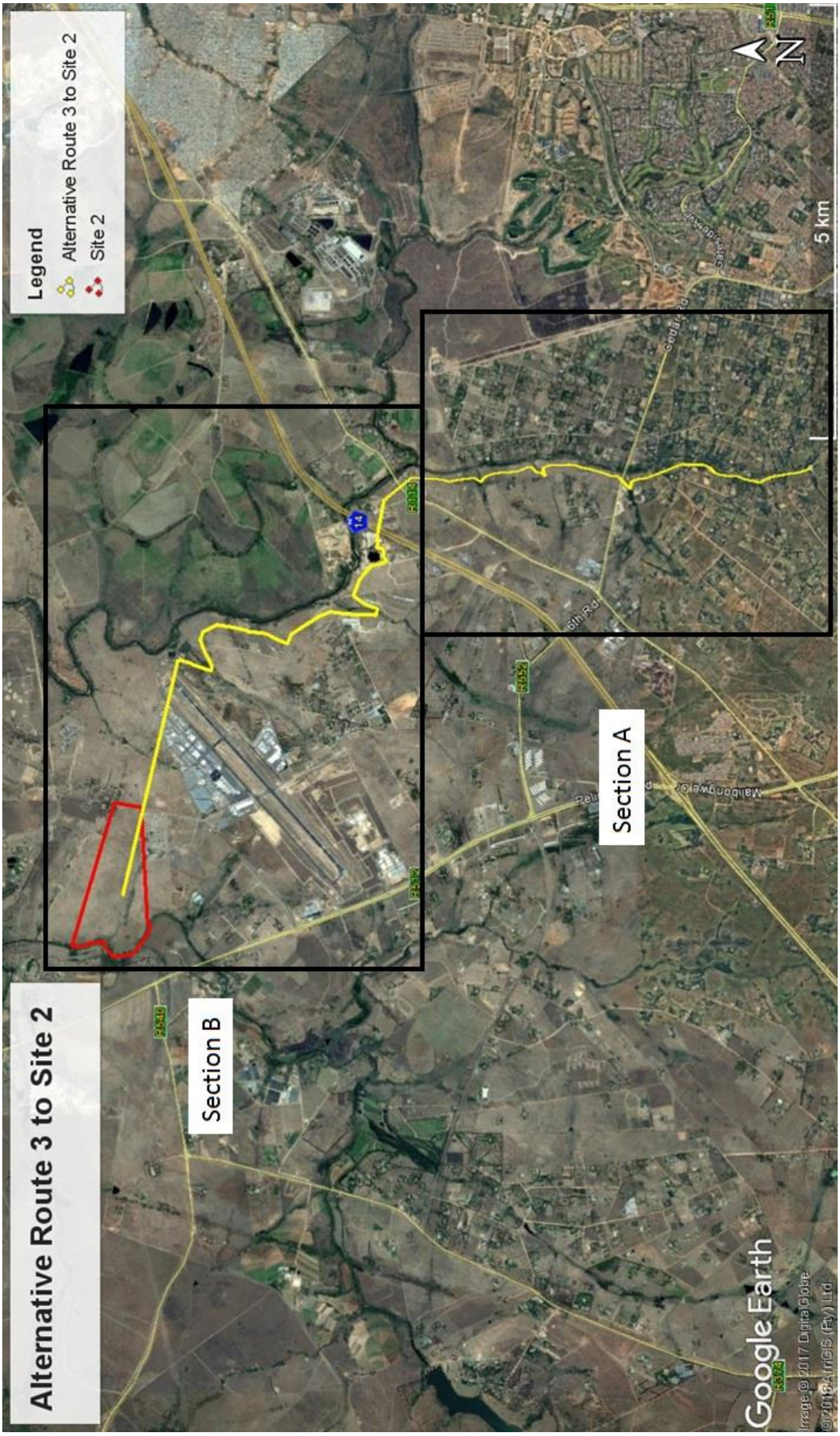
Briefly explain the findings of the specialist if one was already appointed:

This proposed route section is found close to one heritage site:

The section which traverses parallel to the Lanseria Airport, contains the remains of a small dwelling. Only the foundation and a few bricks remain. The structure occurs between small clumps of trees and is about 5x5m. The proposed pipeline traverses the small dwelling, a permit will be required.

Will any building or structure older than 60 years be affected in any way?	YES **X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If yes, please attached the comments from SAHRA in the appropriate Appendix	YES **X**

ALTERNATIVE ROUTE 3 TO SITE 2 (TUNNELED):



SECTION A:

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large number of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative 3 – Section A:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.998272º	27.962483º
• Middle point of the activity	25.977094º	27.961903º
• End point of the activity	25.956559º	27.961840º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 3 TO SITE 2 (SECTION A)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**

	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	4	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	3	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	2	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	0	3	3	0	0	0	0	0
	T	0	J	Q	0	0	2	1	0	0	0	0	0	0	1	4	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	7
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	3
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	5	1
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	7	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	3	5	0	0	0	3	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:15 – 1:10 **X**	

4. LOCATION IN LANDSCAPE

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

	Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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 **X**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 50	Natural veld with scattered aliens % =10	Natural veld with heavy alien infestation % =30	Veld dominated by alien species % = 0	Landscaped (vegetation) % =5
Sport field % =0	Cultivated land % =0	Paved surface (hard landscaping) % = 5	Building or other structure % = 0	Bare soil % = 0

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	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**	

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area.

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 4 and Class 3 Ridges along the start of the route, as well as the Chartwell conservancy. In this section of the route, 5 wetlands are traversed.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe

Qualification(s) of the specialist:	M.Sc. (Botany)			
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg			
Postal code:	2194			
Telephone:	011 781 1730	Cell:	082 783 6724	
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731	
Are any further specialist studies recommended by the specialist?			NO **X**	
If YES, specify:				
If YES, is such a report(s) attached?			NO **X**	

If YES list the specialist reports attached below

Signature of specialist: Date: 22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland			5. Koppie or ridge
	7. Agriculture			
	12. Retail	13. Offices	14. Commercial & warehousing	
			29. Graveyard	
			34. Small Holdings	

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

NORTH

5,34	**1, 7, 34**	**34**	**1, 2, 34**	**34**
5, 34	**1, 7, 29, 34**	**34**	**2, 5, 34**	**34**
34	**12,13, 14,25, 34**		**2, 13, 14, 25, 34**	**34**
5, 34	**29, 34**	**34**	**2, 34**	**34**
34	**34**	**34**	**2, 34**	**34**

WEST EAST

SOUTH

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

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

Have specialist reports been attached

YES	
X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy

The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)

Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education

Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment

The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population

The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

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

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

This proposed route is found close to two heritage sites:

Near the beginning of this section, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north, A small informal burial ground is located close to the site. It consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west.

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:

This proposed route is found close to two heritage sites:

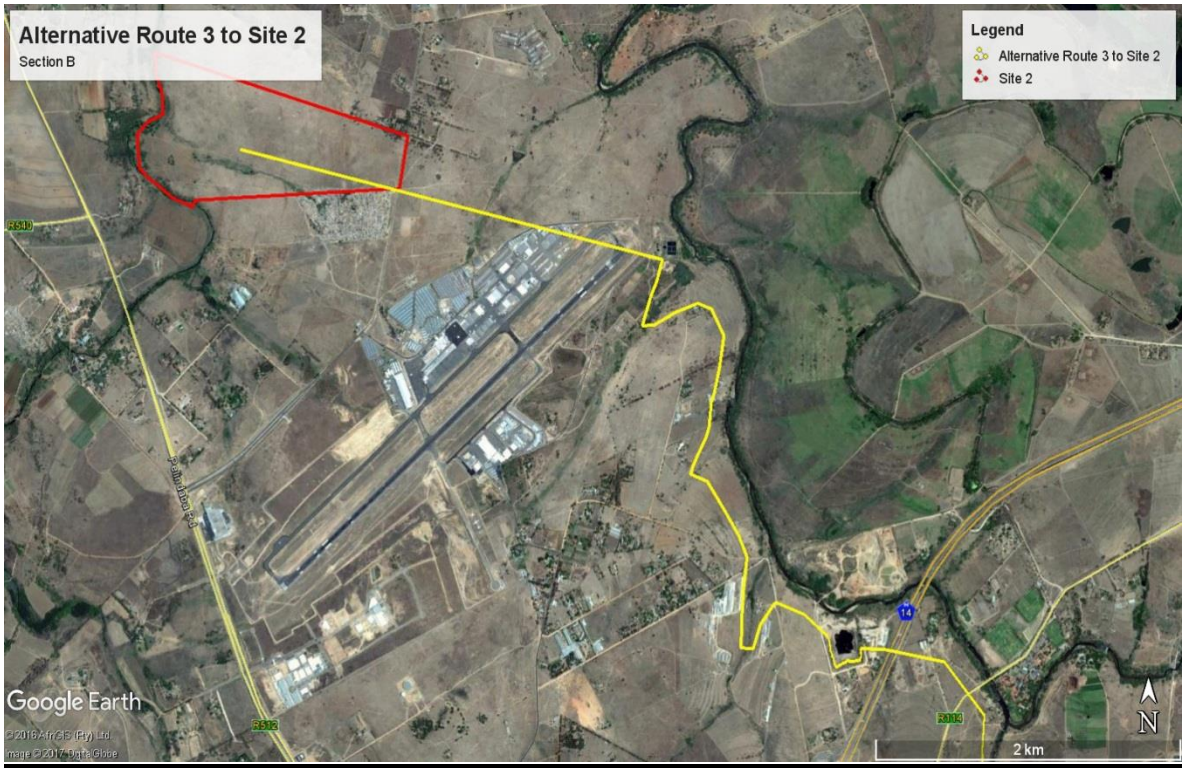
Near the beginning of this section, a small informal burial ground is located close to site. It consists of approximately 15 graves. The area where the graves are located is heavily overgrown with thick vegetation and it is difficult to determine exactly how many graves are present. The graves are stone packed and oriented east to west.

Further north, the proposed pipeline traverse a small informal burial ground. It consists of three large graves next to each other and one smaller grave below the three large graves. The graves are stone backed and oriented east to west. A permit will be required for traversing through the burial ground.

Please refer to the HIA in **Appendix G4.**

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

SECTION B:



1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Due to the large amount of properties affected, please refer to **Appendix I2** for the property details of this section of the route.

2. ACTIVITY POSITION

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

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

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	25.956559º	27.961840º
• Middle point of the activity	25.934986º	27.944886º
• End point of the activity	25.924290º	27.912735º

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 **X**

The 21 digit Surveyor General code of each cadastral land parcel

ALT. 3 TO SITE 2 (SECTION B)	**T**	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**3**	**5**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**0**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**5**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**4**	**4**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**9**	**5**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**9**	**6**
	T	**0**	**J**	**Q**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**0**	**0**	**1**	**3**

	T	0	J	Q	0	0	0	9	0	0	0	0	0	5	3	3	0	0	0	5	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	5	3	3	0	0	0	5	1
	T	0	J	Q	0	0	0	9	0	0	0	0	0	5	3	3	0	0	0	5	3
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	3	0	0	0	0	2
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	2	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	1	0	0	0	0	0
	T	0	J	Q	0	0	4	3	0	0	0	0	0	0	4	0	0	0	0	0	0
	T	0	J	Q	0	0	0	9	0	0	0	0	0	5	3	0	0	0	0	0	3
	T	0	J	Q	0	0	0	9	0	0	0	0	0	5	3	0	0	0	0	0	8
	T	0	J	Q	0	1	1	8	0	0	0	0	0	1	8	3	0	0	0	0	0
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	1	3	5
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	6	9
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	7	2
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	7	6
	T	0	J	Q	0	0	0	0	0	0	0	0	0	5	2	8	0	0	0	0	6

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:10 – 1:7,5 **X**	

4. LOCATION IN LANDSCAPE

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

	Side slope of hill/ridge **X**		Plain **X**	Undulating plain/low hills **X**	River front **X**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

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

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 **X**

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

	X

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)
Latitude (S): **Longitude (E):**

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

6. AGRICULTURE

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

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 35	Natural veld with scattered aliens % =35	Natural veld with heavy alien infestation % =5	Veld dominated b y alien species % = 0	Landscaped (vegetation) % = 0
Sport field % =0	Cultivated land % =5	Paved surface (hard landscaping) % =5	Building or other structure % =10	Bare soil % =5

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

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES **X**

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. For flora, three species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* and these species have a conservation status of Declining. Several mammal species of conservation concern were recorded along the routes, namely Honey badger, Serval, Brown hyena and Southern African Hedgehog. The outfall sewer routes offer suitable habitat for the Giant Bullfrog and this species was recorded along the study area. This proposed route section falls within the Magaliesberg Important Bird Area (IBA). Key bird species occurring in the Magaliesberg IBA include: Cape Vulture (*Gyps coprotheres*) (which breeds in two colonies at Nooitgedacht and Skeerpoort); White-backed Vulture and Lappet-faced Vulture (*Torgos tracheliotus*) (although mostly single birds); Verreauxs' Eagle (*Aquila verreauxii*) (which breeds in the Magaliesberg); African Grass Owl (*Tyto capensis*); Secretarybird (*Sagittarius serpentarius*); White-bellied Korhaan (*Eupodotis senegalensis*); Black Stork (*Ciconia nigra*); Half-collared Kingfisher (*Alcedo semitorquata*) (along streams); African Finfoot (*Podica senegalensis*) (along streams/rivers).

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

If YES, specify and explain:

The study area is described as falling within the Egoli Granite Grassland and this vegetation type is classified as Endangered with a national conservation target of 24%. According to the data sourced from South African National Biodiversity Institute; the Endangered Egoli Granite Grassland is listed as a threatened terrestrial ecosystem that was noted along the study area. The data from the Gauteng Conservation Plan 3.3 indicates that the study area occurs within Critical Biodiversity Areas (CBA) and also in an Ecological Support Area (ESA) and the CBA recorded in the study area are Important and Irreplaceable Areas. Areas of conservation importance also fall in this section, such as the Class 1 Ridge along the route. For this section, 5 wetlands are traversed, thus alternative 3 for Site 2 does not traverse any river systems, but a total of 10 wetlands will be traversed, which are recognized as CoJ Wetlands and NFEPA wetlands. This section of the proposed route also falls within the Magaliesberg Biosphere Transition Zone, where entering into collaboration with communities and industries to wisely develop, cooperatively management and sustainably utilise the larger area to ensure the protection of the natural and heritage resources of the Magaliesberg. The top section of this route also falls within the Magaliesberg Biosphere Buffer Zone, where activities within the buffer zone involve conservation and maintenance of ecosystems, nature based recreation, eco-tourism, primary dwellings, new developments and small resorts coupled to conservation areas that are compliant with the EIA Regulations.

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

If yes complete specialist details

Name of the specialist:	Avhafarei Ronald Phamphe		
Qualification(s) of the specialist:	M.Sc. (Botany)		
Postal address:	147 Bram Fischer Drive, Ferndale, Randburg		
Postal code:	2194		
Telephone:	011 781 1730	Cell:	082 783 6724
E-mail:	AvhafareiP@nemai.co.za	Fax:	011 781 1731

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

If YES list the specialist reports attached below

Signature of specialist:		Date:	22/05/2017

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
			19. Education facilities	20. Sport facilities
	22. Airport[N]			25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]			29. Graveyard	30. Archeological site
			34. Small Holdings	
Other land uses (describe):	35. Quarry			

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

NORTH

7, 34	**1, 2, 34**	**34**	**7, 34**	**1,7, 34**
5,9,22,	**5, 34, 22**	**1, 2, 7,29, 34**	**2, 3, 5**	**3**
7,22,34	**6,22,**		**2, 3, 26**	**3**
7,13,14, 34	**7,14, 31**	**1,2**	**2, 3**	**3, 15**
7, 34	**7,15, 34**	**25**	**2,19, 20, 25, 35**	**11,13, 19, 20, 25, 35**

WEST EAST

SOUTH

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

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

Have specialist reports been attached

YES	
X	

If yes indicate the type of reports below

1. Soil, Land Use and Agricultural Potential Report
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3. Avifaunal Specialist Study
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7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

Economy
The tertiary sector is the largest sector in each of the municipalities accounting for seventy-seven percent of total GVA. Finance, insurance, real estate and business services is the largest individual industry in City of Johannesburg contributing thirty-one percent and twenty-three percent in Mogale City Local Municipality. General government is the largest individual industry in City of Tshwane at thirty percent.

2013 GVA for City of Johannesburg and City of Tshwane at 2005 constant prices in R millions (Quantec, 2012)			
Industry	City of Johannesburg	City of Tshwane	MCLM
Primary sector	**3%**	**2%**	**3%**
Agriculture, forestry and fishing	0%	0%	1%
Mining and quarrying	3%	1%	2%
Secondary sector	**19%**	**18%**	**26%**
Manufacturing	11%	10%	19%
Electricity, gas and water	3%	3%	2%
Construction	5%	5%	5%
Tertiary sector	**78%**	**81%**	**71%**
Wholesale and retail trade, catering and accommodation	19%	15%	16%
Transport, storage and communication	8%	7%	10%
Finance, insurance, real estate and business services	31%	24%	23%
Community, social and personal services	4%	4%	4%
General government	16%	30%	18%
Total	**100%**	**100%**	**100%**

Education
Over twenty-two percent of the population in all three Wards have no education or have not completed primary education and are considered to be functionally illiterate. Functional illiteracy is defined as a person who has received skills to read and write, but are inadequate to manage daily living and employment tasks that require reading skills beyond a basic level. Usually persons who have a low level of education, up to primary education, are classified as functionally illiterate.
In Ward 96, twenty-four percent of the population over age 20 have higher education, where in Ward 48 and Ward 33 only six percent and eight percent of people over age 20 have higher education respectively. Schools in the area include the private Curro Monaghan Independent School & Curro Castle Monaghan. Public schools include the former boarding school Blair Atholl Primary School as well as the public schools of Saint Ansgar's Combined School and Kwena Molapo combined school.

Employment
The labour force comprises of all persons employed plus all persons unemployed. In the study area, the total labour force is 61 416 persons and the unemployment rate as calculated is twenty-one percent (using the strict definition of unemployment). Forty-seven percent of the persons in the study area are employed and thirteen percent are unemployed.

Population
The total population in the study area 102 945 people, mostly of working age. Ward 96, City of Johannesburg, has the highest population of 58 779 persons while MCLM Ward 33 has a population of 8 277. Males accounts for fifty-three percent of the overall population where the gender profile of South Africa shows a slightly higher female population of fifty-one percent. The working age population is classified as persons aged 15 – 64 and accounts for seventy-six percent of the total population. According to the Lanseria Spatial Development Framework, the population of Lanseria is expected to increase as the area transforms from its current rural state to an urban environment and eventually a metropolis. The municipality spatial planning allows for such growth and has commenced with spatial planning, such as this project to meet future demand. Please refer to **Appendix G 6** for the full Socio Economic Impact Assessment (SEIA).

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

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

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

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

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

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

2. LOCAL AUTHORITY PARTICIPATION

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

Was the draft report submitted to the local authority for comment?		NO **X**
If yes, has any comments been received from the local authority?		

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

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

The draft BAR will be placed for a 30-day review period from 19 June 2017 to 18 July 2017, and thus any comments on the BAR from GDARD will be received during this review period and included in the Final BAR to be submitted to GDARD.

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?	YES **X**	

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

The main concerns raised during the focus group meetings include:
- Potential impacts on the environment;
- Potential impacts on the Chartwell Conservancy;
- Safety and security of the landowners in the area;
- Impact on property value;
- Access to better sanitation services in the future;
- Maintaining the sense of place in the area;
- Design of the Outfall Sewer and proposed masterplan by JW;
- Construction and Operational impacts of the Outfall Sewer;
- JW ability to manage the Outfall Sewer; and
- Efficient capacity of the Outfall Sewer Pipeline.

Refer to the Comments and Responses Report (CRR) in **Appendix E6.**

Refer to **Appendix E2** for all correspondence.

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

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

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

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Communications to and from interested and affected parties

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

Appendix 6 - Comments and Responses Report

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

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

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

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

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

ALL ALTERNATIVE ROUTES WILL USE THE SAME RESOURCE AND PROCESS DETAILS

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

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

If yes, what estimated quantity will be produced per month? Unknown at this stage.

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

Land-filling is the most common, cost effective and cheapest method of disposing of waste. The contractor will ensure that the waste is disposed of at a registered site.

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

All solid waste will be disposed of at the nearest licensed landfill disposal site.

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

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

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

[redacted]

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

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

No solid waste will be generated.

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

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

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

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

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:

Contractor will be encouraged to recycle and re-use waste.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? NO **X**

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

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

Will the activity produce any effluent that will be treated and/or disposed of on site? NO X

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

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

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

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

If yes, provide the particulars of the facility:
Facility name:
Contact person:
Postal address:
Postal code:
Telephone: Cell:
E-mail: Fax:

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

The contractor is to handle reuse or recycling of waste water generated on site. The contractor's oil storage will be bunded to prevent spillages into the environment. It is anticipated that the generation of waste water shall be kept to a minimum and shall not include any harmful substances which could affect the environment negatively.

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system? NO X

If yes, what estimated quantity will be produced per month?
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the 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? NO X

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

Emissions into the atmosphere

Will the activity release emissions into the atmosphere? NO X

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:

Sources of air emissions will include dust generated by construction activities and emissions emanating from construction vehicles and equipment. Best practices to manage emissions are included in the Environmental Management Programme (EMPr).

2. WATER USE

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

Municipal X

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

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix
Does the activity require a water use permit from the Department of Water Affairs? YES X

If yes, list the permits required

A Water Use License in terms of section 21 c and i..

If yes, have you applied for the water use permit(s)? NO X

If yes, have you received approval(s)? (attached in appropriate appendix) NO X

3. POWER SUPPLY

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

Municipality/Eskom.

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

4. ENERGY EFFICIENCY

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

None.

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

None.

SECTION E: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

The main concerns raised during the focus group meetings include:
• Potential impacts on the environment;
• Potential impacts on the Chartwell Conservancy;
• Safety and security of the landowners in the area;
• Impact on property value;
• Access to better sanitation services in the future;
• Maintaining the sense of place in the area;
• Design of the Outfall Sewer and proposed masterplan by JW;
• Construction and Operational impacts of the Outfall Sewer;
• JW ability to manage the Outfall Sewer; and
• Efficient capacity of the Outfall Sewer Pipeline.

Refer to the CRR in **Appendix E6**.

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

The impact assessment in **Appendix I1**, Specialist Studies (**Appendix G**) and EMPr (**Appendix H**), address most of the issues raised by IAPs. Alternative route 1 to Site 1 was selected as the Best Practicable Environmental Option (BPEO) which clarified concerns about which alternative will be selected. Refer to the CRR in **Appendix E6.**

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

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

Information provided by specialists was used to calculate an overall impact score by multiplying the product of the nature, magnitude and the significance of the impact by the sum of the extent, duration and probability based on the following equation:

Overall Score = (NxMxS)x(E+D+P)

Where: N = Nature;
E = Extent
M = Magnitude
D = Duration
P = Probability
S = Significance

Nature			
Negative	Neutral	Positive	
-1	0	+1	
Extent			
Local	Regional	National	International
1	2	3	4
Magnitude			
Low	Medium	High	
1	2	3	
Duration			
Short Term (0-5yrs)	Medium Term (5-11yrs)	Long Term	Permanent
1	2	3	4

Probability				
Rare/Remote	Unlikely	Moderate	Likely	Almost Certain
1	2	3	4	5

Significance			
No Impact/None	No Impact After Mitigation/Low	Residual Impact After Mitigation/Medium	Impact Cannot be Mitigated/High
0	1	2	3

The following definitions apply:

For the methodology of the impact assessment, the analysis is conducted on a quantitative basis with regard to the nature, extent, magnitude, duration, probability and significance of the impacts. The following definitions and scoring system apply:

Nature (/Status)
The project could have a positive, negative or neutral impact on the environment.

Extent
- Local – extend to the site and its immediate surroundings.
- Regional – impact on the region but within the province.
- National – impact on an interprovincial scale.
- International – impact outside of South Africa.

Magnitude
Degree to which impact may cause irreplaceable loss of resources.
- Low – natural and social functions and processes are not affected or minimally affected.
- Medium – affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.
- High – natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.

Duration
- Short term – 0-5 years.
- Medium term – 5-11 years.
- Long term – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.
- 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.

Probability
- Almost certain – the event is expected to occur in most circumstances.
- Likely – the event will probably occur in most circumstances.
- Moderate – the event should occur at some time.
- Unlikely – the event could occur at some time.
- Rare/Remote – the event may occur only in exceptional circumstances.

Significance
Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-
0 – Impact will not affect the environment. No mitigation necessary.
1 – No impact after mitigation.
2 – Residual impact after mitigation.
3 – Impact cannot be mitigated.

For example, the worst possible impact score of -117 would be achieved based on the following ratings:

N = Nature = -1

M = Magnitude = 3

S = Significance = 3

E = Extent = 4

D = Duration = 4

P= Probability = 5

Worst impact score = (-1 x 3 x 3) x (4+4+5) = -117

On the other hand, if the nature of an impact is 0 (neutral or no change) or the significance is 0 (no impact), then the impact will be 0.

Impact Scores will therefore be ranked in the following way:

Impact Rating	Low/Acceptable impact	Medium	High	Very Hig
Score	0 to -30	-31 to -60	-61 to -90	-91 to -11

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.

Please refer to **Appendix I1** for the full Impact Assessment Report.

PRE-CONSTRUCTION PHASE

All Alternative Routes

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology and soil – Loss of topsoil	**Low (Negative)**	During site preparation, special care must be taken during the clearing of the works area where organic material will be stored separately from the topsoil and spoil material to ensure for the protection thereof. This topsoil must be re-used during the rehabilitation phase. Erosion control measures must be implemented to ensure that the loss of topsoil is prevented.	**Low (Negative)**	**Low**
Flora - Loss of plant species of conservation concern	**Medium (Negative)**	It is recommended that prior to construction, the *Hypoxis hemerocallidea, Eucomis autumnalis* and *Boophane disticha* plant species recorded must be searched and rescued and then following construction activities, they can be re-established at the site. Given that the species of conservation importance were observed, it is important that species of conservation importance and threatened species	**Low (Negative)**	**Low**

		which may occur along the proposed pipeline routes are addressed through a search and rescue plan.		
Flora – destruction of indigenous flora	**Medium (Negative)**	• Indigenous plants naturally growing along the routes, but that would be otherwise destroyed during clearing for development purposes should be incorporated into landscaped areas. • Vegetation clearing should be kept to a minimum, and this should only occur where it is absolutely necessary and the use of a brush-cutter is highly preferable to the use of earth-moving equipment. • Rehabilitate all disturbed areas as soon as the construction is completed within the proposed development area. • Ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm and this can be achieved through provision of appropriate awareness to all personnel.	**Low (Negative)**	**Low**
Flora – Loss of habitat and habitat fragmentation	**Medium (Negative)**	• Limit the footprint within the natural habitat areas remaining. • No structures should be built outside the area demarcated for the development. • Although it is unavoidable that sections of the pipeline will need to traverse areas of potential sensitivity, the pipeline construction should be constructed in such cases so as to avoid further impact to these areas.	**Low (Negative)**	**Low**
Fauna – Loss and displacement of animals on site	**Medium (Negative)**	• Training of construction workers to recognise threatened animal species will reduce the probability of fauna being harmed unnecessarily. • The contractor must ensure that no faunal species are disturbed, trapped, hunted or killed during the construction phase. • Vehicles must adhere to a speed limit, 30-40 km/h is recommended for light vehicles and a lower speed for heavy vehicles. • All construction and maintenance vehicles must stick to properly demarcated and prepared roads. Off-road driving	**Low (Negative)**	**Low**

		should be strictly prohibited. • No fires should be allowed at the site • No dogs or other pets should be allowed at the site.		

CONSTRUCTION PHASE

Alternative Routes to Site 1

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology and Soil – • Soil Erosion • Loss of quality and quantity of topsoil	**Medium (Negative)**	Erosion Control: • Suitable erosion protective measures to be implemented for access roads. • Stabilisation of cleared areas to prevent and control erosion. • Monitoring to be conducted to detect erosion. • Rehabilitate all areas disturbed during construction. • The Contractor shall take measures to the approval of the Engineer to ensure that there is no undue stormwater damage and soil erosion resulting from the construction activities outside the construction camp and works areas. • Contamination of surface water and stormwater shall be well controlled. This shall be achieved by managing activities such as mixing concrete on wooden boards in a plastic lined and bunded area and by reducing spills of hazardous substances. • A minimum distance of open trench with stockpiled soils exposed to rainfall and storm water flow shall be maintained at any one time. • Construction and rehabilitation shall be completed as quickly as is reasonably possible. • Surface stormwater shall, where possible, not be allowed to be concentrated and to flow down cut or fill slopes or along the pipeline route without erosion protection measures being place.	**Low (Negative)**	**Low**

		<u>Topsoil</u> • Wind and water erosion-control measures to be implemented to prevent loss of topsoil. • Remove, stockpile and preserve topsoil for re-use during rehabilitation. • Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky material, when areas are cleared. • Stockpiled soil should be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet season. The need for such measures will be indicated in the site-specific report. • Topsoil stripped from different sites must be stockpiled separately and clearly identified as such. Topsoil obtained from sites with different soil types must not be mixed. • Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and microorganisms in the soil. • Soil must not be stockpiled on drainage lines or near watercourses without prior consent from the Project Manager. • Soil should be exposed for the minimum time possible once cleared of invasive vegetation.		
Geohydrology - Impact on groundwater	**Low (Negative)**	• Fuel Storage Tanks used during construction should be installed according to the relevant SABS standards, • The construction of the workshops, cleaning bays and fuel dispensing areas of the construction camps should be in such a way that no accidental spillages leave the site and surface and storm water run-off be diverted through an oil/water separator before leaving the site. Adequate sanitation and waste disposal facilities should be	**Low (Negative)**	**Low**

		provided at the construction camps. • Emergency Spill Response Procedures should be in place with capable people with the necessary training available at strategic locations to follow these procedures in the case of major accidents and/or accidental spillages. • Should contamination of the soil/groundwater be suspected at any given point in time within the project area, a detailed site and consequent risk assessment is proposed.		
Land capability – • Loss of quality and quantity of topsoil	**Low (Negative)**	The agricultural potential is linked to the soils that will be destroyed and has a low baseline. With the permanence of the structures on the site as well as the poor prognosis for complete rehabilitation to a pre-development state at some time in the future the impacts are considered to be permanent and therefore no mitigation is possible.	**Low (Negative)**	**Low**
Land capability – • Indirect agricultural impacts	**Medium (Negative)**	The surrounding land is impacted through the changing rural to urban character of the site with its associated urban expansion, crime increase, water quality impacts and general change in rural character. Mitigation actions include adequate planning, site access control and integration with needs of land owners.	**Low (Negative)**	**Low**
Land use – • Land acquisition and servitude restrictions	**Medium (Negative)**	• Engage and negotiate with affected landowners. • JW will need to conform to all its legal obligations as part of the acquisition of land/servitudes for the construction and operation of the project.	**Low (Negative)**	**Low**
Flora – • Loss of vegetation disturbance due to fuel and chemical spills • Introduction of alien species • Destruction of alien vegetation • Increased soil erosion • Impacts on ridges • Loss of habitat on Egoli Granite Grassland, CBA's and ESA's • Damage to plant life outside the propose development site	**Medium (Negative)**	• Appropriate measures should be implemented in order to prevent potential soil pollution through fuel and oil leaks and spills and then compliance monitored by an appropriate person. • Make sure construction vehicles are maintained and serviced to prevent oil and fuel leaks. • During construction, the construction area and immediate	**Low (Negative)**	**Low**

		surroundings should be monitored regularly for emergent invasive vegetation • The establishment of pioneer species should be considered with the natural cycle of rehabilitation of disturbed areas, which assists with erosion control, dust and establishment of more permanent species. This can be controlled during construction phase and thereafter more stringent measures should be implemented during the rehabilitation and post rehabilitation. • All alien seedlings and saplings must be removed as they become evident for the duration of construction phase • Manual / mechanical removal is preferred to chemical control. • Topsoil should be stored in such a way that does not compromise its plant-support capacity. • Topsoil from the construction activities should be stored for post-construction rehabilitation work and should not be disturbed more than is absolutely necessary. • Protect topsoil in order to avoid erosion loss on steep slopes. • Protect topsoil from contamination by aggregate, cement, concrete, fuels, litter, oils, domestic and wastes. • Vehicles and construction workers should under no circumstances be allowed outside the site boundaries to prevent impact on the surrounding vegetation. • Where possible, natural vegetation must not be cleared and encouraged to grow. • All stockpiles, construction vehicles, equipment and machinery should be situated away from the natural vegetation. • Disturbance of vegetation must be limited only to areas of construction. • Prevent contamination		

		of natural grasslands by any pollution. • Areas cleared of vegetation must be re-vegetated prior to contractor leaving the site. • Any fauna (mammal, bird, and reptile) that becomes trapped in the trenches or in any construction or operational related activity may not be harmed and must be placed rescued and relocated by an experienced person. • Proliferation of alien and invasive species is expected within the disturbed areas and they should be eradicated and controlled to prevent further spread into the ridge. • No trapping or any other method of catching of any animal or bird may be performed on site • No access roads onto ridge areas must be present and such areas must be fenced off during construction activities. • The buffer zones mentioned in Terrestrial Ecological Assessment report must be strictly adhered to, and the areas covered by the buffers be treated as environmentally sensitive. No storage of building materials or rubbles are allowed in the sensitive and buffer areas. • Avoid translocating stockpiles of topsoil from one place to sensitive areas in order to avoid translocating soil seed banks of alien species • Vehicles and construction workers should under no circumstances be allowed outside the site boundaries to prevent impact on the surrounding vegetation. • Where possible, natural vegetation must not be cleared and encouraged to grow. • All stockpiles, construction vehicles, equipment and machinery should be situated away from the		

		natural vegetation. • Disturbance of vegetation must be limited only to areas of construction. • Prevent contamination of natural grasslands by any pollution. • Areas cleared of vegetation must be re-vegetated prior to contractor leaving the site • Construction activities should be restricted to the development footprint area and then the compliance in terms of footprint can be monitored by Environmental Control Officer (ECO). • Areas which could be deemed as no go should be clearly marked.		
Fauna – • Disturbance to animals	**Low (Negative)**	• Animals residing within the designated area shall not be unnecessarily disturbed. • During construction, refresher training can be conducted to construction workers with regards to littering and poaching. • The Contractor and his/her employees shall not bring any domestic animals onto site. • Toolbox talks should be provided to contractors regarding disturbance to animals. Particular emphasis should be placed on talks regarding snakes. • Any fauna (mammal, bird, reptile and amphibian) that becomes trapped in the trenches or in any construction or operational related activity may not be harmed and must be placed rescued and relocated by an experienced person.	**Low (Negative)**	**Low**
Avifauna – Habitat destruction	**High (Negative)**	• For all construction and operational activities to avoid the High (riparian) and Medium (stream & wetland) sensitivity areas identified by this study (delineation of which should be confirmed in consultation with wetland/botanical/ecology specialist). Strict control over all vehicles, staff and machinery is required	**High (Negative)**	**High**

		so as to ensure that they do not enter this area. • Any newly established (subsequent to this assessment and prior to construction) breeding or roosting sites of sensitive species should be reported by the Environmental Control Officer, and will be managed through case specific mitigation measures, which could include temporal and/or spatial restrictions on construction in the relevant species breeding season. • The ground surface should be rehabilitated after construction by returning it to the same plant types as before, under the supervision of a suitably experienced botanist.		
Avifauna – Disturbance of birds	**Low (Negative)**	• Any newly established (subsequent to this assessment and prior to construction) breeding or roosting sites of sensitive species should be reported by the Environmental Control Officer, and will be managed through case specific mitigation measures, which could include temporal and/or spatial restrictions on construction in the relevant species breeding season.	**Low (Negative)**	**Low**
Air Quality – • Excessive dust levels as a result of construction activities and movement of construction vehicles. • Vehicles and construction machinery's emissions. • Smoke from uncontrolled fires.	**Low (Negative)**	• Speed limits must be implemented in all areas to limit the levels of dust pollution. • Dust must be suppressed on access roads and construction sites during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that must not result in the generation of run-off. • The Contractor must ensure that construction activities do not disturb school activities e.g. dust clouds may reduce visibility affecting sports activities. • Waste must be disposed of, as soon as possible at a municipal transfer	**Low (Negative)**	**Low**

		station, skip or on a permitted landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours. • The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface. Normal working hours must be clearly indicated to adjacent landowners. • No fires are allowed if smoke from such fires will cause a nuisance to IAPs. • Appropriate dust suppression measures or temporary stabilising mechanisms must be used when dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather. Dust suppression to be undertaken for all bare areas, including construction area, access roads, borrow pits, etc. • Fine materials must be covered during transportation		
Noise – Excessive noise levels as a result of decommissioning (demolition activities), construction and operation activities.	**Low (Negative)**	• Working hours to be agreed upon with Project Manager, so as to minimise disturbance to adjacent landowners and community members. • No amplified music will be allowed on the site. The use of radios, tape recorders, compact disc players, television sets etc. will not be permitted unless at a level that does not serve as an intrusion to adjacent landowners. • Construction activities generating output levels of 85 dB or more will be confined to the hours during normal working hours. • The Contractor must inform local communities and residents of any activity that could cause a nuisance to them.	**Low (Negative)**	**Low**

		• Noise rules must be established for construction areas. These rules must continue into the operation phase. • The Contractor will take preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to minimise complaints regarding noise and vibration nuisances from sources such as power tools. • All construction vehicles must be serviced on a frequent basis as a means of limiting excessive noise levels. • The Contractor must ensure the silencers of all construction vehicles and machinery is working.		
Aesthetics – • Impact on the landscape character and sense of place • Visual intrusion and VAC impacts • Visual exposure and visibility impacts	**Medium (Negative)**	• Mitigation measures that will have to be implemented in order to minimise the visual impacts, with specific reference to minimising loss of indigenous vegetation, with specific mention of tall trees and shrubs, ensuing that effective reshaping and revegetation takes place within disturbed areas and careful consideration of the material and colours used in infrastructure design. • Other management measures that will have to be implemented in order to minimise the visual impact on the local and subregional area, including dust control and management, prevention of damage to visual resources such as the Jukskei and Klein Jukskei Rivers, making use of screening opportunities where possible and implementing good housekeeping measures.	**Low (Negative)**	**Medium**
Waste management – Land, air and water pollution through poor waste management practices.	**Medium (Negative)**	• The entire site will be cleared of construction material, metal, tins, glass bottles, and food packaging or any other type of empty container or waste material or waste equipment used by the construction team on a daily basis.	**Low (Negative)**	**Low**

		• Waste material that may harm man or animals should be removed immediately. • No hazardous materials e.g. oil, diesel and fuel should be disposed of in the surrounding environment. Any diesel, oil or petrol spillages are to be collected and stored in specially marked containers and disposed of at a permitted waste disposal site and must be treated as hazardous waste. • No refuse or litter is allowed to be burnt on site. • The recycling of all waste is to be encouraged of both the contractor and staff. • All vehicle parking areas and vehicle servicing areas are to be inspected carefully for diesel, oil and other spillages weekly		
Traffic	**Medium (Negative)**	• Traffic safety measures to be implemented. • All construction access roads shall be clearly demarcated. Vehicle loads shall be secured such that no loads or part thereof fall from the vehicle and damage other road users. • It must be ensured that that construction vehicle speeds are restricted and traffic measures are implemented for safe and convenient access to the site. • The Contractor should strive to keep adverse impacts on the daily commuter traffic to a minimum. • Temporary traffic accommodation signage shall be displayed along the route to be followed by construction vehicles in order to create awareness of construction vehicles by other road users • Construction vehicles travelling on all public roads shall adhere to the posted speed limits and speeds along proposed access route shall be controlled at 40kph to minimise potential conflict.	**Low (Negative)**	**Low**

Socio-Economic – • Impact on the economy from improved transport of wastewater • Economic opportunities arising from the construction phase	**High (Positive)**	• The development potential of Gauteng is increasing and there is a need for improved provision of water services. This project will have a positive impact for the municipality as developers invest in the area. • Employment opportunities will be generated through the development which will increase household income. • In the study area, properties will have access to wastewater treatment which will allow development in the area to occur. • Contractors and sub-contractors must liaise with the local Councillor regarding the employment of local labour. • Employment of females and youth is encouraged to ensure the empowerment of the most vulnerable to unemployment and poverty.	**High (Positive)**	**High**
Socio-Economic – • Land use conflicts • Short term disturbance arising from construction phase	**Medium (Negative)**	• The operational plan must include safety measures such as access gates and other access control measures that are to be enforced. • Landowners may choose to negotiate compensation for damage to property as a result of spillages and other damage that may arise from fault with the pipeline. Thus, the operational and management plan should be practical. • Ensure that the necessary signage and traffic measures are implemented for safe and convenient access to the site. • The mitigation measures referred to in the Traffic Management Plan should be adhered to at all times.	**Low (Negative)**	**Low**
Heritage resources – • Impact on burial grounds • Damage to heritage resources and archaeological sites	**High (Negative)**	• Upon the accidental discovery of archaeological material, a buffer of at least 20 meters should be implemented. • If archaeological material is accidentally discovered during construction, activities must cease in the area and a qualified	**Low (Negative)**	**Low**

		archaeologist be contacted to evaluate the find. To remove the material permit must be applied for from SAHRA under Section 35 of the NHRA. • Upon the accidental discovery of graves, a buffer of at least 50 meters should be implemented. • If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a permit must be applied for from SAHRA (Section 36 of the NHRA) and other relevant authorities (National Health Act and its regulations). The local South African Police Services must immediately be notified of the find. • Where it is recommended that the graves be relocated, a full grave relocation process that includes comprehensive social consultation must be followed. • No mitigation measures for palaeontological resources as the site is unfossiliferous.		
Watercourses – • Altered surface and/0r interflow • Altered hydrological regime • Impaired water quality • Erosion and sedimentation of water resources • Establishment of alien vegetation • Altered flows or river systems	**Medium (Negative)**	• The recommended buffer zones (15m) should be strictly adhered to during the construction phase of the project, with exception of the activities required to traverse a watercourse. Any supporting aspects and activities not required to be within the buffer area should adhere to the buffer zone; • Pipeline trenches and sandy bedding material may produce preferential flow paths for water across the project area perpendicular to the general direction of flow instead of angle. This risk can be reduced by installing clay plugs at intervals down the length of the trench to force water out of the trench and	**Low (Negative)**	**Low**

		down the natural topographical gradient; • Pipelines crossing drainage areas, should preferably span the drainage lines above ground. This prevents disruptions to sub surface flow dynamics, and allows the pipeline to be monitored for leaks and subsequent waste of potable water. Pipelines underground crossing rivers and streams should be buried at a sufficient depth below ground level such that the pipelines do not interfere with surface water movement or create obstructions, where flows can cause erosion; • Storm water channels and preferential flow paths should be filled with aggregate and/or logs (branches included) to dissipate and slow flows limiting erosion; • Laydown yards, camps and storage areas must be beyond the water resource areas and associated buffers where applicable; • Temporary and permanent erosion control methods may include silt fences, flotation silt curtains, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching; and • Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil. • An alien invasive plant management plan needs to be compiled and implemented prior to construction to control and prevent the spread of invasive aliens.		

Alternative routes to Site 2

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology and Soil – • Soil Erosion	**Medium (Negative)**	Erosion Control: • Suitable erosion	**Low (Negative)**	**Low**

• Loss of quality and quantity of topsoil		protective measures to be implemented for access roads. • Stabilisation of cleared areas to prevent and control erosion. • Monitoring to be conducted to detect erosion. • Rehabilitate all areas disturbed during construction. • The Contractor shall take measures to the approval of the Engineer to ensure that there is no undue stormwater damage and soil erosion resulting from the construction activities outside the construction camp and works areas. • Contamination of surface water and stormwater shall be well controlled. This shall be achieved by managing activities such as mixing concrete on wooden boards in a plastic lined and bunded area and by reducing spills of hazardous substances. • A minimum distance of open trench with stockpiled soils exposed to rainfall and storm water flow shall be maintained at any one time. • Construction and rehabilitation shall be completed as quickly as is reasonably possible. • Surface stormwater shall, where possible, not be allowed to be concentrated and to flow down cut or fill slopes or along the pipeline route without erosion protection measures being place. <u>Topsoil</u> • Wind and water erosion-control measures to be implemented to prevent loss of topsoil. • Remove, stockpile and preserve topsoil for re-use during rehabilitation. • Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky material, when areas are cleared. • Stockpiled soil should be protected by erosion-control berms if exposed for a period		

		of greater than 14 days during the wet season. The need for such measures will be indicated in the site-specific report. • Topsoil stripped from different sites must be stockpiled separately and clearly identified as such. Topsoil obtained from sites with different soil types must not be mixed. • Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and microorganisms in the soil. • Soil must not be stockpiled on drainage lines or near watercourses without prior consent from the Project Manager. • Soil should be exposed for the minimum time possible once cleared of invasive vegetation.		
Geohydrology - Impact on groundwater	**Low (Negative)**	• Fuel Storage Tanks used during construction should be installed according to the relevant SABS standards, • The construction of the workshops, cleaning bays and fuel dispensing areas of the construction camps should be in such a way that no accidental spillages leave the site and surface and storm water run-off be diverted through an oil/water separator before leaving the site. Adequate sanitation and waste disposal facilities should be provided at the construction camps. • Emergency Spill Response Procedures should be in place with capable people with the necessary training available at strategic locations to follow these procedures in the case of major accidents and/or accidental spillages. • Should contamination of the soil/groundwater be suspected at any given point in time within the project area, a detailed site and consequent risk	**Low (Negative)**	**Low**

		assessment is proposed.		
Land capability – • Loss of quality and quantity of topsoil	**Low (Negative)**	The agricultural potential is linked to the soils that will be destroyed and has a low baseline. With the permanence of the structures on the site as well as the poor prognosis for complete rehabilitation to a pre-development state at some time in the future the impacts are considered to be permanent and therefore no mitigation is possible.	**Low (Negative)**	**Low**
Land capability – • Indirect agricultural impacts	**Medium (Negative)**	The surrounding land is impacted through the changing rural to urban character of the site with its associated urban expansion, crime increase, water quality impacts and general change in rural character. Mitigation actions include adequate planning, site access control and integration with needs of land owners.	**Low (Negative)**	**Low**
Flora – • Loss of vegetation disturbance due to fuel and chemical spills • Introduction of alien species • Destruction of alien vegetation • Increased soil erosion • Impacts on ridges • Loss of habitat on Egoli Granite Grassland, CBA's and ESA's • Damage to plant life outside the propose development site	**Medium (Negative)**	• Appropriate measures should be implemented in order to prevent potential soil pollution through fuel and oil leaks and spills and then compliance monitored by an appropriate person. • Make sure construction vehicles are maintained and serviced to prevent oil and fuel leaks. • During construction, the construction area and immediate surroundings should be monitored regularly for emergent invasive vegetation • The establishment of pioneer species should be considered with the natural cycle of rehabilitation of disturbed areas, which assists with erosion control, dust and establishment of more permanent species. This can be controlled during construction phase and thereafter more stringent measures should be implemented during the rehabilitation and post rehabilitation. • All alien seedlings and saplings must be removed as they become evident for the duration of construction phase • Manual / mechanical removal is preferred to chemical control.	**Low (Negative)**	**Low**

		• Topsoil should be stored in such a way that does not compromise its plant-support capacity. • Topsoil from the construction activities should be stored for post-construction rehabilitation work and should not be disturbed more than is absolutely necessary. • Protect topsoil in order to avoid erosion loss on steep slopes. • Protect topsoil from contamination by aggregate, cement, concrete, fuels, litter, oils, domestic and wastes. • Vehicles and construction workers should under no circumstances be allowed outside the site boundaries to prevent impact on the surrounding vegetation. • Where possible, natural vegetation must not be cleared and encouraged to grow. • All stockpiles, construction vehicles, equipment and machinery should be situated away from the natural vegetation. • Disturbance of vegetation must be limited only to areas of construction. • Prevent contamination of natural grasslands by any pollution. • Areas cleared of vegetation must be re-vegetated prior to contractor leaving the site. • Any fauna (mammal, bird, and reptile) that becomes trapped in the trenches or in any construction or operational related activity may not be harmed and must be placed rescued and relocated by an experienced person. • Proliferation of alien and invasive species is expected within the disturbed areas and they should be eradicated and controlled to prevent further spread into the ridge. • No trapping or any other method of catching of any animal or bird may be		

		performed on site • No access roads onto ridge areas must be present and such areas must be fenced off during construction activities. • The buffer zones mentioned in Terrestrial Ecological Assessment report must be strictly adhered to, and the areas covered by the buffers be treated as environmentally sensitive. No storage of building materials or rubbles are allowed in the sensitive and buffer areas. • Avoid translocating stockpiles of topsoil from one place to sensitive areas in order to avoid translocating soil seed banks of alien species • Vehicles and construction workers should under no circumstances be allowed outside the site boundaries to prevent impact on the surrounding vegetation. • Where possible, natural vegetation must not be cleared and encouraged to grow. • All stockpiles, construction vehicles, equipment and machinery should be situated away from the natural vegetation. • Disturbance of vegetation must be limited only to areas of construction. • Prevent contamination of natural grasslands by any pollution. • Areas cleared of vegetation must be re-vegetated prior to contractor leaving the site • Construction activities should be restricted to the development footprint area and then the compliance in terms of footprint can be monitored by Environmental Control Officer (ECO). • Areas which could be deemed as no go should be clearly marked.		
Fauna – • Disturbance to animals	**Low (Negative)**	• Animals residing within the designated area shall not be unnecessarily disturbed.	**Low (Negative)**	**Low**

		• During construction, refresher training can be conducted to construction workers with regards to littering and poaching. • The Contractor and his/her employees shall not bring any domestic animals onto site. • Toolbox talks should be provided to contractors regarding disturbance to animals. Particular emphasis should be placed on talks regarding snakes. • Any fauna (mammal, bird, reptile and amphibian) that becomes trapped in the trenches or in any construction or operational related activity may not be harmed and must be placed rescued and relocated by an experienced person.		
Avifauna – Habitat destruction	**High (Negative)**	• For all construction and operational activities to avoid the High (riparian) and Medium (stream & wetland) sensitivity areas identified by this study (delineation of which should be confirmed in consultation with wetland/botanical/ecology specialist). Strict control over all vehicles, staff and machinery is required so as to ensure that they do not enter this area. • Any newly established (subsequent to this assessment and prior to construction) breeding or roosting sites of sensitive species should be reported by the Environmental Control Officer, and will be managed through case specific mitigation measures, which could include temporal and/or spatial restrictions on construction in the relevant species breeding season. • The ground surface should be rehabilitated after construction by returning it to the same plant types as before, under the supervision of a suitably experienced botanist.	**High (Negative)**	**High**
Avifauna –	**Low**	• Any newly established	**Low**	**Low**

Disturbance of birds	**(Negative)**	(subsequent to this assessment and prior to construction) breeding or roosting sites of sensitive species should be reported by the Environmental Control Officer, and will be managed through case specific mitigation measures, which could include temporal and/or spatial restrictions on construction in the relevant species breeding season.	**(Negative)**	
Air Quality – • Excessive dust levels as a result of construction activities and movement of construction vehicles. • Vehicles and construction machinery's emissions. • Smoke from uncontrolled fires.	**Low (Negative)**	• Speed limits must be implemented in all areas to limit the levels of dust pollution. • Dust must be suppressed on access roads and construction sites during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that must not result in the generation of run-off. • The Contractor must ensure that construction activities do not disturb school activities e.g. dust clouds may reduce visibility affecting sports activities. • Waste must be disposed of, as soon as possible at a municipal transfer station, skip or on a permitted landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours. • The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface. Normal working hours must be clearly indicated to adjacent landowners. • No fires are allowed if smoke from such fires will cause a nuisance to IAPs. • Appropriate dust suppression measures or temporary stabilising mechanisms must be used when dust generation is unavoidable (e.g.	**Low (Negative)**	**Low**

		dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather. Dust suppression to be undertaken for all bare areas, including construction area, access roads, borrow pits, etc. • Fine materials must be covered during transportation		
Noise – Excessive noise levels as a result of decommissioning (demolition activities), construction and operation activities.	**Low (Negative)**	• Working hours to be agreed upon with Project Manager, so as to minimise disturbance to adjacent landowners and community members. • No amplified music will be allowed on the site. The use of radios, tape recorders, compact disc players, television sets etc. will not be permitted unless at a level that does not serve as an intrusion to adjacent landowners. • Construction activities generating output levels of 85 dB or more will be confined to the hours during normal working hours. • The Contractor must inform local communities and residents of any activity that could cause a nuisance to them. • Noise rules must be established for construction areas. These rules must continue into the operation phase. • The Contractor will take preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to minimise complaints regarding noise and vibration nuisances from sources such as power tools. • All construction vehicles must be serviced on a frequent basis as a means of limiting excessive noise levels. • The Contractor must ensure the silencers of all construction vehicles and machinery is working.	**Low (Negative)**	**Low**
Aesthetics – • Impact on the landscape character	**Medium (Negative)**	• Mitigation measures that will have to be implemented in order	**Low (Negative)**	**Medium**

and sense of place • Visual intrusion and VAC impacts • Visual exposure and visibility impacts		to minimise the visual impacts, with specific reference to minimising loss of indigenous vegetation, with specific mention of tall trees and shrubs, ensuing that effective reshaping and revegetation takes place within disturbed areas and careful consideration of the material and colours used in infrastructure design. • Other management measures that will have to be implemented in order to minimise the visual impact on the local and subregional area, including dust control and management, prevention of damage to visual resources such as the Jukskei and Klein Jukskei Rivers, making use of screening opportunities where possible and implementing good housekeeping measures.		
Waste management – Land, air and water pollution through poor waste management practices.	**Medium (Negative)**	• The entire site will be cleared of construction material, metal, tins, glass bottles, and food packaging or any other type of empty container or waste material or waste equipment used by the construction team on a daily basis. • Waste material that may harm man or animals should be removed immediately. • No hazardous materials e.g. oil, diesel and fuel should be disposed of in the surrounding environment. Any diesel, oil or petrol spillages are to be collected and stored in specially marked containers and disposed of at a permitted waste disposal site and must be treated as hazardous waste. • No refuse or litter is allowed to be burnt on site. • The recycling of all waste is to be encouraged of both the contractor and staff. • All vehicle parking areas and vehicle servicing areas are to	**Low (Negative)**	**Low**

		be inspected carefully for diesel, oil and other spillages weekly		
Traffic	**Medium (Negative)**	• Traffic safety measures to be implemented. • All construction access roads shall be clearly demarcated. Vehicle loads shall be secured such that no loads or part thereof fall from the vehicle and damage other road users. • It must be ensured that that construction vehicle speeds are restricted and traffic measures are implemented for safe and convenient access to the site. • The Contractor should strive to keep adverse impacts on the daily commuter traffic to a minimum. • Temporary traffic accommodation signage shall be displayed along the route to be followed by construction vehicles in order to create awareness of construction vehicles by other road users • Construction vehicles travelling on all public roads shall adhere to the posted speed limits and speeds along proposed access route shall be controlled at 40kph to minimise potential conflict.	**Low (Negative)**	**Low**
Socio-Economic – • Impact on the economy from improved transport of wastewater • Economic opportunities arising from the construction phase	**High (Positive)**	• The development potential of Gauteng is increasing and there is a need for improved provision of water services. This project will have a positive impact for the municipality as developers invest in the area. • Employment opportunities will be generated through the development which will increase household income. • In the study area, properties will have access to wastewater treatment which will allow development in the area to occur. • Contractors and sub-contractors must liaise with the local Councillor regarding the employment of local labour. • Employment of females and youth is	**High (Positive)**	**High**

		encouraged to ensure the empowerment of the most vulnerable to unemployment and poverty.		
Socio-Economic – • Land use conflicts • Short term disturbance arising from construction phase	**Medium (Negative)**	• The operational plan must include safety measures such as access gates and other access control measures that are to be enforced. • Landowners may choose to negotiate compensation for damage to property as a result of spillages and other damage that may arise from fault with the pipeline. Thus, the operational and management plan should be practical. • Ensure that the necessary signage and traffic measures are implemented for safe and convenient access to the site. • The mitigation measures referred to in the Traffic Management Plan should be adhered to at all times.	**Low (Negative)**	**Low**
Heritage resources – • Impact on burial grounds • Damage to heritage resources and archaeological sites	**High (Negative)**	• Upon the accidental discovery of archaeological material, a buffer of at least 20 meters should be implemented. • If archaeological material is accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the material permit must be applied for from SAHRA under Section 35 of the NHRA. • Upon the accidental discovery of graves, a buffer of at least 50 meters should be implemented. • If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a permit must be applied for from SAHRA (Section 36 of the NHRA) and other relevant authorities (National Health Act and its regulations). The local South African Police	**Low (Negative)**	**Low**

		Services must immediately be notified of the find. • Where it is recommended that the graves be relocated, a full grave relocation process that includes comprehensive social consultation must be followed. • No mitigation measures for palaeontological resources as the site is unfossiliferous.		
Watercourses – • Altered surface and/0r interflow • Altered hydrological regime • Impaired water quality • Erosion and sedimentation of water resources • Establishment of alien vegetation • Altered flows or river systems	**Medium (Negative)**	• The recommended buffer zones (15m) should be strictly adhered to during the construction phase of the project, with exception of the activities required to traverse a watercourse. Any supporting aspects and activities not required to be within the buffer area should adhere to the buffer zone; • Pipeline trenches and sandy bedding material may produce preferential flow paths for water across the project area perpendicular to the general direction of flow instead of angle. This risk can be reduced by installing clay plugs at intervals down the length of the trench to force water out of the trench and down the natural topographical gradient; • Pipelines crossing drainage areas, should preferably span the drainage lines above ground. This prevents disruptions to sub surface flow dynamics, and allows the pipeline to be monitored for leaks and subsequent waste of potable water. Pipelines underground crossing rivers and streams should be buried at a sufficient depth below ground level such that the pipelines do not interfere with surface water movement or create obstructions, where flows can cause erosion; • Storm water channels and preferential flow paths should be filled with aggregate and/or logs (branches included) to dissipate	**Low (Negative)**	**Low**

		and slow flows limiting erosion; • Laydown yards, camps and storage areas must be beyond the water resource areas and associated buffers where applicable; • Temporary and permanent erosion control methods may include silt fences, flotation silt curtains, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching; and • Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil. • An alien invasive plant management plan needs to be compiled and implemented prior to construction to control and prevent the spread of invasive aliens.		

OPERATIONAL PHASE

All Alternative Routes

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Geology and Soil – Soil erosion	**Medium (Negative)**	• Monitoring to be conducted to detect erosion. • Exposed areas to be rehabilitated as soon as possible to avoid erosion.	**Low (Negative)**	**Low**
Flora – The proposed construction activities may affect biodiversity through the encroachment of exotic vegetation following soil disturbance, in addition the maintenance of the area would disturb naturalised species within the area.	**Low (Negative)**	• Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed. • A monitoring program should be implemented for the first year to control and/or eradicate newly emerging invasives.	**Low (Negative)**	**Low**
Flora – Loss of habitat due to construction activities	**Low (Negative)**	• All areas to be affected by the proposed project will be rehabilitated after construction and all waste generated by the construction activities will be stored in a temporary demarcated storage area, prior to disposal	**Low (Negative)**	**Low**

		thereof at a licensed registered landfill site. • As much vegetation growth as possible should be promoted within the proposed development site in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping. In terms of the percentage of coverage required during rehab and also the grass mix to be used for rehab, the EMPr will be consulted for guidance. However, the plant material to be used for rehabilitation should be similar to what is found in the surrounding area.		

No-go option

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
The property will retain its current status and no construction activities will be undertaken.	**Low (Positive)**	No management measures are applicable	**Low (Positive)**	**Low**
No development means there is no opportunity for any economic activities, the pipeline will not provide opportunity for job creation within the local community or further growth in development in the area.	**Medium (Negative)**	Installation of a gravitational sewer pipeline and removal of pump stations.	**Low (Negative)**	**Medium**
No improved sewer pipeline infrastructure means a risk of leakages and keeps reliance on pump station which means high management costs	**High (Negative)**	Installation of a gravitational sewer pipeline and removal of pump stations.	**Low (Negative)**	**High**
No development means there is no visual impact to affected areas, no removal of indigenous vegetation or impact on fauna, flora or watercourses.	**Low (Positive)**	No management measures are applicable	**Low (Positive)**	**Low**

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

1. Soil, Land Use and Agricultural Potential Report
2. Riparian Habitat and Wetland Delineation Impact Assessment Report
3. Avifaunal Specialist Study
4. Heritage Impact Assessment Report
5. Paleontological Impact Assessment Report
6. Socio-Economic Impact Assessment Report
7. Terrestrial Ecological Assessment Report
8. Visual Impact Assessment Report

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

Wetland Assessment:

- Not all areas aligned with the pipeline alternative could be comprehensively assessed, this is due to private and business land ownership. A desktop study was conducted in order to supplement this limitation.
- The aquatic baseline assessment was based on the results of a single high flow survey only, and information provided should be interpreted accordingly.
- The wetland baseline assessment was based on the results of a single wet season survey only, and information provided should be interpreted accordingly.
- The GPS used for wetland delineations is accurate to within five meters. Therefore, the wetland delineation plotted digitally may be offset by at least five meters to either side.
- Wetland systems identified at desktop level within 500 m of the project area were considered for the identification and desktop delineation, with wetland areas within the project area being the focus for ground truthing.

Avifaunal impact assessment:

- This report is the result of a short term study. No long term studies were conducted on site.
- This study therefore depends heavily upon secondary or existing data sources such as those listed above. This study assumes a reasonable degree of accuracy of these data.
- Predictions in this study are based on experience of these and similar species in different parts of South Africa, through the authors' experience since 1999. However, bird behaviour can't be reduced to formulas that will hold true under all circumstances.

Heritage Impact Assessment:

- The heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the development area. Various factors account for this, including the subterranean nature of some archaeological sites. As such, should any heritage features and/or objects not included in the present inventory, be located or observed, a heritage specialist must immediately be contacted.
- Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question, which also applies to graves and burial grounds. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.
- Access to certain areas of the alignment was hampered by dense vegetation, while general access through the numerous properties intersected was challenging.

Palaeontological Impact Assessment:

- Old fossil databases that have not been kept up-to-date or are not computerised. These databases do not always include relevant locality or geological information. South Africa has a limited number of professional palaeontologists that carry out fieldwork and most development study areas have never been surveyed by a palaeontologist.
- The accuracy of geological maps where information may be based solely on aerial photographs and small areas of significant geology have been ignored. The sheet explanations for geological maps are inadequate and little to no attention is paid to palaeontological material.
- Impact studies and other reports (e.g. of commercial mining companies) - is not readily available for desktop studies.

Socio-Economic Impact Assessment:

- The study was undertaken with the information available to the specialist at the time of executing the study, within the available time frames and budget. The sources consulted are not exhaustive, and additional information which might strengthen arguments, and/or identify additional information might exist. However, the specialist did endeavor to take an evidence-based approach in the compilation of this report and did not intentionally exclude information relevant to the assessment.
- This report is the result of a short-term study; no long-term studies were conducted on site. As a result, the opportunity for primary data collection was limited. This study therefore depends heavily on secondary or existing data sources mentioned in Section 3.1. It is assumed that these sources are dependable and of good quality.
- Regardless of the analytical and predictive method employed to determine the potential impacts associated with the project, the impacts are only predicted on a probability basis. The accuracy of the predictions is largely dependent on the availability of data and the degree of understanding of the socio-economic fabric of the receiving environment.
- It is assumed that all information provided by the Environmental Assessment Practitioner is accurate, as is the information provided in other specialist studies used in this report.
- It was assumed that the information gathered through the stakeholder engagement process a general reflection of the attitude of the public towards the project and as such is accurately recorded. This report is to be used as part of the public participation process for the environmental impact assessment and additional information may be uncovered as this process unfolds.
- The study was completed using the Statistics South Africa Census 2011 data. While it is acknowledged that the data is somewhat outdated, it is the most comprehensive primary data available.
- It must be assumed that all the interview reports are based on reflections provided by those present and may or may not necessarily be a reflection of future conditions.
- Information related to the capital cost and operational cost of each route alignment alternative was unavailable.
- Lastly, it is important to note the term sense of place is subjective in nature as it relies on human nature and emotional responses to a geographic area. Thus, the impact on sense of place varies between communities, income groups and in personal interests of those living in the study areas.

Terrestrial Impact Assessment:

- The majority of threatened plant species are seasonal and only flower during specific periods of the year.
- Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage and Nemai Consulting can thus not accept responsibility for conclusions and mitigation measures made in good faith based on information gathered or databases consulted at the time of the investigation.

Visual Impact Assessment:

- No specific national legal requirements for VIAs currently exist in South Africa. However, the assessment of visual impacts is required by implication when the provisions of relevant acts governing environmental management are considered and when certain characteristics of either the receiving environment or the proposed project indicate that visibility and aesthetics are likely to be significant issues and that visual input is required (Oberholzer, 2005);
- Due to no visual specialist guidelines being available for the Gauteng Province, the "Guidelines for Involving Visual and Aesthetic Specialists in the EIA Process" (Oberholzer, 2005), prepared for the Western Cape Department of Environmental Affairs & Development Planning, was used;
- All information relating to the proposed project as referred to in this report is assumed to be the latest available information obtained from the project engineers. Detailed information was however not available on final finishings, colours and detailed infrastructure and river crossing design. Therefore, for the purposes of this report, assumptions were made, where required, taking best practice and industry standards into consideration;
- Access into privately-owned land within the vicinity of the proposed aboveground route alternatives was not possible at all sites at the time of assessment;
- Only the aboveground pipeline sections have been assessed as part of this VIA, however construction/ installation and decommissioning related impacts were considered for the underground/ tunneled sections of the pipelines as part of the impact assessment;
- Abstract or qualitative aspects of the environment and the intangible value of elements of visual and aesthetic significance are difficult to measure or quantify and as such depend to some degree on subjective judgments. It therefore is necessary to differentiate between aspects that involve a degree of subjective opinion and those that are more objective and quantifiable, as outlined in the diagram below (The Landscape Institute and Institute of Environmental Management and Assessment (LI IEMA, 2002); and
- The viewsheds resulting from the DEM and as illustrated in this report, indicate the areas from which the proposed infrastructure is likely to be visible and do not take local vegetation cover and man-made structures into account. Potential sensitive receptor sites have therefore been groundtruthed during the field assessment.

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

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

The decommissioning or closure of the proposed development is not envisioned for this proposed development at this stage. A separate EIA Process must take place if any decommissioning activities are to take place in future.

Proposal

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

Alternatives

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

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

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

4. CUMULATIVE IMPACTS

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

According to GN No. R. 982 (04 December 2014), a "cumulative impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. Cumulative impacts can be identified by combining the potential environmental implications of the proposed project with the impacts of projects and activities that have occurred in the past, are currently occurring, or are proposed in the future within the project area.

Roads
During construction, there will be traffic-related impacts to the local road network. The combined construction periods for the Lanseria WwTW and outfall sewer as well as any future proposed developments in the area (as Lanseria is earmarked for development such as roads and housing) will possibly place a significant burden on the roads in the study area, where there will be an overlap between these project footprints. The associated impacts may include traffic disruptions and deterioration of road conditions.

Increase in Alien Invasives
Large-scale land clearing activities and other construction-related disturbances could lead to the proliferation of exotic vegetation. The associated cumulative impact in relation to other activities in the affected areas, such a livestock grazing, will need to be considered further.

Erosion
The soils in some parts of the project area may be erodible. Any previous disturbance (such as overgrazing) will be aggravated by the construction activities if this impact is not properly managed. The properties adjacent to the river currently experience erosion and collapse of the Jukskei River banks along their properties.

Ecology and Biodiversity
The terrestrial study will need to identify species of conservation significance that could be adversely affected by the project activities. This study will need to consider the existing local impacts to biodiversity and the incremental loss of conservation-worthy species, within the context of the provincial conservation goals and targets, especially with the nearby the Chartwell Conservancy and the Diepsloot Nature Reserve. There are ridges that exist on the alternative routes that contain conservation importance. Over time, there could be further loss of threatened ecosystem and biodiversity with the opportunity of further development encroachment. Site 1 is considered to be in an area classified as one of the last remaining “green lungs” in Lanseria. Development of one of the remaining vacant properties in this area could result in loss of an area that could be incorporated into the conservation plans for the area to preserve this pristine environment. A cumulative impact could be that more open spaces consisting of threatened ecosystems and biodiversity are lost in future once development further encroaches this area.

Pollution into the River
Possible cumulative impacts such as accidental spillages or poor management of the WwTW or the associated outfall sewer could result in further degradation of the Jukskei River at Site 1 or the Crocodile River at Site 2, or further pollution of the Klein-Jukskei flowing parallel to where the outfall sewer is proposed to be installed. Thus there could be pollution discharge into the streams and wetlands from non-discharge point sources. Water users downstream of the river could be impacted. There are many concerns about the new WwTW management as a result of the historic poor management by JW of the existing Northern WwTW and the Zandspruit Pump Station. Poor management and over reliance of the pump station has resulted in serious pollution and irreversible damage to the Klein-Jukskei and Jukskei River.

Increase Flow into the River
Possible cumulative impacts as a result of the treated effluent discharge from the WwTW or leaks from the outfall sewer could affect downstream users or groundwater users

Health
Some of the residents may use the water from the river for their own purposes or use boreholes on their properties. Residents at Site 1 and surrounding the Zandspruit pump station are currently concerned with the water quality of the Jukskei River and the Klein-Jukskei River. Poor management (such as spillages) of the new WwTW and leakages or mismanagement of the outfall sewer pipeline could adversely affect downstream water users in areas within Lanseria, Chartwell and Farmall.

Security
Security is already a concern to the local community of Blair Atholl, Monaghan Farms, and the Chartwell/Farmall Community, and this could be worsened during the construction phase, as well as in the operational phase of the outfall sewer pipeline. There is the possibility that informal dwellings could encroach within the site area so as to be situated close to the site camp of the outfall sewer, and that the construction site will allow for uncontrolled access into these protected communities. These factors could result in an increase in crime for the residents.

Enhancement of Further Development
The provision of a WwTW and gravitational outfall sewer pipeline will allow developments in the area that have been on hold (due to the lack of sanitation service provision) to proceed. Therefore, the new WwTW will definitely trigger further development in the Lanseria area (mostly industrial and residential). The CoJ Masterplan indicates the future planned developments for Lanseria. Some of the planned developments include a large abattoir, housing and mining applications for the area. For many of the residents in the area (located along all alternatives) found close to the Klein-Jukskei and Jukskei River, the area has a quiet and rural nature, and many households have invested a lot in their properties to pursue this sense of place. For many directly adjacent property owners, there could be loss of income or property value as well as permanent loss of the sense of place of their properties. Further development in the area that will be triggered by the new WwTW will further impact the sense of place of the study area.

Increased Standard of Living
The project was initiated to meet the future sanitation demands in the northern areas of CoJ. The sanitation deficit in this system means that the sanitation requirements of the supply area cannot be met in future, placing more pressure on the existing infrastructure (Northern WwTW and Zandspruit Pump Station) and posing higher risks to the environment. The proposed WwTW and outfall sewer pipeline will cater for these demands. In turn, this will have a positive impact on the macro socio-economic environment, and relieve pressure on the existing infrastructure, also moving away from the reliance on pump stations.

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.

All Alternatives

The overall impact of the proposed Lanseria Outfall Sewer Pipeline will be low, if the pre-construction, construction and operation phases are managed correctly under the framework and guidelines outlined in the EMPr. From the detailed Impact Assessment (Appendix I) and Specialist Studies it can be concluded that the impact of the Alternative route 1 to Site 1 will have an overall lower impact to threatened vegetation, fauna and flora, watercourses and the social environment, than all other proposed alternatives. The alternative outfall sewer pipelines full impact assessment is contained in the Impact Assessment Report, please refer to **Appendix I1** for the specific types of impact, duration of impacts, potential and significance of all related impacts to the outfall sewer pipeline. All mitigation measures and the EMPr must be adhered to.

No-go (Compulsory)

The proposed outfall sewer alternatives are associated to the Lanseria WwTW, and is thus dependent on the WwTW just as the WwTW is dependent on the outfall sewer, as this is the main inlet to the treatment plant. If no outfall sewer is installed, then the reliance on pump stations remains, posing a risk to the environment as with the increase in population, the pump stations overflow and thus pollute land and watercourses of high conservational importance. From a socio-economic perspective, if no development occurs in this area, there will be no local job opportunities, and the areas that are currently on hold due to the lack of sanitary services currently in the area.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For **alternative 1 to Site 1:**

Geology and Soil –
- Soil Erosion
- Loss of quality and quantity of topsoil

Geohydrology -
- Impact on groundwater

Land capability –
- Loss of quality and quantity of topsoil

Land capability –
- Indirect agricultural impacts

Flora –
- Loss of vegetation disturbance due to fuel and chemical spills
- Introduction of alien species
- Destruction of alien vegetation
- Increased soil erosion
- Impacts on ridges
- Loss of habitat on Egoli Granite Grassland, CBA's and ESA's
- Damage to plant life outside the propose development site

Fauna –
- Disturbance to animals

Avifauna –
- Habitat destruction

Avifauna –
Disturbance of birds

Air Quality –
- Excessive dust levels as a result of construction activities and movement of construction vehicles.
- Vehicles and construction machinery's emissions.
- Smoke from uncontrolled fires.

Noise –
Excessive noise levels as a result of decommissioning (demolition activities), construction and operation activities.

Aesthetics –
- Impact on the landscape character and sense of place
- Visual intrusion and VAC impacts
- Visual exposure and visibility impacts

Waste management –
Land, air and water pollution through poor waste management practices.

Traffic

Socio-Economic –
- Impact on the economy from improved transport of wastewater
- Economic opportunities arising from the construction phase

Socio-Economic –
- Land use conflicts
- Short term disturbance arising from construction phase

Heritage resources –
- Impact on burial grounds
- Damage to heritage resources and archaeological sites

Watercourses –

- Altered surface and/0r interflow
- Altered hydrological regime
- Impaired water quality
- Erosion and sedimentation of water resources
- Establishment of alien vegetation
- Altered flows or river systems

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

The table below, represents the environmental features assessed in the impact study, including the specialist study that assessed that feature, as well as a summary of which route is preferred due to the least impact on the environment. The green box with a tick represents which route is preferred based on its low impact on the environmental features assessed in the impact study. The red box with a cross represents routes that are not preferred due to the high impact on the environment and features.

Based on the comparative analysis below taken from the Impact Assessment (**Appendix I1**):

Feature	Specialist Study	R1 S1	R2 S1	R1 S2	R2 S2	R3 S3
Geology and Soil	Geotechnical Study	✓	✓	✓	✓	✓
Geohydrological	Baseline Geohydrological Assessment	✓	✓	✓	✓	✓
Land capability and Land use	Soil, Land Use and Agricultural Potential Survey	✓	X	X	✓	X
Water	-	✓	✓	✓	✓	✓
Flora and Fauna	Terrestrial Ecological/ Ridge Assessment	✓	X	X	X	✓
Avifauna	Avifaunal Specialist Study	✓	X	X	X	✓
Air Quality	-	✓	✓	✓	✓	✓
Traffic	Traffic Impact Study	✓	✓	✓	✓	✓
Noise	-	✓	✓	✓	✓	✓
Aesthetics	Visual Impact Assessment	✓	X	X	✓	✓
Waste Management	-	✓	✓	✓	✓	✓
Socio – Economic	Socio-Economic Impact Assessment	✓	X	✓	✓	✓
Heritage Resources	Heritage Impact Assessment	X	X	X	X	X
Palaeontology	Palaeontological Impact Assessment	✓	✓	✓	✓	✓
Watercourses	Riparian Habitat and Wetland Delineation Impact Assessment	✓	X	X	X	✓

It clearly shows that Alternative route 1 to Site 1 is the route with the least natural and social environmental impacts and is mostly preferred by specialist studies. The route is a gravitational route and will therefore be technically preferred as it means that there is no need for the reliance on pump stations. This proposed alternative only crosses 9 wetlands and is not within 20m of any heritage site. It is fully gravitational, completely underground and is the shortest route of all the alternatives. **Figure 5** below shows the preferred Alternative Route 1 to WwTW Site 1. The preference for this route will also enable JW to decommission various existing sewer pump stations (Zandspruit Pump Station Etc.).

Figure 5: Preferred alternative route 1 to WwTW Site 1

7. SPATIAL DEVELOPMENT TOOLS

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

Gauteng Conservation Plan
Geographic Information Systems were used in determining the status quo of the receiving environment. The Gauteng Conservation Plan was utilised to indicate any sensitive surrounding environments and the level of protection of these. The alternative routes fall within CBA and ESA areas.

Gauteng Ridges Policy (2006)
Conservation of ridges and the area immediately surrounding the ridges, which provide habitat for a wide variety of fauna and flora, some of which are Red List, rare or endemic species or, in the case of certain of the plant species, are found nowhere else in South Africa or the world. The proposed alternative routes fall within Class 1, 2, 3, and 4 Ridges, which are all governed and managed under the framework and guidelines stipulated in this policy.

Gauteng Environmental Management Framework (2014)
The Gauteng Environmental Management Framer was taken cognisance of in determining the feasibility of the proposed project.

Gauteng Spatial Development Framework (2014)
The Spatial Development Framework was taken cognisance of during the design and development of the proposed outfall sewer. The SDF is the legislated component of the municipality's IDP that prescribes development strategies and policy guidelines to restructure and reengineer the urban and rural form. The SDF is the municipality's long-term vision of what it wishes to achieve spatially, and within the IDP programmes and projects. The SDF should not be interpreted as a blueprint or master plan aimed at controlling physical development, but rather the framework giving structure to an area while allowing it to grow and adapt to changing circumstances.

8. RECOMMENDATION OF THE PRACTITIONER

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

YES	
X	

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

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

The proposed development should not result in pronounced negative impacts on the natural or social environment that are detrimental, nor result in undue risks to the natural environment. The nature and types of negative impacts do not outweigh the potential benefits of this project, provided that the short term localised impacts of the construction phase are adequately mitigated. In this regard, an EMPr has been compiled and attached to this report). It is

recommended that weekly compliance monitoring takes place by an independent Environmental Control Officer (ECO) to ensure that the requirements of the EMPr and EA are being correctly implemented, thus ensuring the protection of the surrounding environs during construction. The monitoring reports will be submitted to the Applicant and a quarterly monitoring report will be submitted to GDARD. All mitigation measures provided by the Specialist Reports (**Appendix G**) need to be adhered to.

It is the recommendation of the EAP, and the Specialist Studies, that the following main management and mitigation measures be incorporated into any project approvals which may be issued:

Watercourses:

- It is recommended that the wetland areas be avoided if possible. It is preferable that the selected pipeline traverses a watercourse aboveground. Details pertaining to the crossings should be considered for an updated risk assessment.
- Should the final development plan require that wetland areas be lost to accommodate the project, it is recommended that a wetland rehabilitation plan be compiled for the project in order to prescribe measures to protect the remaining wetland systems, and also improve the status and functioning of these systems.
- It is recommended that a specific monitoring plan be compiled for the route. The monitoring plan should include key aspects of the rivers and wetlands that will be affected by the pipeline. The monitoring plan will be compiled in the WULA.

Avifaunal:

- For all construction and operational activities to avoid the High (riparian) and Medium (stream & wetland) sensitivity areas identified by this study (delineation of which should be confirmed in consultation with wetland/botanical/ecology specialist). Strict control over all vehicles, staff and machinery is required so as to ensure that they do not enter this area.
- Any newly established (subsequent to this assessment and prior to construction) breeding or roosting sites of sensitive species should be reported by the Environmental Control Officer, and will be managed through case specific mitigation measures.
- The ground surface should be rehabilitated after construction by returning it to the same plant types as before, under the supervision of a suitably experience botanist.

Heritage/Archaeological resources:

- Demarcate the heritage site as a no go area, with a 20-meter buffer and a fence.
- It is also recommended that the Environmental Control Officer (ECO) monitor construction at these locations.

Terrestrial:

- It is recommended that prior to construction, three (3) species of conservation concerns were noted, namely *Hypoxis hemerocallidea, Boophane disticha* and *Eucomis autumnalis* must be searched and rescued and then following construction activities, they must be re-established at the site.
- Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed and there should be an on-going monitoring program to control and/or eradicate newly emerging invasives.
- The rehabilitation of disturbed areas should receive high priority and must be included in the EMPr and recommendations regarding
- Prior to construction activities, an experienced person who knows the animals in the region well will identify any possible Red Data fauna on site and acquire the necessary permits to relocate fauna will be obtained if avoidance is not possible.
- It is recommended that the larger exotic species that are not included in the Category 1b list of invasive species could also be allowed to remain for aesthetic purposes.
- The sensitivity map be considered during the planning and construction phases of the proposed development activities in order to aid in the conservation of ecology within the study area.

Including general recommendations:

- Site clearing of flora, taking into account the rehabilitation potential.
- Search and rescue of plant species of conservation importance.
- Restrict construction activities to footprint area.
- Encroachment of alien vegetation should be monitored regularly and controlled.
- Minimise vegetation disturbance due to fuel and chemical spills to the river.
- Care must be taken during clearing of site to minimize damage or disturbance of roosting and nesting sites.
- Animals residing within the designated area shall not be unnecessarily disturbed.
- Animals should be allowed to move freely within their habitat.
- For any chance finds, all work will cease in the area affected and the Contractor will immediately inform the Project Manager. A registered heritage specialist must be called to site for inspection. The relevant heritage resource agency (PHRAG) must be informed about the finding.
- Should any remains be found on site that is potentially human remains, the South African Police Service should also be contacted.
- If there are chance finds of fossils during construction, a palaeontologist must be called to the site in order to assess the fossils and rescue them if necessary (with a SAHRA permit). The fossils must then be housed in a suitable, recognized institute
- Rehabilitate and revegetate the excavated areas.
- During the construction phase laydown yards, vehicle yards and soil dumps should be located beyond the 15m buffer of the riparian zones and the 15m buffer of the wetland.
- Erosion prevention and sediment control measures need to be implemented
- Construction camp to be established in an already disturbed area;
- 'No go' areas to be demarcated;
- To manage handling, use and storage of materials on site; and
- Rehabilitation to be undertaken post construction where required.

From the findings of this BAR, it is recommended that the EA be granted for the proposed Lanseria Outfall Sewer Alternative Route 1 Pipeline to Site 1, in adherence to the EMPr as per the project description.

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

No.	Question	Response
Need (Timing)		
1.	Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the IDP).	The CoJ SDF (2015/2016) mentions that the Lanseria Development Framework 2020 and the Mogale City SDF identify the Lanseria airport node as a long term strategic development node with opportunities for commercial, business and residential development. The future development of the airport is grounded on the Lanseria Airport infrastructure project with a development company established to undertake this development. This development should be mixed use with mixed income housing opportunities. Significant expansion of the area available for urban development also includes the K29 freight corridor, from Kya Sand to Lanseria (LDF, 2008). The LDF (2008) highlights the need for sewer bulk infrastructure to be provided in order for future development to proceed. The proposed outfall sewer for the WwTW is provided for in the CoJ IDP as associated infrastructure (2012 – 2016).
2.	Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	Lanseria is earmarked for future development including residential, commercial and industrial (CoJ SDF, 2015/2016; LDF, 2008) and it is these areas that are going to require efficient sanitation capacity to handle future demands. Therefore the new WwTW and its proposed outfall sewer intended to serve these areas needs to be located close by. The WwTW and outfall sewer also needs to be constructed soon as these developments are soon to be established to meet the current population growth. This response applies to both site alternatives and outfall sewer pipeline alternatives as the area of supply by the entire proposed WwTW infrastructure, including the outfall sewer does not change whether Site 1 or Site 2 is considered.
3.	Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate)	As the largest city in South Africa, CoJ is home to more than 4.4 million people (CoJ IDP, 2012 - 2016). Sanitation forms one of the core elements to ensure a decent standard of living as the aim of the National Development Plan (CoJ IDP, 2012 - 2016). Therefore the proposed Lanseria Outfall Sewer Pipeline is a critical need to cater for future urban expansion. This response applies to both site alternatives and outfall sewer pipeline alternatives as the area of supply by the entire proposed WwTW infrastructure, including the outfall sewer does not change whether Site 1 or Site 2 is considered.
4.	Are the necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	The need for a new WwTW and outfall sewer is to provide the necessary sanitation services to the future planned areas of northern CoJ, and to move away from the need for pump stations. The existing Northern WwTW is currently serving the existing area and is planned to be expanded to meet future demands as the capacity will not be enough; however, even after this expansion, the Northern WwTW will not be enough to cater for

		the urban expansion in the Lanseria area. Therefore a new WwTW and outfall sewer pipeline connecting to the works, is required to meet future demands.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services)?	Site 1 and associated outfall sewer Yes, the proposed Lanseria WwTW and the associated outfall sewer alternatives is provided for in the infrastructure planning by CoJ (CoJ IDP, 2012 - 2016). Site 2 and associated outfall sewer No. The Mogale City IDP (2016/2017) does not make provision for the Lanseria WwTW or its associated infrastructure. Other WwTWs that are planned for Mogale City nearby include the Lindley WwTW but this does not cover the area of supply for this project.
6.	Is this project part of a national programme to address an issue of national concern or importance?	Yes, there is an urgent need to provide sanitation services to the future urban areas of northern CoJ.
Desirability (Placing)		
7.	Is the development the best practicable environmental option (BPEO) for this land/site?	The new WwTW needs to serve the Lanseria area and thus needs to be built within Lanseria. It has already been discussed why the existing Northern WwTW cannot be expanded to accommodate the future demand. A new WwTW and associated gravitational outfall sewer is considered a more practical option by JW than installing pump stations as this is costly and can result in overflows during power failures. A number of factors were considered by JW in selecting the outfall sewer pipeline alternatives for the WwTW. The BPEO (Alternative 1 to Site 1) was selected after a comparative analysis of the outfall sewer pipeline alternatives, and was found to have the lowest impact on the environment.
8.	Would the approval of this application compromise the integrity of the existing approved municipal IDP and Spatial Development Framework (SDF) as agreed to by the relevant authorities?	Site 1 and alternative outfall sewer pipeline No. It is not anticipated that the proposed Lanseria WwTW will contradict or be in conflict with the CoJ IDP and SDF as it is mentioned that a new WwTW and associated outfall sewer is required for the City. Site 2 and alternative outfall sewer pipeline Even though JW would be responsible for the WwTW, this specific WwTW project does not currently fall part of the Mogale City IDP and SDF.
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	The compatibility of the project with the Gauteng EMF (2014) is considered. A WwTW is classified as a development that would be either compatible or conditionally compatible, and thus not undesirable. The Gauteng Conservation Plan (C-Plan) identifies CBAs and ESAs that are critical for conserving biodiversity and maintaining ecosystem functioning in the province, and provides land use guidelines. It further serves as a key input to future bioregional plans in the Province.
10.	Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its broader context).	Yes. As part of the technical analysis, a number of factors were considered by JW in selecting outfall sewer alternatives for the WwTW, Refer to the Impact Assessment in **Section E** of this report for a summary of the Specialist Studies which identify the sensitive environmental features and receptors of all outfall sewer alternatives.

11.	How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	There will be an impact on the open space areas in terms of fauna and flora and on the wetlands on both site alternatives and their associated outfall sewer alternatives. Refer to the full Impact Assessment Report in **Appendix I1** for an overall assessment of the project's potential impacts.
12.	How will the development impact on people's health and wellbeing (e.g. i.t.o. noise, odours, visual character and sense of place, etc)?	There will be an impact by the proposed Lanseria WwTW on the surrounding landowners and occupiers for both the construction and operation phases in terms of noise, dust, odour and sense of place. The associated outfall sewer pipeline are underground, except for two section for Alternative 1 to Site 2 which is visually impacting the surrounding settlements, and construction noise and dust could also impact the surrounding areas during the construction phase. However, the sanitation service provision by the WwTW and its associated outfall sewer moving away from the need for pump stations, creates a necessary service to people's wellbeing. Refer to the full Impact Assessment Report in **Appendix I1** for an overall assessment of the project's potential impacts.
13.	Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	No. All alternatives to Site 1 and Site 2 traverse trough open land, as well through small holdings, farms and ervens. However the least amount of properties are affected by the proposed alternatives to Site 1, whereas the routes to Site 2 travers within existing registered structures, including but not limited to Blair Atholl Golf Estate, Monaghan Farms, Lanseria Airport and properties within Chartwell and Farmall. These routes also traverse within areas seen to contain heritage and archaeological value. The alternative route 3 to Site 2 will also have to undergo tunnelling underneath the Lanseria Airport, resulting in higher costs than those proposed to Site 1. Refer to Section E and **Appendix I2** for an assessment of the project's potential impacts.
14.	Will the proposed land use result in unacceptable cumulative impacts?	Refer to Section E for an assessment of the project's potential cumulative impacts.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

(CONSIDER WHEN THE ACITIVTY IS EXPECTED TO BE CONCLUDED)

The related 150Ml/day WwTW consists of three phases, where the first phase is 50Ml/day which will approximately take 5-6 years to construct, therefore it is requested that, if granted, this EA must be valid for at least 6 years.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

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

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

EMPr attached	**X**

SECTION F: APPENDIXES

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

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

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

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information
- E1 – Proof of site notice
- E2 – Written notices issued as required in terms of the regulations
- E3 – Proof of newspaper advertisements
- E4 –Communications to and from interested and affected parties
- E5 – Minutes of any public and/or stakeholder meetings
- E6 - Comments and Responses Report
- E7 –Comments from I&APs on Basic Assessment (BA) Report
- E8 –Comments from I&APs on amendments to the BA Report
- E9 – Copy of the register of I&APs

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

Appendix G: Specialist reports
- G1: Soil, Land Use and Agricultural Potential Report
- G2: Riparian Habitat and Wetland Delineation Impact Assessment Report
- G3: Avifaunal Specialist Study
- G4: Heritage Impact Assessment Report
- G5: Paleontological Impact Assessment Report
- G6: Socio-Economic Impact Assessment Report
- G7: Terrestrial Ecological Assessment Report
- G8: Visual Impact Assessment Report

Appendix H: EMPr

Appendix I: Other information
- I1: Impact Assessment Report
- I2: Property details of alternative route sections
- I3: Traffic Impact Assessment
- I4: Geotechnical Study
- I5: Geohydrological Study
- I6: Addendum of route alternatives

CHECKLIST

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

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