



Gauteng Department of Agriculture, Conservation and Environment

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, 2006 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDACE in terms of the EIA Regulations, 2006 and must be submitted together with the application form.
 2. This application form is current as of 26 June 2006. 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. 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.
 4. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
 5. An incomplete report may be returned to the applicant for revision.
 6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
 7. Five (5) copies of this report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
 8. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
 9. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
-

DEPARTMENTAL DETAILS

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

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

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

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

(For official use only)

File Reference Number:

Application Number:

Date Received:

SECTION A: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

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

Duplication of the Vlakfontein (Benoni) – Mamelodi Water Supply pipeline within the existing servitude. Phase 2: From the southern boundary of the Rietvlei Nature Reserve to Mamelodi.

Select the appropriate box

The application is for an upgrade of an existing development

☐

The application is for a new development

☐

Other, specify

Duplication of an existing structure

Describe the activity and associated infrastructure, which is being applied for, in detail

Rand Water proposes the duplication of a 52km water supply pipeline, routed adjacent to the existing Rynfield – Mamelodi R1 and H26 pipelines, within the existing servitudes, from Vlakfontein to Mamelodi. The pipeline will have an internal diameter of 0.8 – 1.5 metres. This environmental assessment applies to Phase 2 of the alignment (27km) which runs from the southern boundary of the Rietvlei Nature Reserve to Mamelodi.

The project is proposed in order to provide for the supply of the peak water demands, whilst maintaining a positive pressure and flow velocity of less than 2.5m/s. This proposed pipeline is routed through the City of Tshwane Metropolitan Municipal area (which includes the former Kungwini Local Municipality). Associated construction activities include but not limited to:

- Surveying and assessment of the servitude.
- Establishment of construction camps and laydown areas.
- Removal of obstacles along the alignment.
- Movement of construction vehicles within the servitude.
- Construction of access roads and turning circles for the equipment.
- Excavation and stockpiling of topsoil and subsoil along the servitude.
- Construction of the pipeline below ground (trenching).
- Construction of infrastructure associated with the pipeline.
- Backfilling of open trenches.
- Pipe – jacking in areas where needed (railway and road crossings).
- Search and rescue of plants.
- The crossing of 8 water courses.
- The rehabilitation of the construction and stockpiling areas.

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:

Administering authority:

Promulgation Date:

National Environmental Management Act No. 107 of 1998	National & Provincial	27 November 1998
GNR 386	GDARD	21 April 2000
National Water Act No 36 of 1998	DWA	20 June 2002
Occupational Health and Safety Act No 85 of 1993 (GNR 1010 Construction regulations)	Department of Labour	18 July 2003
National Heritage Resources Act No 25 of 1999	SAHRA	1 April 2000

National Environmental Management: Protected Areas Act No 57 of 2003	DEA	1 November 2004
National Environmental Management: Biodiversity Act No 10 of 2004	DEA and/or GDARD	1 September 2004
Constitution of South Africa No Act 108 of 1996	National Government	8 May 1996
Municipal Structures Acts No 117 of 1998	Local Government	1 February 1999
Municipal Systems Act No 32 of 2000	Local Government	1 March 2001

3. ALTERNATIVES

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

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

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

Provide a description of the alternatives considered :

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, operational or other(provide details of "other")	Description
1	Proposal: Phase 2: Duplication of the Vlakfontein (Benoni) – Mamelodi Water Supply pipeline within the existing servitude.	<p>Rand Water proposes the duplication of a 52 km water supply pipeline, routed adjacent to the existing Rynfield – Mamelodi R1 and H26 pipelines, within the existing servitudes, from Vlakfontein (Benoni) to Mamelodi. The pipeline will have an internal diameter of 0.8 – 1.5 metres. This environmental assessment applies to Phase 2 of the alignment (approximately 27km) which runs from the southern boundary of the Rietvlei Nature Reserve to Mamelodi as can be seen by the locality map attached in Addendum A of Appendix A.</p> <p>The project is proposed in order to provide for the supply of the peak water demands, whilst maintaining a positive pressure and flow velocity of less than 2.5m/s. This proposed pipeline is routed through parts of the City of Tshwane Metropolitan Municipal area (which includes the former Kungwini Local Municipality).</p> <p>For the purpose of this Basic Assessment the proposed alignment will be divided into the following sections:</p> <ul style="list-style-type: none"> • Section 1: Maps 28B – 21 (Rietvlei Nature Reserve) • Section 2: Maps 20 - 17 (Rietvlei Nature Reserve to Garsfontein Road) • Section 3: Map 16 to 12 (Garsfontein Road to Bronberg) • Section 4: Map 11 to 08 (Bronberg to Six Fountains) • Section 5: Map 07 to 05 (Six Fountains to Savannah Country Estate) • Section 6: Map 04 to 01 (Savannah Country Estate to Mamelodi)

2	Preferred Alignment alternative: Phase 2: Duplication of the Vlakfontein (Benoni) – Mamelodi Water Supply pipeline within the existing servitude.	<p>It is proposed that the pipeline remain within the existing servitude which varies from 30 to 18 m for the majority of the alignment with the exception of Rietvlei Nature Reserve and Woodhill Golf Estate where deviations from the original servitude are proposed due to the environmental and social sensitivities of these areas as can be seen by the locality map attached in Addendum A of Appendix A.</p> <p>For the purpose of this Basic Assessment the preferred alternative alignment will be divided into the following sections:</p> <ul style="list-style-type: none"> • Section 7: Maps A28B – A21 (Rietvlei Nature Reserve) • Section 8: Maps A20 - A17 (Rietvlei Nature Reserve to Garsfontein Road) • Section 9: Map A16 to A12 (Garsfontein Road to Bronberg) • Section 10: Map A11 to A08 (Bronberg to Six Fountains) • Section 11: Map A07 to A05 (Six Fountains to Savannah Country Estate) • Section 12: Map A04 to A01 (Savannah Country Estate to Mamelodi)
3	Construction alternatives	<p>The proposed pipeline is to be constructed below ground using open trenching.</p> <p>Above ground construction of the pipeline was considered in certain areas. This alternative form of construction was deemed not feasible for security reasons.</p>
4	Material alternatives	<p>The pipeline will be constructed from steel. No other alternative materials exist except at water course crossings where the steel pipeline will be encased in concrete.</p>
<p>Please note: The following deviation alternatives were considered for Rietvlei Nature Reserve, Woodhill Golf Estate as well as the Bronberg Reserve but will not be investigated any further in the report as they were not deemed feasible alternatives for the various reasons mentioned below. A map of the alternatives can be found in Addendum B of Appendix A.</p>		
A	Alignment alternative: Rietvlei Nature Reserve	<p>It was proposed the alignment enter the Rietvlei Nature Reserve at the southern boundary of the reserve, turn 90° east and run parallel with the Eskom distribution power lines. Once at the eastern boundary of the reserve, the deviation will turn 90° north and will run within the firebreak of the reserve parallel to the Delmas road. The deviation will join up with the existing servitude and will exit the reserve at the same point as the proposed alignment.</p> <p>This deviation is not investigated any further as it will be placed in a high risk dolomitic area which already contains a sinkhole.</p>
B	Alignment alternative: Rietvlei Nature Reserve	<p>The deviation will run in the existing servitude up to the southern side of the Eskom distribution power lines. At this point the deviation will turn 90° and run parallel to</p>

		<p>the power lines, passing through Corobrik and Nova Brick properties. Once reaching the Delmas road it will turn 90° north, entering the reserve at the southern boundary, where it will run in the firebreak of the reserve parallel to the Delmas Road. The deviation will ultimately join up with the existing servitude at the boundary of the reserve.</p> <p>This deviation would pass through an area (Nova Brick) which has mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights. The firebreak parallel to the Delmas Road is also a high risk dolomitic area which already contains a sinkhole as previously mentioned.</p>
C	Alignment alternative: Rietvlei Nature Reserve	<p>The deviation will run in the existing servitude up to the southern side of the Eskom distribution power lines. At this point the deviation will turn 90° and run parallel to the power lines, passing through Corobrik and Nova Brick properties towards the Delmas road which it will cross. Once across the Delmas road, the deviation will turn 90° north and run parallel to the road in the Corobrik, Nova Brick and Townsdev (Pty) Ltd property where it will be diverted between the Lion Camp and Quarry, behind the NIA until it joins up with the existing servitude.</p> <p>This deviation will not be investigated any further in the report as the deviation would still pass through an area (Nova brick) which has mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights. Townsdev (Pty) Ltd have also opposed the registering of servitude on their property. Reasons for opposition can be found in Appendix 6 of Appendix E. The deviation would also pass to close to the NIA buildings.</p>
D	Alignment alternative: Rietvlei Nature Reserve	<p>The deviation is diverted to run behind the southern boundary of Corobrik, between the Corobrik and Chieftain development. The deviation will cross the Delmas road turn 90° north and run parallel to the road in Nova Brick property until it is diverted between the Lion Camp and Quarry, behind the NIA buildings.</p> <p>Once again this deviation will not be investigated any further in the report as the deviation would still pass through areas (Nova Brick) which have mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights. The deviation would also pass to close to the NIA buildings. There is also not enough space between the boundary of the Corobrik property and the Chieftain development for a 30m servitude.</p>
E	Alignment alternative: Woodhill Golf Estate	<p>The deviation will cross De Villebois in the existing servitude. Once across the road it will run in the road reserve parallel to De Villebois until it joins with the existing servitude. It will not enter the Estate.</p> <p>This deviation will not be investigated further in the report as the road reserve is too narrow for 13 m servitude and will encroach on an existing Eskom</p>

		servitude.
F	Alignment alternative: Bronberg Reserve	<p>The alternative deviation will run on the southern side of the Bronberg extending from the existing servitude at Leander Road (Olympus) westwards along the edge of the crown of the ridge along the Zeerust, heading north parallel to Hans Strijdom. At Lynnwood road the deviation turns east towards Catherine road, to the northern side on Bronberg where it meets up to the existing servitude.</p> <p>The alternative deviation was ruled out by the specialists as there were several more constraints (i.e. presence of existing services) and would have a larger impact on the Juliana Golden Mole as a whole as a greater area would be disturbed.</p>

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

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative 1(Proposed activity)

Alternative 2 (if any)

Alternative 3 (if any)

Size of the activity:

	N/A
	N/A
	N/A

Ha/ m²

or, for linear activities:

Alternative:

Alternative 1(Proposed activity) (**approx.**)

Alternative 2 (**approx.**)

Length of the activity:

	25
	27

m/km

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

Alternative:

Alternative 1(Proposed activity) (**approx.**)

Alternative 2 (**approx.**)

Size of the site/servitude:

	64.33
	69.98

Ha/m²

5. SITE ACCESS

Alternative 1 (Proposal)

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

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

Describe the type of access road planned:

YES	NO
	m

The contractor will use all existing access roads. In certain areas where additional access roads may need to be constructed, the contractor will consult with the ECO, affected landowners and GDARD prior to any construction of gravel roads. These gravel roads will be kept to minimum width and will be fully rehabilitated to the satisfaction of the ECO.

The contractor will make use of the existing roads within the Nature Reserve as designated by the Manager of the Rietvlei Nature Reserve.

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

Alternative 2 (Preferred)

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

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

Describe the type of access road planned:

YES	NO
	m

The contractor will use all available existing access roads. In certain areas where additional access roads may need to be constructed, the contractor will consult with the ECO, affected landowners and GDARD prior to any construction of gravel roads. These gravel roads will be kept to minimum width and will be fully rehabilitated to the satisfaction of the ECO.

The contractor will access Rietvlei Nature Reserve from the R50 Delmas Road and will make use of the existing roads within the Nature Reserve as designated by Manager of the Rietvlei Nature Reserve.

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

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

Section A 6-8 has been duplicated

2

Number of times

(only complete when applicable)

6. SITE 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 as Appendix A to this document. The site or route plans must indicate the following:

- the scale of the plan, which must be at least a scale of 1:2000 (scale can not be larger than 1:2000 i.e. scale can not be 1:2500 but could where applicable be 1:1500)
- the property boundaries and numbers of all the properties within 50m of the site;
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- the exact position of each element of the application as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, septic tanks, storm water infrastructure and telecommunication infrastructure;
- walls and fencing including details of the height and construction material;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites including (but not limited thereto):
 - Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- the positions from where photographs of the site were taken.
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the 32m position from the bank to be clearly indicated).

- **Route Plan of the Proposed and Preferred Alignment attached in Addendum A of Appendix A.**
- **Route Plan of the other Alternative Alignments considered attached in Addendum B of Appendix A.**

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.

- **Site Photographs of the Proposed Alignment attached in Addendum A of Appendix B.**
- **Site Photographs of the Alternative Alignment attached in Addendum B of 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.

- Not applicable

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal

Further:

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route 6 times

Instructions for completion of Section B for location/route alternatives

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

Section B has been duplicated for **SECTIONS of the** 6 times
location/route alternatives
(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 2 is to be completed and attached in a chronological order; then
- all significantly different environments identified for Alternative 3 is to be completed and attached chronological order
- etc.

Section B - Section of Route 6 (complete only when appropriate for above)

Section B – Location/route Alternative No. 6 (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description:

(Farm name, portion etc.)

Please find a list of property descriptions for the proposed and alternative alignment attached in Addendum A and B of Appendix I.

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):

--	--

In the case of linear activities:

Alternative 1 (Proposal):

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

Latitude (S):

Longitude (E):

-25.914057°	28.310998°
-25.819784°	28.317232°
-25.730083°	28.397276°

Alternative 2:

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

Latitude (S):

Longitude (E):

-25.914057°	28.310998°
-25.821420°	28.315877°
-25.914057°	28.310998°

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 D**

Addendum of route alternatives attached

YES

Addendum A: Route position for the proposed alignment.

Addendum B: Route position for the alternative alignment.

PROPOSED ACTIVITY AND ALIGNMENT

SECTION 1: RIETVLEI NATURE RESERVE

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

4. LOCATION IN LANDSCAPE

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

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

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas (**only for 1.7km**)
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

6. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

7. GROUNDCOVER

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

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

Natural veld – good condition % =	Natural veld with scattered aliens % = 100	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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

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

YES

NO

If YES, specify and explain:

Avian diversity

Avian diversity along the proposed route is high, as 90 species were recorded during the site visit on 20 November 2008. Except for the nesting sites of the African Grass Owl found where the alignment crosses the wetland (25°52'59"S; 28°17'38"E) no other species of conservation concern were recorded along the proposed alignment during the site visit.

Herpetofauna

Rietvlei Nature Reserve has a rich herpetofaunal assemblage with approximately 64 species potentially occurring in the area. Of the 64 species, 31 were recorded during the site visit conducted on 20 November 2008. The following four species of conservation concern were recorded on the proposed alignment:

No	Scientific name	Common name	Status
1	<i>Chamaesaura anana</i>	Copper grass lizard	Vulnerable
2	<i>Pyxicephalus adspersus</i>	Giant bullfrog	Near Threatened
3	<i>Crocodylus niloticus</i>	Nile crocodile	Vulnerable
4	<i>Python natalensis</i>	South African Python	Vulnerable / Near Threatened

For this project the Nile crocodile and the South African Python are considered as low conservation value as they have been introduced to the reserve and potentially do not historically occur on the site.

Mammal

According to previous studies conducted 109 species potentially occur at Rietvlei Nature Reserve. Of the 109 species, 18 were recorded on the site visit held on 20 November and 04 December 2008. One species of conservation concern was identified out of the 18 species recorded on the proposed alignment.

No	Scientific name	Common name	Status
1	<i>Chrysospalax villosus</i>	Rough Haired Golden Mole	Vulnerable

Invertebrates

The invertebrate specialist conducted site visits on 7, 10, 13, 26 October 2009; 18 December 2009 and 28 January 2010. The aim of the investigation was to determine whether *Ichneustoma stobai* potentially occurred along the proposed alignment. Although no *Ichneustoma stobai* could be observed on the proposed alignment numerous *Metisella meninx* were found in a wetland which traverses the northern section of the proposed alignment.

Other protected but not yet threatened species identified included:

No	Scientific name	Common name	Status
1	<i>Opisthophthalmus pugnax</i>	Burrowing scorpions	Protected

Flora

The specialist visited the site in November 2008. An in depth study on the flora for the proposed alignment was not conducted as the specialist identified the proposed alignment as having an inherent high sensitivity precluding it as a feasible alternative. A list of the plant species found in Rietvlei Nature Reserve can be in the specialist report attached in Addendum A of Appendix G.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES

NO

If YES, specify and explain:

Avian diversity

It was noted that the following species of conservation concern have been recorded in the quarter – degree square within the reserve and therefore may potentially occur on the alignment:

No	Scientific name	Common Name	Status
1	<i>Ciconia nigra</i>	Black stork	Near Threatened
2	<i>Glareola nordmanni</i>	Black winged pratincole	Near Threatened
3	<i>Anthropoides paradisues</i>	Blue crane	Vulnerable
4	<i>Eupodotis caerulescens</i>	Blue korhaan	Near Threatened
5	<i>Sterna caspia</i>	Caspian tern	Near Threatened
6	<i>Crex crex</i>	Corn crake	Near Threatened
7	<i>Rostratul benghalensis</i>	Greater – painted snipe	Near Threatened
8	<i>Falco naumanni</i>	Lesser kestrel	Vulnerable
9	<i>Sagittarius serpentarius</i>	Secretary bird	Near Threatened
10	<i>Eupodotis senegalensis</i>	White – bellied korhaan	Vulnerable
11	<i>Phoenicopterus ruber</i>	Greater Flamingo	Near Threatened
12	<i>Falco biarmicus</i>	Lanner Falcon	Near Threatened

Herpetofauna

The following species of conservation concern occur in the surrounding area at Rietvlei Nature Reserve and therefore have the potential to occur on the proposed alignment.

No	Scientific name	Common Name	Status
1	<i>Homoroselaps dorsalis</i>	Striped harlequin snake	Rare
2	<i>Kinixys lobatsiana</i>	Lobatse hinged tortoise	Vulnerable

Mammal

The following species of conservation concern were confirmed to occur in the area and therefore have the potential to occur on the proposed alignment.

No	Scientific name	Common name	Status
1	<i>Myodomys albicaudatus</i>	White tailed mouse	Endangered
2	<i>Atelerix frontalis</i>	South African Hedgehog	Near Threatened
3	<i>Rhinolophus blasii</i>	Blasius' Horseshoe bat	Vulnerable
4	<i>Rhinolophus clivus</i>	Geoffroy's Horseshoe bat	Near Threatened
5	<i>Rhinolophus darlingi</i>	Darlings Horseshoe bat	Near Threatened
6	<i>Manis temminckii</i>	Ground Pangolin	Vulnerable
7	<i>Hyaena brunnea</i>	Brown hyena	Near Threatened
8	<i>Ourebia ourebi</i>	Oribi	Endangered
9	<i>Amblysomus septentrionalis</i>	Highveld Golden Mole	Near Threatened
10	<i>Dasymys incomtus</i>	Water Rat	Near Threatened
11	<i>Crocidura maquassiensis</i>	Maquassie Musk Shrew	Vulnerable
12	<i>Miniopterus schreibersii</i>	Schreiber's Long-fingered bat	Near Threatened
13	<i>Myotis welwitschii</i>	Welwitsch's Hairy Bat	Near Threatened
14	<i>Mycotis tricolor</i>	Temminck's Hairy bat	Near Threatened
15	<i>Pipistrellus rusticus</i>	Rusty Pipistrelle	Near Threatened
16	<i>Lutra maculicollis</i>	Spotted-necked otter	Near Threatened
17	<i>Mellivora capensis</i>	Honey badger	Near Threatened

Invertebrates

No record of any rare or endangered invertebrates was made within the parameters mentioned above.

Flora

An in depth study on the flora for the proposed alignment was not conducted as the specialist had identified the proposed alignment as having an inherent high sensitivity precluding it as a feasible alternative. No record of any rare or endangered plants was therefore made within the parameters mentioned above.

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

YES

NO

If YES, specify and explain:

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

The proposed alignment crosses three wetland habitats in Rietvlei Nature Reserve. A surface watercourse assessment was conducted in August 2010.

- The outcomes of the study revealed that the first and second wetland habitats are a PES Category B:
- Implying that it is largely natural with few modifications.
 - A slight change in ecosystem processes and some loss of natural habitats and biota may have taken place.

Kniphofia typhoides (Near Threatened Red Data Species) was identified at the wetland closest to the southern boundary of the Rietvlei Nature Reserve.

- The study revealed that the third wetland identified alongside the Delmas Road has PES Category A:
- Implying that it is unmodified / natural, or approximates natural conditions.

A copy of the specialist report can be found in Addendum B of Appendix G.

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

If yes complete specialist details

Name of the specialist:	Mr. De Wet Botha		
Qualification(s) of the specialist:	M.A.Env.Man		
Postal address:	PO Box 1401, Wilgeheuwel, Johannesburg		
Postal code:	1736		
Telephone:	011 475 7137	Cell:	083 232 3042
E-mail:	dewet@prismems.co.za	Fax:	086 601 4800
Are any further specialist studies recommended by the specialist?			YES NO
If YES, specify:			
If YES, is such a report(s) attached?			YES NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Dr. Sarita Maree		
Qualification(s) of the specialist:	PhD in Zoology		
Postal address:	Department of Genetics, 8th Floor (Room 8-33), Agricultural Building, Main Campus, University of Pretoria,		
Postal code:	0002		
Telephone:	012 420 3871 / 4402	Cell:	-----
E-mail:	smaree@zoology.up.ac.za	Fax:	012 362 5327
Are any further specialist studies recommended by the specialist?			YES NO
If YES,specify:			
If YES, is such a report(s) attached?			YES NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Polke Birkholtz		
Qualification(s) of the specialist:	BA(Hons) in Archaeology		
Postal address:	PO Box 32542, Totiusdal		
Postal code:	0134		
Telephone:	012 332 5305	Cell:	082 717 6661
E-mail:	polke@lantic.net	Fax:	012 332 2625
Are any further specialist studies recommended by the specialist?			YES NO
If YES, specify:			
If YES, is such a report(s) attached?			YES NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. Mauritz Naude		
Qualification(s) of the specialist:	(MA) Architecture: Conservation		
Postal address:	PO Box 584, La Montagne, Pta		
Postal code:	0184		
Telephone:	012 324 6082	Cell:	083 447 2232
E-mail:	mauritz@mitsong.org.za	Fax:	012 3464168
Are any further specialist studies recommended by the specialist?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Retief Grobler		
Qualification(s) of the specialist:	BSc Hons (UP) Botany		
Postal address:	PO Box 7284, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 365 2546	Cell:	082 606 7770
E-mail:	retief@imperata.co.za	Fax:	012 365 3217
Are any further specialist studies recommended by the specialist?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Dr. Ute Schwaibold		
Qualification(s) of the specialist:	PhD Zoology/Environmental Sciences		
Postal address:	School of Animal, Plant And Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	011 717 6482	Cell:	
E-mail:	ute.schwaibold@wits.ac.za	Fax:	086 614 3189
Are any further specialist studies recommended by the specialist?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Andrew Mckechnie		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	Department of Zoology and Entomology, University of Pretoria, Pretoria		
Postal code:	0002		
Telephone:	012 420 3232	Cell:	
E-mail:	aemckechnie@up.ac.za	Fax:	012 362 5242
Are any further specialist studies recommended by the specialist?			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Peter Hawkes		
Qualification(s) of the specialist:	BSc Honours Entomology		
Postal address:	379 Bakenkloof Street, Pretoria North		
Postal code:	0182		
Telephone:	012 546 7289	Cell:	
E-mail:	phawkes@iafrica.com	Fax:	086 670 9055
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Graham Alexander		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	School of Animal, Plant and Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	012 717 6400	Cell:	
E-mail:	graham.alexander@wits.ac.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Benny de Lange		
Qualification(s) of the specialist:	BSc (Hons) Botany		
Postal address:	P.O Box 3409, Kenmore, Krugersdorp		
Postal code:	1745		
Telephone:		Cell:	082 782 2879
E-mail:	reedfrog@vodamail.co.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

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

8. LAND USE CHARACTER OF SURROUNDING AREA

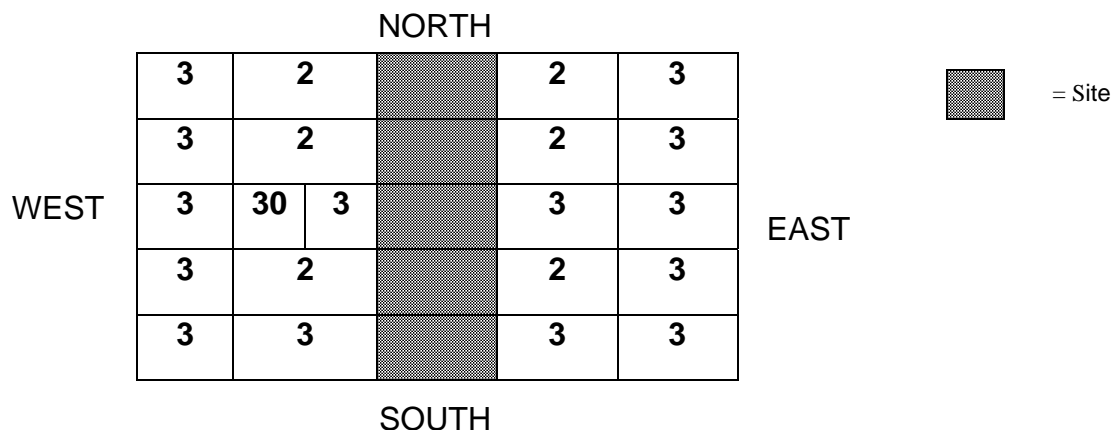
Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

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

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached
If yes indicate the type of reports below

YES	NO
-----	----

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.
Mammal Assessment done by Ute Schwaibold from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Site Investigation: Rough Haired Golden Mole and Juliana's Golden Mole done by De Wet Botha from Prism Environmental Management Services and Sarita Maree from the University of Pretoria. A copy of this report can be found in Addendum D of Appendix G.
Biodiversity Survey and Wetland Delineation done by Africon. A copy of this report can be found in Addendum A of Appendix G.
Assessment of the Herpetofauna done by Graham Alexander from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Assessment of Impacts on Birds done by Andrew McKechnie from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Invertebrate study conducted by Peter Hawkes from Afribugs. A copy of this report can be found in Addendum D of Appendix G.
Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.
Surface Watercourse Assessment: Proposed R5 Rand Water Pipeline between Rietvlei Nature Reserve and Mamelodi. Addendum B of Appendix G.

9. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

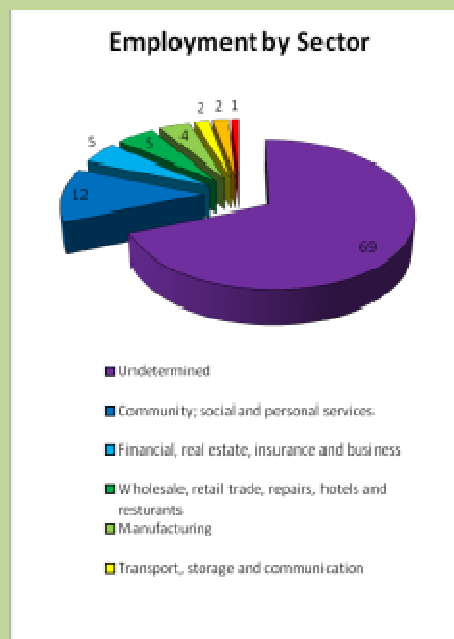


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality as a whole. This section of the alignment passes through the Rietvlei Nature Reserve which does not have residents. Unemployment in this area

would be therefore be relatively low with the main employment sector being Conservation.

10. CULTURAL/HISTORICAL FEATURES

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

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

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

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

If YES, explain:

YES	NO
-----	----

A possible Late Stone Age or Historic site with several possible stone cairns and stone walls was identified outside the alignment of the proposed pipeline in the Rietvlei Nature Reserve.

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:

Due to the dense vegetation, the significance of the site could not be determined. However as mentioned above, the site is located outside of the proposed alignment and therefore is not expected to be impacted on. A copy of the Heritage Impact Assessment can be found in Addendum E of Appendix G.

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

YES	NO
YES	NO

SECTION 2: RIETVLEI NATURE RESERVE TO GARSFONTEIN ROAD

11. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

12. LOCATION IN LANDSCAPE

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

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

13. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas (**For 1km from Delmas Road**)
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

14. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

15. GROUNDCOVER

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

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

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % = 80	Veld dominated by alien species % =	Landscaped (vegetation) % = 20
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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

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

YES

NO

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES

NO

If YES, specify and explain:

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

YES

NO

If YES, specify and explain:

Was a specialist consulted to assist with completing this section

YES

NO

If yes complete specialist details

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

Cell:

E-mail:

Fax:

Are any further specialist studies recommended by the specialist?

YES

NO

If YES, specify:

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

YES

NO

If YES list the specialist reports attached below

Signature of specialist:

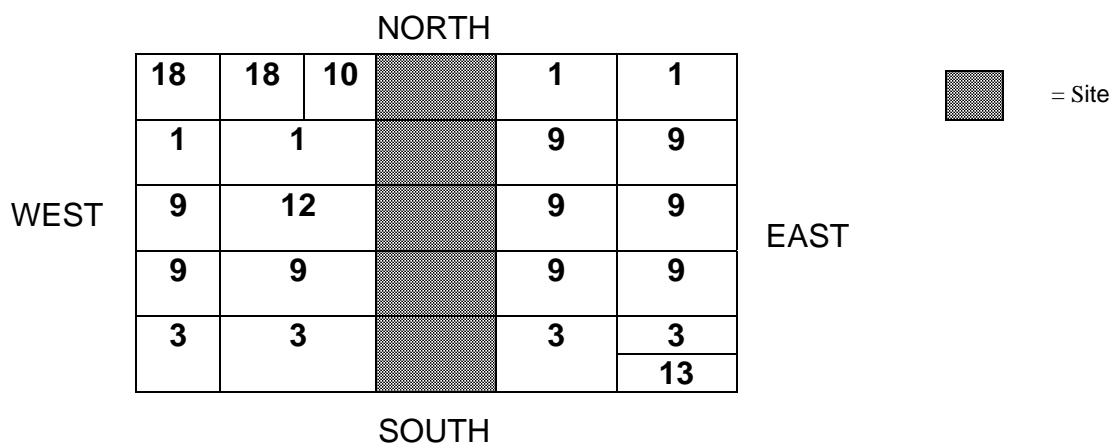
Date:

16. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached
If yes indicate the type of reports below

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

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

17. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

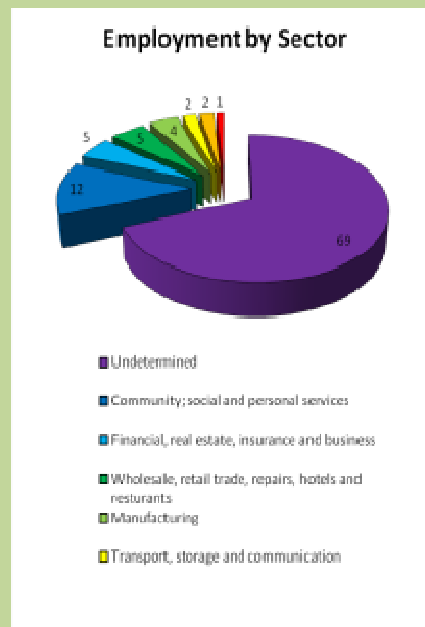


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality as a whole. This section of the alignment passes through a suburban area as well as an informal settlement set up by CoTMM. In terms of Employment the population which resides in these areas may fall into either three of

the categories mentioned above with a personal monthly income ranging from no fixed income to R3200 for the informal settlement and R3200 and higher for the suburban area.

18. 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?

YES	NO
-----	----

If YES, explain:

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

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

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

YES	NO
-----	----

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

YES	NO
-----	----

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

SECTION 3: GARSFONTEIN ROAD TO BRONBERG

19. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

20. LOCATION IN LANDSCAPE

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

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

21. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

22. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

23. GROUNDCOVER

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

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

Natural veld – good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % = 30	Veld dominated by alien species % =	Landscaped (vegetation) – Golf course % = 20
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 25	Building or other structure % =	Bare soil % = 25

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	NO
-----	----

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site	YES	NO
---	-----	----

If YES, specify and explain:

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

If YES, specify and explain:

The proposed alignment crosses two wetlands in this section. A surface watercourse assessment was conducted in August 2010.

The first wetland is situated downstream of the Pretoria East Cemetery and upstream of the Woodhill Residential Estate and Country Club. The outcomes of the study revealed that the wetland habitat is a PES Category C:

- Implying that it is moderately modified.
- A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact.

The second wetland is situated in Boardwalk Meander Residential Estate. The outcomes of the study revealed that the wetland habitat is a PES Category E:

- Implying that it is seriously modified.
- The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

If yes complete specialist details

Name of the specialist:

Mr. Retief Grobler

Qualification(s) of the specialist:

BSc Hons (UP) Botany

Postal address:

PO Box 7284, Lynnwood Ridge

Postal code:

0040

Telephone:

012 365 2546

Cell:

082 606 7770

E-mail:

retief@imperata.co.za

Fax:

012 365 3217

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

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

YES	NO
-----	----

If YES list the specialist reports attached below

Signature of specialist:

Date:





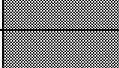


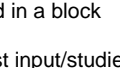
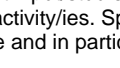
Please note: If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated.

24. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m

	NORTH					
	9	9		9	9	
	9	2		2	9	
	9	9		9	9	
WEST	9	9		9	9	
	9	21		21	9	
	25	25		25	25	
	12	2		2	1	
	12	12		12	34	
	9	1		1	1	
	SOUTH					
						= Site

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

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

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

Surface Watercourse Assessment: Proposed R5 Rand Water Pipeline between Rietvlei Nature Reserve and Mamelodi. Addendum B of Appendix G.

25. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane and Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE

Employment

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business art 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.



Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

KUNGWINI LOCAL MUNICIPALITY**Employment**

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 4 below.



Figure 4: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 5 below indicates the percentage of the employment sectors in KLM.



Figure 5: Employment by sector within the KLM

Personal monthly income

Figure 6 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.



Figure 6: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality and Kungwini Local Municipality on a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas fall into either the economically active or economically inactive category with a personal monthly income of R1600 and higher.

26. 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-

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

- (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?

YES	NO
-----	----

If YES, explain:

--

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?

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	NO
YES	NO

SECTION 4: BRONBERG TO SIX FOUNTAINS

27. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

28. LOCATION IN LANDSCAPE

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

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

29. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

30. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

31. GROUNDCOVER

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

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

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

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

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

YES

NO

If YES, specify and explain:

Avian diversity

Avian diversity along the proposed route through the Bronberg Conservation area is moderate, as 32 species were recorded during the site visit on 20 November 2008. No species of conservation concern were observed.

Herpetofauna

Bronberg Conservation Area has a diverse herpetofaunal assemblage with approximately 42 species potentially occurring in the area. Of the 42 species potentially occurring, only 10 were confirmed at the site assessment conducted on 20 November 2008. The 10 species identified on site were of least concern. The following species of conservation concern may occur on the proposed alignment:

No	Scientific name	Common name	Status
1	<i>Lygodactylus o. ocellatus</i>	Spotted Dwarf Gecko	Rare
2	<i>Homoroselaps dorsalis</i>	Stripped Harlequin snake	Rare

Mammal

According to previous studies conducted 73 species potentially occur at Bronberg Conservation Area. Of the 73 species, 2 were recorded on the site visit held on 20 November and 04 December 2008. One species of conservation concern was identified out of the 2 species recorded on the proposed alignment:

No	Scientific name	Common name	Status
1	<i>Neamblysomus julianae</i>	Juliana's Golden Mole	Vulnerable

Invertebrates

The invertebrate specialist conducted site visits on 4 and 18 December 2009. Only two species of conservation were identified on site. A third species, *Entypesa? Schoutedeni* (Wishbone trap door spider) was identified along the alignment. This species has not been classified as yet. Protected but not yet threatened species identified included:

No	Scientific name	Common name	Status
1	<i>Opisthophthalmus glabrifrons</i>	Burrowing scorpions	Protected

Flora

The specialist visited the site in November 2008. The species diversity at the Bronberg Conservation Area is very low as the species recorded are indicative of rehabilitation and invader or exotic species which have started to establish. No rare or endangered flora was identified within the 18m servitude. A list of the plant species found in the Bronberg Conservation Area can be found in the specialist report attached in Addendum A of Appendix G.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES

NO

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

If YES, specify and explain:

Avian diversity

It was noted that the following species of conservation concern may potentially occur in the area:

No	Scientific name	Common Name	Status
1	<i>Ciconia nigra</i>	Black stork	Near Threatened
2	<i>Crex crex</i>	Corn crane	Near Threatened
3	<i>Falco biarmicus</i>	Lanner Falcon	Near Threatened
4	<i>Falco peregrines</i>	Peregrine Falcon	Near Threatened

Herpetofauna

No record of any rare or endangered herpetofauna was made within the parameters mentioned above.

Mammal

A list of species which may occur in the area and therefore potentially on the proposed alignment can be found in the specialist report in Addendum D of Appendix G.

Invertebrates

It was noted that the following species of conservation concern may potentially occur in the area:

No	Scientific name	Common name	Status
1	<i>Hadogenes gunning</i>	Flat Rock Scorpion	Protected

Flora

Although the servitude was found to have no rare or endangered flora and therefore be considered to have a low sensitivity, the surrounding areas have been demarcated as being highly sensitive and therefore great care should be taken in preventing the disturbance of these areas during construction. A map indicating the sensitivity on the alignment can be found in the specialist report attached in Addendum A of Appendix G.

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

YES

NO

If YES, specify and explain:

The proposed alignment crosses the Bronberg Ridge. This ridge is classified as a Class 2 ridge according to the GDARD Guidelines. All of the required studies have been conducted.

The proposed alignment crosses a natural drainage line and wetland in this section. A surface watercourse assessment was conducted in August 2010.

The drainage line is located in Shere Agricultural Holdings. Based in the assessment, the specialist has concluded that the drainage line is not consistent with the definition of a natural wetland (no wetland indicators were recorded) as well as a channel associated watercourse (due to the absence of a natural channel features that may contain regular or intermittent flow).

The wetland is situated to the east of Hans Strijdom Drive and the north of Lynnwood / Graham Road crossing. The outcomes of the study revealed that the wetland habitat is a PES Category F:

- Implying that it is critically modified.
- Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES

NO

If yes complete specialist details

Name of the specialist:

Dr. Sarita Maree

Qualification(s) of the specialist:

PhD in Zoology

Postal address:

Department of Genetics, 8th Floor (Room 8-33), Agricultural Building, Main Campus, University of Pretoria

Postal code:

0002

Telephone:

012 420 3871 / 4402

Cell:

E-mail:

smaree@zoology.up.ac.za

Fax:

012 362 5327

Are any further specialist studies recommended by the specialist?

YES

NO

If YES, specify:

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

YES

NO

If YES list the specialist reports attached below

Signature of specialist:

Date:

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. De Wet Botha		
Qualification(s) of the specialist:	M.A.Env.Man		
Postal address:	PO Box 1401, Wilgeheuwel, Johannesburg		
Postal code:	1736		
Telephone:	011 475 7137	Cell:	083 232 3042
E-mail:	dewet@prismems.co.za	Fax:	086 601 4800
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Polke Birkholtz		
Qualification(s) of the specialist:	BA(Hons) in Archaeology		
Postal address:	PO Box 32542, Totiusdal		
Postal code:	0134		
Telephone:	012 332 5305	Cell:	082 717 6661
E-mail:	polke@lantic.net	Fax:	012 332 2625
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Mauritz Naude		
Qualification(s) of the specialist:	(MA) Architecture: Conservation		
Postal address:	PO Box 584, La Montagne		
Postal code:	0184		
Telephone:	012 324 6082	Cell:	083 447 2232
E-mail:	mauritz@mitsong.org.za	Fax:	012 346 4168
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Retief Grobler		
Qualification(s) of the specialist:	BSc Hons (UP) Botany		
Postal address:	PO Box 7284, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 365 2546	Cell:	082 606 7770
E-mail:	retief@imperata.co.za	Fax:	012 365 3217
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Dr. Ute Schwaibold		
Qualification(s) of the specialist:	PhD Zoology/Environmental Sciences		
Postal address:	School of Animal, Plant And Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	011 717 6482	Cell:	
E-mail:	ute.schwaibold@wits.ac.za	Fax:	086 614 3189
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Andrew McKechnie		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	Department of Zoology and Entomology, University of Pretoria, Pretoria		
Postal code:	0002		
Telephone:	012 420 3232	Cell:	
E-mail:	aemckechnie@up.ac.za	Fax:	012 362 5242
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Peter Hawkes		
Qualification(s) of the specialist:	BSc Honours Entomology		
Postal address:	379 Bakenkloof Street, Pretoria North		
Postal code:	0182		
Telephone:	012 546 7289	Cell:	
E-mail:	phawkes@iafrica.com	Fax:	086 670 9055
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Graham Alexander		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	School of Animal, Plant and Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	012 717 6400	Cell:	
E-mail:	graham.alexander@wits.ac.za	Fax:	
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. Benny de Lange		
Qualification(s) of the specialist:	BSc (Hons) Botany		
Postal address:	PO Box 3409, Kenmore, Krugersdorp		
Postal code:	1745		
Telephone:		Cell:	082 782 2879
E-mail:	reedfrog@vodamail.co.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

32. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m

		NORTH					
		9	9		9	9	= Site
		1	2		2	2	
		12	1		12	12	
WEST		34	34		34	34	
		3	3		3	3	
		5	5		5	5	
		3	3		3	30	
	9	34	34		9	9	
		SOUTH					
		EAST					

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

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and

noise impacts may be required for any feature above and in particular those features marked with an ^{uAu} and with an ^{uN} respectively.

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.
Mammal Assessment done by Ute Schwaibold from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Biodiversity Survey and Wetland Delineation done by Africon. A copy of this report can be found in Addendum A of Appendix G.
Assessment of the Herpetofauna done by Graham Alexander from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Assessment of Impacts on Birds done by Andrew McKechnie from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Invertebrate study conducted by Peter Hawkes from Afribugs. A copy of this report can be found in Addendum D of Appendix G.
Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.
Surface Watercourse EIA Investigation: Proposed R5 Rand Water Pipeline, by Retief Grobler from Imperata Consulting. A copy of this report can be found in Addendum B of Appendix G.
Follow-up Specialist Assessment: Juliana's Golden Mole, Bronberg Ridge, Eastern Pretoria, Gauteng conducted by De Wet Botha from Prism Environmental Management Services and Sarita Maree from the University of Pretoria. A copy of this report can be found in Addendum D of Appendix G.

33. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

KUNGWINI LOCAL MUNICIPALITY

Employment

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 1 below.

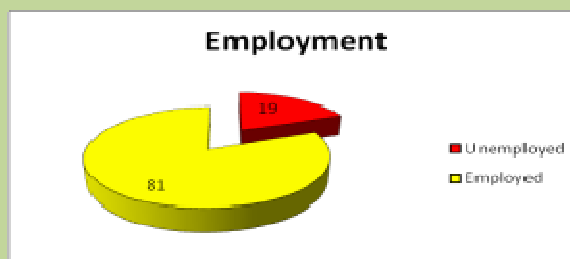


Figure 1: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 2 below indicates the percentage of the employment sectors in KLM.



Figure 2: Employment by sector within the KLM

Personal monthly income

Figure 3 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas falls into the employed category mentioned above with a personal monthly income ranging from R1600 and higher.

34. CULTURAL/HISTORICAL FEATURES

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

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

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

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

If YES, explain:

YES

NO

Two sites, P3-8 and P3-9, of low Heritage significance were identified at the Bronberg Conservation Area. Both sites are believed to occur within the proposed footprint of the pipeline.

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:

P3-8 is classified as either a Late Iron Age or Historic site comprising of large circular stone walled enclosures with at least one internal divisional wall.

The P3-9 site comprises of a circular row of stones of unknown age or function.

A copy of the Heritage Impact Assessments conducted can be found in Addendum E of Appendix.

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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

YES	NO
YES	NO

- **We have not received comment from SAHRA with regards to the issue mentioned above. However; the application for permits is a recommended mitigation measure made by the Heritage specialists, which has been included in the EMP.**

SECTION 5: SIX FOUNTAINS TO SAVANNAH COUNTRY ESTATE

35. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
-------------	------------------------	------------------------	------------------------	-------------------------	------------------------	-------------------------

36. LOCATION IN LANDSCAPE

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

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

37. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

38. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

39. 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 % = 25	Natural veld with scattered aliens % = 35	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % = 35
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 5	Building or other structure % =	Bare soil % =

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

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

YES	NO
-----	----

If YES, specify and explain:

--

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES	NO
-----	----

If YES, specify and explain:

--

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

YES	NO
-----	----

If YES, specify and explain:

--

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

If yes complete specialist details

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

E-mail:

	Cell:	
	Fax:	

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

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

YES	NO
-----	----

If YES list the specialist reports attached below

--

Signature of specialist: _____

Date: _____

40. LAND USE CHARACTER OF SURROUNDING AREA

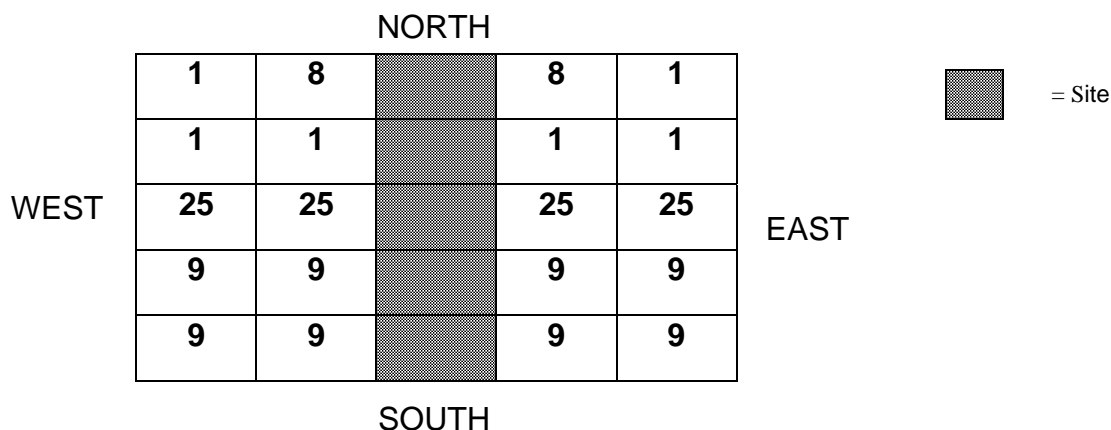
Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport^N	23. Train station or shunting yard^N	24. Railway line^N	25. Major road (4 lanes or more)^N

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

26. Sewage treatment plant ^A	27. Landfill or waste treatment site ^A	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached
If yes indicate the type of reports below

YES	NO
-----	----

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

41. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

KUNGWINI LOCAL MUNICIPALITY

Employment

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 1 below.



Figure 1: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 2 below indicates the percentage of the employment sectors in KLM.

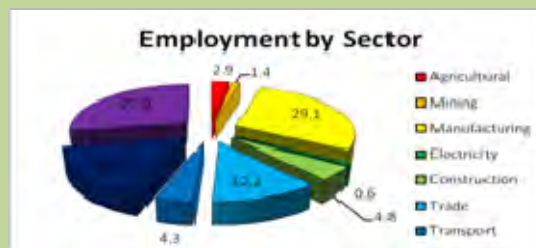


Figure 2: Employment by sector within the KLM

Personal monthly income

Figure 3 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.

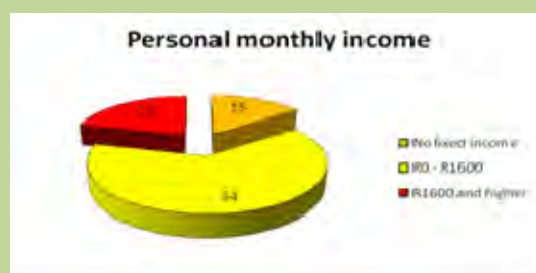


Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas falls into the employed category mentioned above with a personal monthly income ranging from R1600 and higher.

42. CULTURAL/HISTORICAL FEATURES

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

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

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

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

If YES, explain:

YES	NO
-----	----

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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?
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	NO
YES	NO

SECTION 6: SAVANNAH COUNTRY ESTATE TO MAMELODI

43. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

44. LOCATION IN LANDSCAPE

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

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

45. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies) **(Pienaars Rivier)**

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

Any other unstable soil or geological feature **(Shale of the Silverton formation)**

An area sensitive to erosion **(Pienaars Rivier)**

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

46. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

47. GROUNDCOVER

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

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

Natural veld - good condition % =	Natural veld with scattered aliens % = 85	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % = 10	Paved surface (hard landscaping) % =	Building or other structure (Ruins) % = 5	Bare soil % =

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

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

YES	NO
-----	----

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site	YES	NO

If YES, specify and explain:

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

If YES, specify and explain:

The proposed alignment crosses a segment of the Pienaars Rivier known as a floodplain hydro geomorphic, situated to the west of Sammy Marks Museum. A surface watercourse assessment was conducted in August 2010.

The following indicators were used for the determination of the PES for the Pienaars Rivier:

- Index of Habitat Integrity (IHI)
- Invertebrate Habitat Assessment Score (IHAS)
- South African Scoring System version 5 (SASS5)
- Fish Response Assessment Index (FRAI)

The study revealed that the PES of the Pienaars Rivier based on the indicators mentioned above is as follows:

Site	IHI	IHAS	SASS5	FRAI
Upstream of the servitude	D	Poor	D	F
Downstream of the servitude	D	Adequate	D	F

This implies that the Pienaars Rivier is moderately to critically modified.

The proposed alignment crosses a wetland in the same section west of Hans Strijdom Drive at Mamelodi Gardens. The outcomes of the study revealed that the wetland habitat is a PES Category E:

- Implying that it is seriously modified.
- The change in the ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

If yes complete specialist details

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. Retief Grobler		
Qualification(s) of the specialist:	BSc Hons (UP) Botany		
Postal address:	PO Box 7284, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 365 2546	Cell:	082 606 7770
E-mail:	retief@imperata.co.za	Fax:	012 365 3217
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Gina Walsh		
Qualification(s) of the specialist:	MSc Zoology		
Postal address:	PO Box 84, Florida		
Postal code:	1710		
Telephone:		Cell:	082 422 2793
E-mail:	gina@ecotone-sa.co.za	Fax:	
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Mauritz Naude		
Qualification(s) of the specialist:	(MA) Architecture: Conservation		
Postal address:	PO Box 584, La Montagne		
Postal code:	0184		
Telephone:	012 324 6082	Cell:	083 447 2232
E-mail:	mauritz@ditsong.org.za	Fax:	012 346 4168
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Polke Birkholtz		
Qualification(s) of the specialist:	BA(Hons) in Archaeology		
Postal address:	PO Box 32542, Totiusdal		
Postal code:	0134		
Telephone:	012 332 5305	Cell:	082 717 6661
E-mail:	polke@lantic.net	Fax:	012 332 2625
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
If YES list the specialist reports attached below			


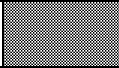
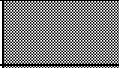


Signature of specialist: _____ Date: _____


48. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m

	NORTH					
	7	2		2	7	
	1	1		1	1	
WEST	1	30		30	1	EAST
	1	2		2	1	
	1	1		1	1	
	SOUTH					

 = Site

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

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

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.

Surface Watercourse EIA Investigation: Proposed R5 Rand Water Pipeline by Retief Grobler. A copy of this report can be found in Addendum B of Appendix G.

49. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane and Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

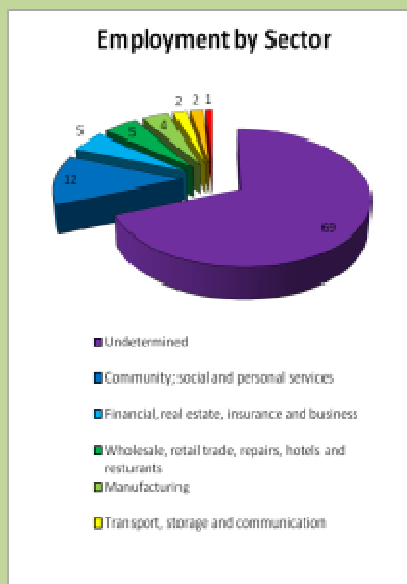


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.

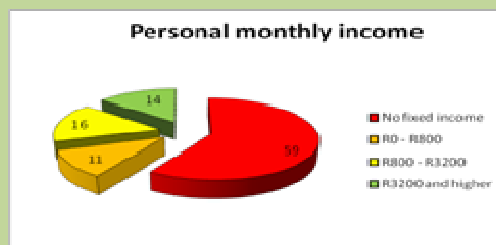


Figure 3: Personal Monthly income within the CoTMM

KUNGWINI LOCAL MUNICIPALITY**Employment**

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 4 below.

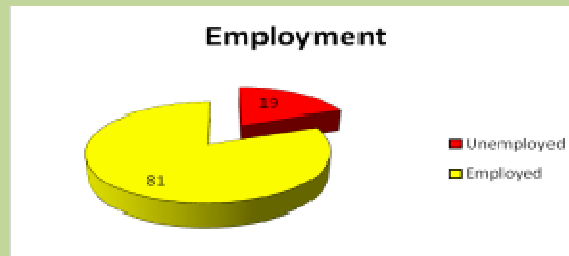


Figure 4: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 5 below indicates the percentage of the employment sectors in KLM.



Figure 5: Employment by sector within the KLM

Personal monthly income

Figure 6 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.

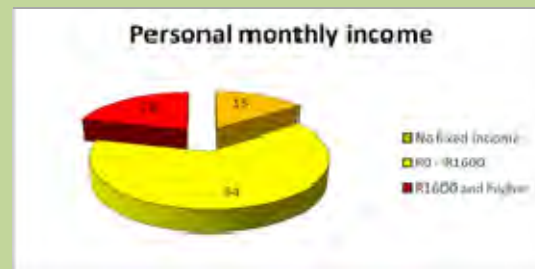


Figure 6: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality and Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area as well as a township. In terms of Employment the population which resides in these areas may fall into either employed or unemployed category with a personal monthly income ranging from no fixed income to R1600 for the township and R3200 and higher for the suburban area.

50. 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-

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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

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

If YES, explain:

YES	NO

Seven sites of Heritage significance were identified in this section. Two potential grave sites (P3-3 and P3-4); one area of high significance (P3-1); two sites of low significance (P3-2 and P3-5) and two sites of medium to moderate significance (P3-6 and P3-7).

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:

POTENTIAL GRAVES

- P3-3: The site consists of oval-shaped concentration of stones oriented along an east-west axis, located within the foot print of the proposed alignment. Although this falls within the identified Late Stone Age area and is characteristic of this era, the possibility of this structure being a grave cannot be excluded.
- P3-4: The site consists of five stone heaps of which two are circular and three are rectangular, located within the foot print of the proposed alignment. Although this falls within the identified Late Stone Age area and is characteristic of this era, the possibility of this structure being a grave cannot be excluded.

HIGH SIGNIFICANCE

- P3-1: A Late Stone Age site consisting of numerous circular stone enclosures, stone walls and heaps; typical features found on sites with cattle enclosures, homesteads, collapsed medicine huts or granary platforms was identified 100m south of Hans Strijdom drive. No cultural material was observed on the surface of the site. This site is found on either side of the proposed alignment.

MEDIUM / MODERATE SIGNIFICANCE

- P3-6: An old historic road which connects the farm house, Zwartkoppies Hall, to the Hatherly Distillery at Eerste Fabrieke. It is believed that the road was constructed during the mid 1880's and is therefore over 100 years old. The proposed pipeline will cross the road at a right angle and therefore will have a minimal impact on the road.
- P3-7: The site consists of a long and straight historic wall. The wall appears to run along the western end of an old road. As it is associated with the Zwartkoppies Farmstead, it is believed to be older than 100 years. As the proposed pipeline will cross the wall at a right angle the impact is expected to be low.

LOW SIGNIFICANCE

- P3-2: A poorly preserved Late Iron Age settlement comprising of stone enclosures and walling. The site is situated to the west of the proposed alignment.
- P3-5: A poorly preserved Late Iron Age site comprising of small sections of walling associated with number of stone heaps and mounds. The site is situated on either side of the proposed alignment.

A copy of the Heritage Impact Assessments conducted can be found in Addendum E of Appendix G.

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

YES	NO
YES	NO

- We have not received comment from SAHRA with regards to the issue mentioned above. However; the application for permits is a recommended mitigation measure made by the Heritage specialists, which has been included in the EMP.

ALTERNATIVE ALIGNMENT

SECTION 7: RIETVLEI NATURE RESERVE

51. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

52. LOCATION IN LANDSCAPE

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

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

53. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas **(for 6km)**

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

Any other unstable soil or geological feature

An area sensitive to erosion

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):
-25. 863150o	28.302754o

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

54. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

55. GROUNDCOVER

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

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

Natural veld – good condition % =	Natural veld with scattered aliens % = 100	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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

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

YES

NO

If YES, specify and explain:

Flora

The section of the alternative alignment which runs parallel to the southern boundary of RNR is Sandveld where the following unique species were recorded along the section of the proposed alternative alignment running parallel to the southern boundary of RNR: *Boophane disticha* (Poison bulb), *Hypoxis sp* (African potato) and *Eucomis sp*. Apart from these known floral species, the Sandveld is also sensitive to disturbance. Once disturbed, the floral communities flourishing in this habitat may, to a large extent, be lost as a result of the changes to their specific habitat with unique soil conditions.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES

NO

If YES, specify and explain:

Avian diversity

It was noted that the following species of conservation concern may potentially occur on the alternative alignment:

No	Scientific name	Common Name	Status
1	<i>Ciconia nigra</i>	Black stork	Near Threatened
2	<i>Glareola nordmanni</i>	Black winged pratincole	Near Threatened
3	<i>Anthropoides paradisues</i>	Blue crane	Vulnerable
4	<i>Eupodotis caerulescens</i>	Blue korhaan	Near Threatened
5	<i>Sterna caspia</i>	Caspian tern	Near Threatened
6	<i>Crex crex</i>	Corn crane	Near Threatened
7	<i>Rostratul benghalensis</i>	Greater – painted snipe	Near Threatened
8	<i>Falco naumanni</i>	Lesser kestrel	Vulnerable
9	<i>Sagittarius serpentarius</i>	Secretary bird	Near Threatened
10	<i>Eupodotis senegalensis</i>	White – bellied korhaan	Vulnerable
11	<i>Phoenicopterus ruber</i>	Greater Flamingo	Near Threatened
12	<i>Falco biarmicus</i>	Lanner Falcon	Near Threatened

Herpetofauna

The following species of conservation concern occur in the surrounding area of Rietvlei Nature Reserve and therefore have the potential to occur on the proposed alternative alignment.

No	Scientific name	Common Name	Status
1	<i>Homoroselaps dorsalis</i>	Striped harlequin snake	Rare
2	<i>Kinixys lobatsiana</i>	Lobatse hinged tortoise	Vulnerable

Mammal

The following species of conservation concern were confirmed to occur in the area and therefore potentially on the proposed alternative alignment.

No	Scientific name	Common name	Status
1	<i>Mystromys albicaudatus</i>	White tailed mouse	Endangered
2	<i>Atelerix frontalis</i>	South African Hedgehog	Near Threatened
3	<i>Rhinolophus blasii</i>	Blasius' Horseshoe bat	Vulnerable
4	<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe bat	Near Threatened
5	<i>Rhinolophus darlingi</i>	Darlings Horseshoe bat	Near Threatened
6	<i>Manis temminckii</i>	Ground Pangolin	Vulnerable
7	<i>Hyaena brunnea</i>	Brown hyena	Near Threatened
8	<i>Ourebia ourebi</i>	Oribi	Endangered
9	<i>Amblysomus septentrionalis</i>	Highveld Golden Mole	Near Threatened
10	<i>Dasymys incomtus</i>	Water Rat	Near Threatened
11	<i>Crociodura maquassiensis</i>	Maquassie Musk Shrew	Vulnerable
12	<i>Miniopterus schreibersii</i>	Schreiber's Long-fingered bat	Near Threatened
13	<i>Myotis welwitschii</i>	Welwitsch's Hairy Bat	Near Threatened
14	<i>Mycotis tricolor</i>	Temminck's Hairy bat	Near Threatened
15	<i>Pipistrellus rusticus</i>	Rusty Pipistrelle	Near Threatened
16	<i>Lutra maculicollis</i>	Spotted-necked otter	Near Threatened
17	<i>Mellivora capensis</i>	Honey badger	Near Threatened

Invertebrates

No record of any rare or endangered invertebrates was made within the parameters mentioned above.

Flora

The section of the alternative alignment which runs parallel to the southern boundary of RNR is Sandveld where the following unique species were recorded along the section of the proposed alternative alignment running parallel to the southern boundary of RNR: *Boophane disticha* (Poison bulb), *Hypoxis sp* (African potato) and *Eucomis sp*. Apart from these known floral species, the Sandveld is also sensitive to disturbance. Once disturbed, the floral communities flourishing in this habitat may, to a large extent, be lost as a result of the changes to their specific habitat with unique soil conditions.

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

YES

NO

If YES, specify and explain:

The proposed alternative alignment crosses three wetland habitats in Rietvlei Nature Reserve. A surface watercourse assessment was conducted in August 2010.

The outcomes of the study revealed that the first and wetland habitats are a PES Category B:

- Implying that it is largely natural with few modifications.
- A slight change in ecosystem processes and some loss of natural habitats and biota may have taken place.

The study revealed that the second wetland identified alongside the Delmas Road has PES Category E:

- Implying that it is a seriously modified wetland.

The study further revealed that the third wetland identified alongside the Delmas Road has PES Category A:

- Implying that it is unmodified / natural, or approximates natural conditions.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section	YES	NO
If yes complete specialist details		
Name of the specialist:	Mr. De Wet Botha	
Qualification(s) of the specialist:	M.A.Env.Man	
Postal address:	PO Box 1401, Wilgeheuwel, Johannesburg	
Postal code:	1736	
Telephone:	011 475 7137	Cell: 083 232 3042
E-mail:	dewet@prismems.co.za	Fax: 086 601 4800
Are any further specialist studies recommended by the specialist?	YES	NO
If YES, specify:		
If YES, is such a report(s) attached?	YES	NO
If YES list the specialist reports attached below		

Signature of specialist: _____ Date: _____

Name of the specialist:	Dr. Sarita Maree	
Qualification(s) of the specialist:	PhD in Zoology	
Postal address:	Department of Genetics, 8th Floor (Room 8-33), Agricultural Building, Main Campus, University of Pretoria	
Postal code:	0002	
Telephone:	012 420 3871 / 4402	Cell: 012 362 5327
E-mail:	smaree@zoology.up.ac.za	Fax: 012 362 5327
Are any further specialist studies recommended by the specialist?	YES	NO
If YES,specify:		
If YES, is such a report(s) attached?	YES	NO
If YES list the specialist reports attached below		

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Polke Birkholtz	
Qualification(s) of the specialist:	BA(Hons) in Archaeology	
Postal address:	PO Box 32542, Totiusdal	
Postal code:	0134	
Telephone:	012 332 5305	Cell: 082 717 6661
E-mail:	polke@lantic.net	Fax: 012 332 2625
Are any further specialist studies recommended by the specialist?	YES	NO
If YES, specify:		
If YES, is such a report(s) attached?	YES	NO
If YES list the specialist reports attached below		

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. Retief Grobler		
Qualification(s) of the specialist:	BSc Hons (UP) Botany		
Postal address:	PO Box 7284, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 365 2546	Cell:	082 606 7770
E-mail:	retief@imperata.co.za	Fax:	012 365 3217
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Dr. Ute Schwaibold		
Qualification(s) of the specialist:	PhD Zoology/Environmental Sciences		
Postal address:	School of Animal, Plant And Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	011 717 6482	Cell:	
E-mail:	ute.schwaibold@wits.ac.za	Fax:	086 614 3189
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Andrew Mckechnie		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	Department of Zoology and Entomology, University of Pretoria, Pretoria		
Postal code:	0002		
Telephone:	012 420 3232	Cell:	
E-mail:	aemckechnie@up.ac.za	Fax:	012 362 5242
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Peter Hawkes		
Qualification(s) of the specialist:	BSc Honours Entomology		
Postal address:	379 Bakenkloof Street, Pretoria North		
Postal code:	0182		
Telephone:	012 546 7289	Cell:	
E-mail:	phawkes@iafrica.com	Fax:	086 670 9055
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Prof. Graham Alexander		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	School of Animal, Plant and Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	012 717 6400	Cell:	
E-mail:	graham.alexander@wits.ac.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Benny de Lange		
Qualification(s) of the specialist:	BSc (Hons) Botany		
Postal address:	PO Box 3409, Kenmore, Krugersdorp		
Postal code:	1745		
Telephone:		Cell:	082 782 2879
E-mail:	reedfrog@vodamail.co.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

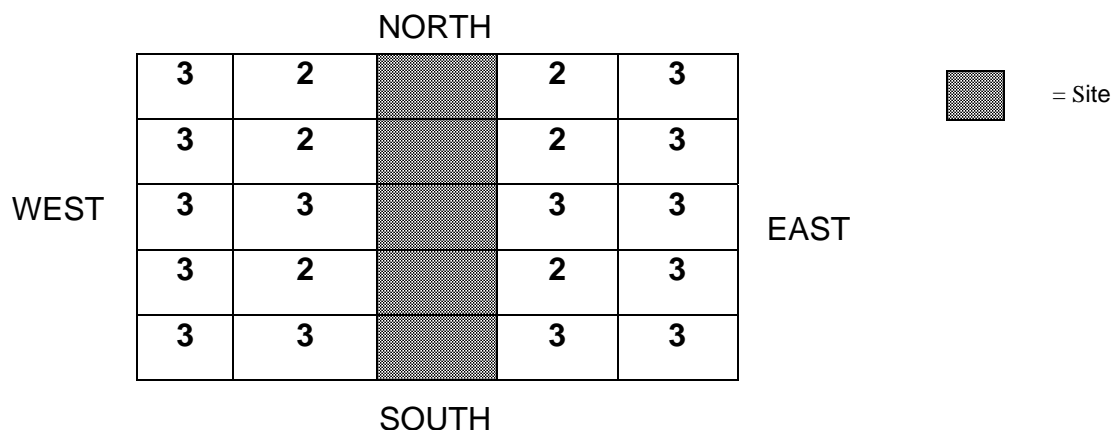
Please note: If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

56. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached
If yes indicate the type of reports below

YES	NO
-----	----

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.
Mammal Assessment done by Ute Schwaibold from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Site Investigation: Rough Haired Golden Mole and Juliana's Golden Mole done by De Wet Botha from Prism Environmental Management Services and Sarita Maree from the University of Pretoria. A copy of this report can be found in Addendum D of Appendix G.
Biodiversity Survey and Wetland Delineation done by Africon. A copy of this report can be found in Addendum A of Appendix G.
Assessment of the Herpetofauna done by Graham Alexander from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Assessment of Impacts on Birds done by Andrew McKechnie from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Invertebrate study conducted by Peter Hawkes from Afribugs. A copy of this report can be found in Addendum D of Appendix G.
Heritage Impact Assessment for the Proposed Alternative to a section of the Rand Water Pipeline between Vlaktefontein and Mamelodi, Tshwane Metropolitan Municipality, Gauteng Province, by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.

57. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment by sector within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

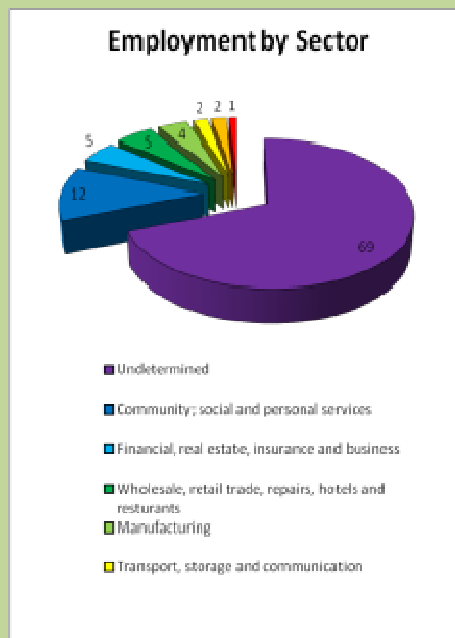


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality as a whole. This section of the alignment passes through the

Rietvlei Nature Reserve which is very low residential. Unemployment in this area would be therefore be relatively low with the main employment sector being Conservation.

58. 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?

YES	NO
-----	----

If YES, explain:

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

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

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

YES	NO
-----	----

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

YES	NO
-----	----

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

SECTION 8: RIETVLEI NATURE RESERVE TO GARSFONTEIN ROAD

59. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

60. LOCATION IN LANDSCAPE

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

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

61. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas (**For 1km from Delmas Road**)
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

62. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

63. GROUNDCOVER

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

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

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % = 80	Veld dominated by alien species % =	Landscaped (vegetation) % = 20
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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

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

YES	NO
-----	----

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site	YES	NO
---	-----	----

If YES, specify and explain:

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

If YES, specify and explain:

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

If yes complete specialist details

Name of the specialist:			
Qualification(s) of the specialist:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

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

YES	NO
-----	----

If YES list the specialist reports attached below

--

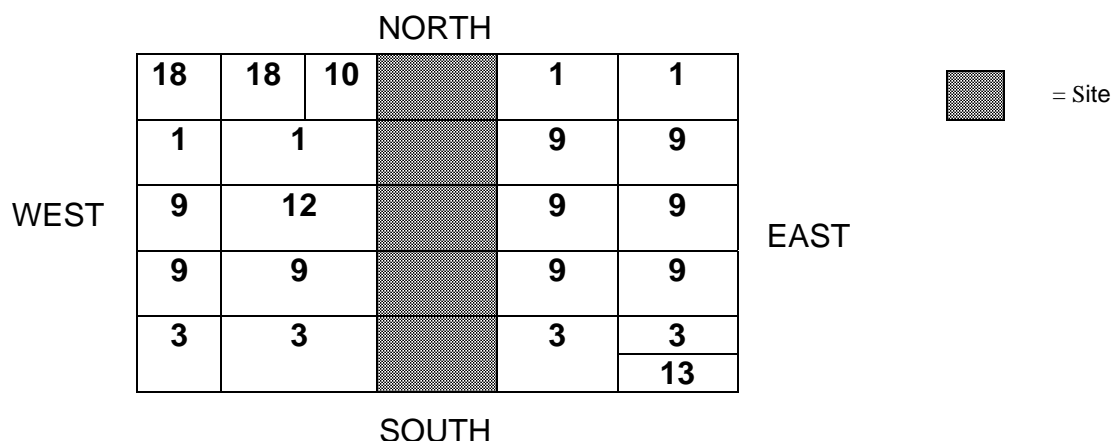
Signature of specialist: _____ Date: _____

64. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

65. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

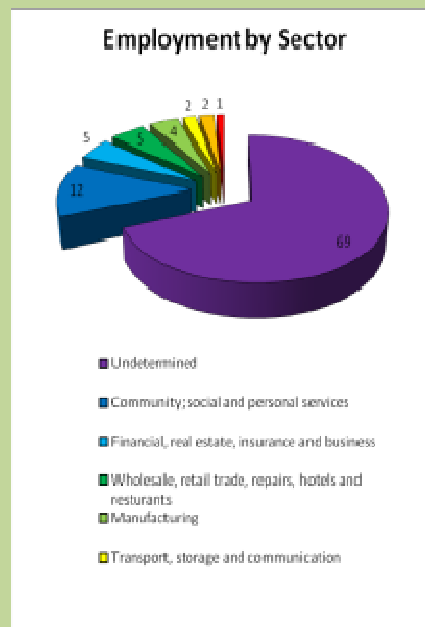


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality as a whole. This section of the alignment passes through a suburban area as well as an informal settlement set up by CoTMM. In terms of Employment the population which resides in these areas may fall into either three of

the categories mentioned above with a personal monthly income ranging from no fixed income to R3200 for the informal settlement and R3200 and higher for the suburban area.

66. 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?

YES	NO
-----	----

If YES, explain:

--

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

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

--

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

YES	NO
-----	----

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

YES	NO
-----	----

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

SECTION 9: GARSFONTEIN ROAD TO BRONBERG

67. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

68. LOCATION IN LANDSCAPE

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

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

69. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

70. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

71. GROUNDCOVER

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

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

Natural veld – good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % = 30	Veld dominated by alien species % =	Landscaped (vegetation) – Golf course % = 20
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 25	Building or other structure % =	Bare soil % = 25

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	NO
-----	----

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site	YES	NO
---	-----	----

If YES, specify and explain:

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

If YES, specify and explain:

The proposed alternative alignment crosses two wetlands in this section. A surface watercourse assessment was conducted in August 2010.

The first wetland is situated downstream of the Pretoria East Cemetery and upstream of the Woodhill Residential Estate and Country Club. The outcomes of the study revealed that the wetland habitat is a PES Category C:

- Implying that it is moderately modified.
- A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact.

The second wetland is situated in Boardwalk Meander Residential Estate. The outcomes of the study revealed that the wetland habitat is a PES Category E:

- Implying that it is seriously modified.
- The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

Name of the specialist:

Mr. Retief Grobler

Qualification(s) of the specialist:

BSc Hons (UP) Botany

Postal address:

PO Box 7284, Lynnwood Ridge

Postal code:

0040

Telephone:

012 365 2546

Cell:

082 606 7770

E-mail:

retief@imperata.co.za

Fax:

012 365 3217

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

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

YES	NO
-----	----

If YES list the specialist reports attached below

Signature of specialist:

Date:

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

72. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m

NORTH					
	9	9		9	9
	9	2		2	9
	9	9		9	9
WEST	9	9		9	9
	9	21		21	9
	25	25		25	25
	12	2		2	1
	12	12		12	34
	9	1		1	1
	SOUTH				

= Site

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

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

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G

Surface Watercourse Assessment: Proposed R5 Rand Water Pipeline between Rietvlei Nature Reserve and Mamelodi. Addendum B of Appendix G.

73. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane and Kungwini IDP respectively. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE

Employment

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

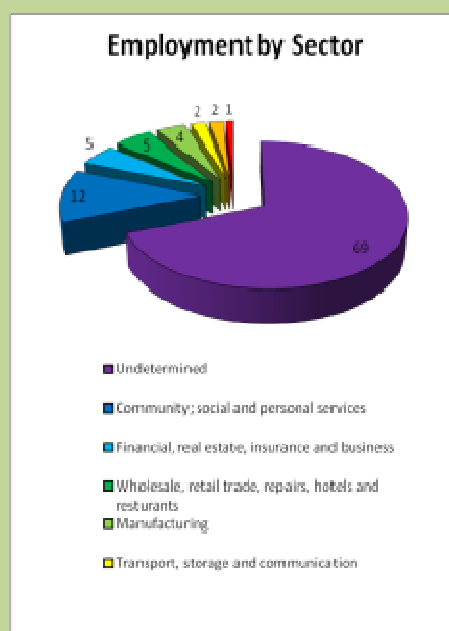


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

KUNGWINI LOCAL MUNICIPALITY**Employment**

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 4 below.

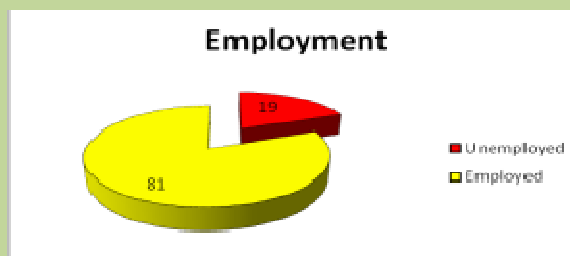


Figure 4: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 5 below indicates the percentage of the employment sectors in KLM.

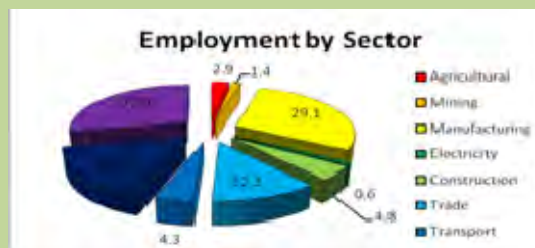


Figure 5: Employment by sector within the KLM

Personal monthly income

Figure 6 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.



Figure 6: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality and Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas fall into either the economically active or economically inactive category with a personal monthly income of R1600 and higher.

74. 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?

YES	NO
-----	----

If YES, explain:

--

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

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

--

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

YES	NO
-----	----

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

YES	NO
-----	----

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

SECTION 10: BRONBERG TO SIX FOUNTAINS

75. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

76. LOCATION IN LANDSCAPE

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

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

77. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

78. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

79. GROUNDCOVER

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

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

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

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

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

YES

NO

If YES, specify and explain:

Avian diversity

Avian diversity along the proposed alternative route through the Bronberg Conservation area is moderate, as 32 species were recorded during the site visit on 20 November 2008. No species of conservation concern were observed.

Herpetofauna

Bronberg Conservation Area has a diverse herpetofaunal assemblage with approximately 42 species potentially occurring in the area. Of the 42 species potentially occurring, only 10 were confirmed at the site assessment conducted on 20 November 2008. The 10 species identified on site were of least concern. The following species of conservation concern may occur on the proposed alignment:

No	Scientific name	Common name	Status
1	<i>Lygodactylus o. ocellatus</i>	Spotted Dwarf Gecko	Rare
2	<i>Homoroselaps dorsalis</i>	Stripped Harlequin snake	Rare

Mammal

According to previous studies conducted 73 species potentially occur at Bronberg Conservation Area. Of the 73 species, 2 were recorded on the site visit held on 20 November and 04 December 2008. One species of conservation concern was identified out of the 2 species recorded on the proposed alignment:

No	Scientific name	Common name	Status
1	<i>Neamblysomus julianae</i>	Juliana's Golden Mole	Vulnerable

Invertebrates

The invertebrate specialist conducted site visits on 4 and 18 December 2009. Only two species of conservation were identified on site. A third species, *Entypesa? Schoutedeni* (Wishbone trap door spider) was identified along the alignment. This species has not been classified as yet. Protected but not yet threatened species identified included:

No	Scientific name	Common name	Status
1	<i>Opisthophthalmus glabrifrons</i>	Burrowing scorpions	Protected

Flora

The specialist visited the site in November 2008. The species diversity at the Bronberg Conservation Area is very low as the species recorded are indicative of rehabilitation and invader or exotic species which have started to establish. No rare or endangered flora was identified within the 18m servitude. A list of the plant species found in the Bronberg Conservation Area can be found in the specialist report attached in Addendum A of Appendix G.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES

NO

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

If YES, specify and explain:

Avian diversity

It was noted that the following species of conservation concern may potentially occur in the area:

No	Scientific name	Common Name	Status
1	<i>Ciconia nigra</i>	Black stork	Near Threatened
2	<i>Crex crex</i>	Corn crane	Near Threatened
3	<i>Falco biarmicus</i>	Lanner Falcon	Near Threatened
4	<i>Falco peregrines</i>	Peregrine Falcon	Near Threatened

Herpetofauna

No record of any rare or endangered herpetofauna was made within the parameters mentioned above.

Mammal

A list of species which may occur in the area and therefore potentially on the proposed alignment can be found in the specialist report in Addendum D of Appendix G.

Invertebrates

It was noted that the following species of conservation concern may potentially occur in the area:

No	Scientific name	Common name	Status
1	<i>Hadogenes gunning</i>	Flat Rock Scorpion	Protected

Flora

Although the servitude was found to have no rare or endangered flora and therefore be considered to have a low sensitivity, the surrounding areas have been demarcated as being highly sensitive and therefore great care should be taken in preventing the disturbance of these areas during construction. A map indicating the sensitivity on the alignment can be found in the specialist report attached in Addendum A of Appendix G.

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

YES

NO

If YES, specify and explain:

The proposed alternative alignment crosses the Bronberg Ridge. This ridge is classified as a Class 2 ridge according to the GDARD Guidelines. All of the required studies have been conducted.

The proposed alternative alignment cross a natural drainage line and wetland in this section. A surface watercourse assessment was conducted in August 2010.

The drainage line is located in Shere Agricultural Holdings. Based in the assessment, the specialist has concluded that the drainage line is not consistent with the definition of a natural wetland (no wetland indicators were recorded) as well as a channel associated watercourse (due to the absence of a natural channel features that may contain regular or intermitted flow).

The wetland is situated to the east of Hans Strijdom Drive and the north of Lynnwood / Graham Road crossing. The outcomes of the study revealed that the wetland habitat is a PES Category F:

- Implying that it is critically modified.
- Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES

NO

Name of the specialist:

Mr. De Wet Botha

Qualification(s) of the specialist:

M.A.Env.Man

Postal address:

PO Box 1401, Wilgeheuwel, Johannesburg

Postal code:

1736

Telephone:

011 475 7137

Cell:

083 232 3042

E-mail:

dewet@prismems.co.za

Fax:

086 601 4800

Are any further specialist studies recommended by the specialist?

YES

NO

If YES, specify:

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

YES

NO

If YES list the specialist reports attached below

Signature of specialist:

Date:

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Dr. Sarita Maree		
Qualification(s) of the specialist:	PhD in Zoology		
Postal address:	Department of Genetics, 8th Floor (Room 8-33), Agricultural Building, Main Campus, University of Pretoria		
Postal code:	0002		
Telephone:	012 420 3871 / 4402	Cell:	_____
E-mail:	smaree@zoology.up.ac.za	Fax:	012 362 5327
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify: _____			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Polke Birkholtz		
Qualification(s) of the specialist:	BA(Hons) in Archaeology		
Postal address:	PO Box 32542, Totiusdal		
Postal code:	0134		
Telephone:	012 332 5305	Cell:	082 717 6661
E-mail:	polke@lantic.net	Fax:	012 332 2625
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify: _____			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Mauritz Naude		
Qualification(s) of the specialist:	(MA) Architecture: Conservation		
Postal address:	PO Box 584, La Montagne		
Postal code:	0184		
Telephone:	012 324 6082	Cell:	083 447 2232
E-mail:	mauritz@mitsong.org.za	Fax:	012 346 4168
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify: _____			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Mr. Retief Grobler		
Qualification(s) of the specialist:	BSc Hons (UP) Botany		
Postal address:	PO Box 7284, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 365 2546	Cell:	082 606 7770
E-mail:	retief@imperata.co.za	Fax:	012 365 3217
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify: _____			
If YES, is such a report(s) attached?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Dr. Ute Schwaibold		
Qualification(s) of the specialist:	PhD Zoology/Environmental Sciences		
Postal address:	School of Animal, Plant And Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	011 717 6482	Cell:	
E-mail:	ute.schwaibold@wits.ac.za	Fax:	086 614 3189
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

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

Name of the specialist:	Prof. Andrew Mckechnie		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	Department of Zoology and Entomology, University of Pretoria, Pretoria		
Postal code:	0002		
Telephone:	012 420 3232	Cell:	
E-mail:	aemckechnie@up.ac.za	Fax:	012 362 5242
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Peter Hawkes		
Qualification(s) of the specialist:	BSc Honours Entomology		
Postal address:	379 Bakenkloof Street, Pretoria North		
Postal code:	0182		
Telephone:	012 546 7289	Cell:	
E-mail:	phawkes@iafrica.com	Fax:	086 670 9055
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

Name of the specialist:	Prof. Graham Alexander		
Qualification(s) of the specialist:	PhD Zoology		
Postal address:	School of Animal, Plant and Environmental Sciences, University of Witwatersrand, Private Bag 3, WITS		
Postal code:	2050		
Telephone:	012 717 6400	Cell:	
E-mail:	graham.alexander@wits.ac.za	Fax:	
Are any further specialist studies recommended by the specialist?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES, specify:			
If YES, is such a report(s) attached?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
If YES list the specialist reports attached below			

Signature of specialist: _____ Date: _____

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Name of the specialist:	Mr. Benny de Lange		
Qualification(s) of the specialist:	BSc (Hons) Botany		
Postal address:	PO Box 3409, Kenmore, Krugersdorp		
Postal code:	1745		
Telephone:		Cell:	082 782 2879
E-mail:	reedfrog@vodamail.co.za	Fax:	
Are any further specialist studies recommended by the specialist?		YES	NO
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

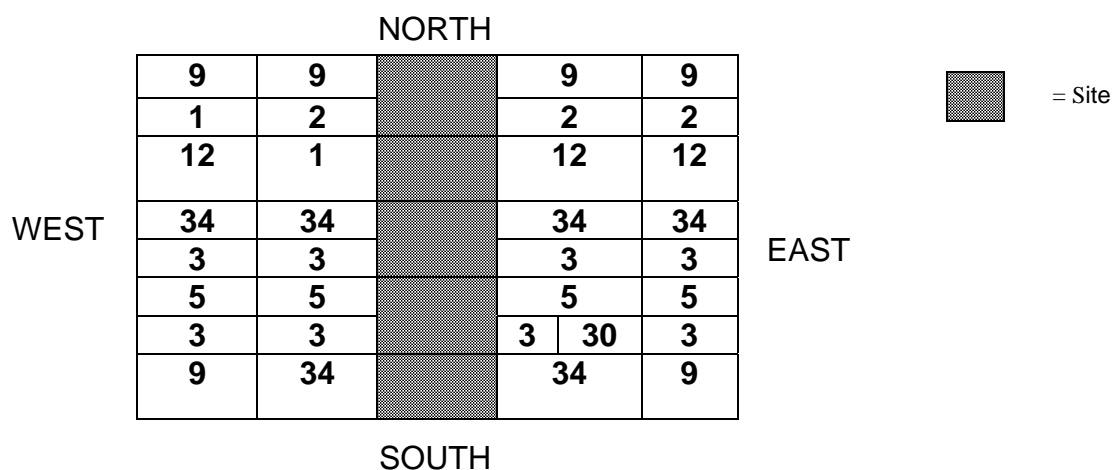
Signature of specialist: _____ Date: _____

80. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m



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 ^{uAu} and with an ^{uN} respectively.

Have specialist reports been attached

YES

NO

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.
Mammal Assessment done by Ute Schwaibold from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Biodiversity Survey and Wetland Delineation done by Africon. A copy of this report can be found in Addendum A of Appendix G.
Assessment of the Herpetofauna done by Graham Alexander from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Assessment of Impacts on Birds done by Andrew McKechnie from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Invertebrate study conducted by Peter Hawkes from Afribugs. A copy of this report can be found in Addendum D of Appendix G.
Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.
Surface Watercourse EIA Investigation: Proposed R5 Rand Water Pipeline, by Retief Grobler from Imperata Consulting. A copy of this report can be found in Addendum B of Appendix G.
Follow-up Specialist Assessment: Juliana's Golden Mole, Bronberg Ridge, Eastern Pretoria, Gauteng conducted by De Wet Botha from Prism Environmental Management Services and Sarita Maree from the University of Pretoria. A copy of this report can be found in Addendum D of Appendix G.

81. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

KUNGWINI LOCAL MUNICIPALITY

Employment

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 1 below.



Figure 1: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 2 below indicates the percentage of the employment sectors in KLM.

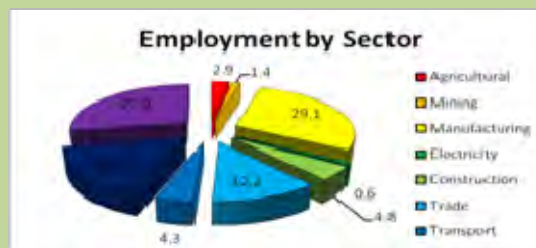


Figure 2: Employment by sector within the KLM

Personal monthly income

Figure 3 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.

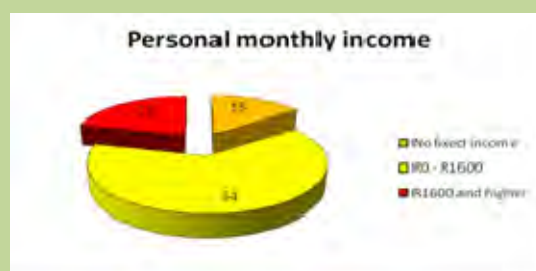


Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the Kungwini Local Municipality on a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas falls into the employed category mentioned above with a personal monthly income ranging from R1600 and higher.

82. 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-

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

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

If YES, explain:

YES

NO

Two sites, P3-8 and P3-9, of low Heritage significance were identified at the Bronberg Conservation Area. Both sites are believed to occur within the proposed footprint of the pipeline.

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:

P3-8 is classified as either a Late Iron Age or Historic site comprising of large circular stone walled enclosures with at least one internal divisional wall.

The P3-9 site comprises of a circular row of stones of unknown age or function.

A copy of the Heritage Impact Assessments conducted can be found in Addendum E of Appendix G.

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

YES	NO
YES	NO

- We have not received comment from SAHRA with regards to the issue mentioned above. However; the application for permits is a recommended mitigation measure made by the Heritage specialists, which has been included in the EMP.**

SECTION 11: SIX FOUNTAINS TO SAVANNAH COUNTRY ESTATE

83. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
-------------	------------------------	------------------------	------------------------	-------------------------	------------------------	-------------------------

84. LOCATION IN LANDSCAPE

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

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

85. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

86. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

87. 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 % = 25	Natural veld with scattered aliens % = 35	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % = 35
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % = 5	Building or other structure % =	Bare soil % =

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

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

YES	NO
-----	----

If YES, specify and explain:

--

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES	NO
-----	----

If YES, specify and explain:

--

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

YES	NO
-----	----

If YES, specify and explain:

--

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

If yes complete specialist details

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

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

YES	NO
-----	----

If YES list the specialist reports attached below

--

Signature of specialist: _____

Date: _____

88. LAND USE CHARACTER OF SURROUNDING AREA

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

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

NOTE: Each block represents an area of 250m X250m

NORTH				
1	8		8	1
1	1		1	1
25	25		25	25
9	9		9	9
9	9		9	9
SOUTH				

WEST
EAST

= Site

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

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

Have specialist reports been attached
If yes indicate the type of reports below

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

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

89. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

KUNGWINI LOCAL MUNICIPALITY

Employment

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 1 below.

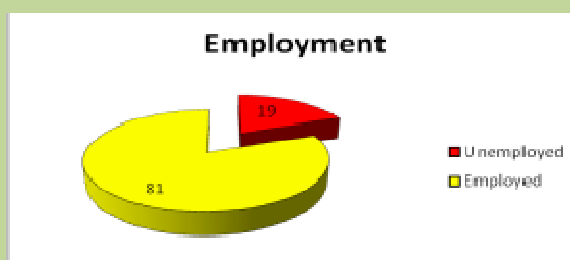


Figure 1: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 2 below indicates the percentage of the employment sectors in KLM.

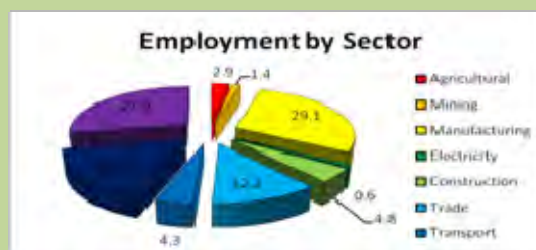


Figure 2: Employment by sector within the KLM

Personal monthly income

Figure 3 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area. In terms of Employment the population which resides in these areas falls into the employed category mentioned above with a personal monthly income ranging from R1600 and higher.

90. 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?

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

If YES, explain:

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?

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	NO
YES	NO

SECTION 12: SAVANNAH COUNTRY ESTATE TO MAMELODI

91. GRADIENT OF THE SITE

Indicate the general gradient of the site.

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

92. LOCATION IN LANDSCAPE

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

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

93. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO

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

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

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

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

Latitude (S):	Longitude (E):

c) are any caves located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

d) are any sinkholes located within a 300m radius of the site(s)

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

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

Latitude (S):	Longitude (E):

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

94. AGRICULTURE

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

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

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

95. GROUNDCOVER

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

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

Natural veld – good condition % =	Natural veld with scattered aliens % = 85	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % = 10	Paved surface (hard landscaping) % =	Building or other structure (Ruins) % = 5	Bare soil % =

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

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

YES	NO
-----	----

If YES, specify and explain:

--

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site

YES	NO
-----	----

If YES, specify and explain:

--

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

YES	NO
-----	----

If YES, specify and explain:

The proposed alternative alignment crosses a segment of the Pienaars Rivier known as a floodplain hydro geomorphic, situated to the west of Sammy Marks Museum. A surface watercourse assessment was conducted in August 2010.

The following indicators were used for the determination of the PES for the Pienaars Rivier:

- Index of Habitat Integrity (IHI)
- Invertebrate Habitat Assessment Score (IHAS)
- South African Scoring System version 5 (SASS5)
- Fish Response Assessment Index (FRAI)

The study revealed that the PES of the Pienaars Rivier based on the indicators mentioned above is as follows:

Site	IHI	IHAS	SASS5	FRAI
Upstream of the servitude	D	Poor	D	F
Downstream of the servitude	D	Adequate	D	F

This implies that the Pienaars Rivier is moderately to critically modified.

The proposed alternative alignment crosses a wetland in the same section west of Hans Strijdom Drive at Mamelodi Gardens. The outcomes of the study revealed that the wetland habitat is a PES Category E:

- Implying that it is seriously modified.
- The change in the ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.

A copy of the specialist report can be found in Addendum B of Appendix G.

Was a specialist consulted to assist with completing this section

YES	NO
-----	----

If yes complete specialist details

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

E-mail:

Mr. Retief Grobler

BSc Hons (UP) Botany

PO Box 7284, Lynnwood Ridge

0040

012 365 2546

retief@imperata.co.za

Cell: **082 606 7770**

Fax: **012 365 3217**

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

Are any further specialist studies recommended by the specialist? ☐ YES ☒ NO

If YES, specify:

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

If YES list the specialist reports attached below

Signature of specialist: _____ Date:

Name of the specialist: **Gina Walsh**

Qualification(s) of the specialist: **MSc Zoology**

Postal address: **PO Box 84, Florida**

Postal code: **1710**

Telephone: Cell: **082 422 2793**

E-mail: gina@ecotone-sa.co.za Fax:

Are any further specialist studies recommended by the specialist? ☐ YES ☒ NO

If YES, specify:

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

If YES list the specialist reports attached below

Signature of specialist: _____ Date:

Name of the specialist: **Mr. Polke Birkholtz**

Qualification(s) of the specialist: **BA(Hons) in Archaeology**

Postal address: **PO Box 32542, Totiusdal**

Postal code: **0134**

Telephone: **012 332 5305** Cell: **082 717 6661**

E-mail: polke@lantic.net Fax: **012 332 2625**

Are any further specialist studies recommended by the specialist? ☐ YES ☒ NO

If YES, specify:

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

If YES list the specialist reports attached below

Signature of specialist: _____ Date:

Name of the specialist: **Mr. Mauritz Naude**

Qualification(s) of the specialist: **(MA) Architecture: Conservation**

Postal address: **PO Box 58, La Montagne**

Postal code: **0184**

Telephone: **012 324 6082** Cell: **083 447 2232**

E-mail: mauritz@mitsong.org.za Fax: **012 346 4168**

Are any further specialist studies recommended by the specialist? ☐ YES ☒ NO

If YES, specify:

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

If YES list the specialist reports attached below

Signature of specialist: _____ Date:

96. LAND USE CHARACTER OF SURROUNDING AREA

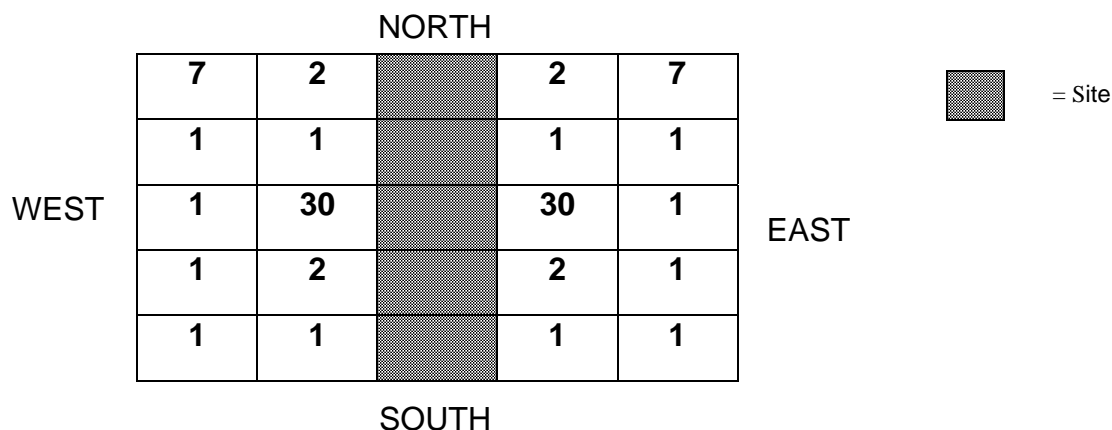
Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial ^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport ^N	23. Train station or shunting yard ^N	24. Railway line ^N	25. Major road (4 lanes or more) ^N

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

26. Sewage treatment plant ^A	27. Landfill or waste treatment site ^A	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X250m



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

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

Have specialist reports been attached

YES **NO**

If yes indicate the type of reports below

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.

Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.

Surface Watercourse EIA Investigation: Proposed R5 Rand Water Pipeline by Retief Grobler. A copy of this report can be found in Addendum B of Appendix G.

97. SOCIO-ECONOMIC CONTEXT

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

The information used below was obtained from the City of Tshwane and Kungwini IDP. This information will be used for the purpose of this report as no new information is available since the merger of the City of Tshwane and Kungwini Municipality after the 2011 Municipal elections.

CITY OF TSHWANE**Employment**

According to the Municipal Demarcation board (2001) there were approximately 2 million people residing within the City of Tshwane Metropolitan Municipality (CoTMM). Of this 2 million people, 46% are unemployed, 22% are employed and 32% are economically inactive as can be seen in Figure 1 below.



Figure 1: Employment status within the CoTMM

Employment sectors

The largest employment sector is undetermined at 69% followed by the community, social and personal services at 12% and financial, insurance, real estate and business at 5%. Figure 2 below indicates the percentage of the employment sectors in CoTMM.

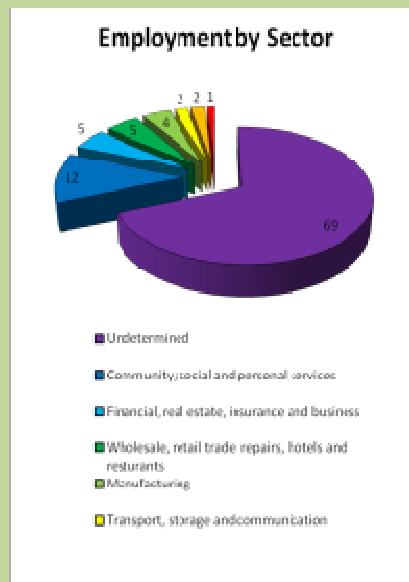


Figure 2: Employment by sector within the CoTMM

Personal monthly income

Figure 3 below indicates that 59% of the population residing in CoTMM do not have a fixed monthly income, 16% earn between R800 – R3200 per month and 15% earn R3200 and higher per month.



Figure 3: Personal Monthly income within the CoTMM

KUNGWINI LOCAL MUNICIPALITY**Employment**

According to the Integrated Development Plan (2008/09) there were approximately 107 875 people residing within the Kungwini Local Municipality (KLM) during the 2001 census. Of this 107 875 people, 55% are at an economically active age while 45% are economically inactive. Of the 55% economically active, 81% are employed and 19% are unemployed as can be seen in Figure 4 below.

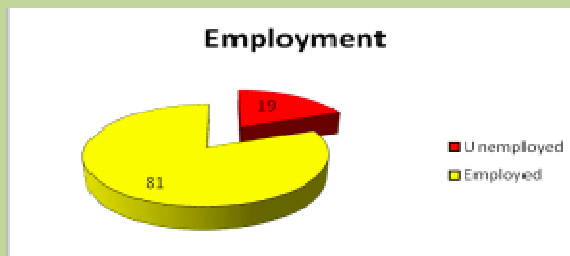


Figure 4: Employment status within the KLM

Employment sectors

The largest employment sector is Manufacturing at 29.1% followed by Services at 27.9% and Trade at 12.2%. Figure 5 below indicates the percentage of the employment sectors in KLM.



Figure 5: Employment by sector within the KLM

Personal monthly income

Figure 6 below indicates that 15% of the population residing in KLM do not have a fixed monthly income, 64% earn between R0 – R1600 per month and 21% earn R1600 and higher per month.

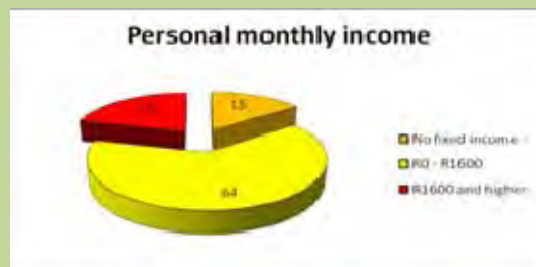


Figure 6: Personal Monthly income within the CoTMM

It is important to note that the information provided above is for the City of Tshwane Metropolitan Municipality and Kungwini Local Municipality as a whole. This section of the alignment passes through a suburban area as well as a township. In terms of Employment the population which resides in these areas may fall into either employed or unemployed category with a personal monthly income ranging from no fixed income to R1600 for the township and R3200 and higher for the suburban area.

98. 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?

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

If YES, explain:

Seven sites of Heritage significance were identified in this section. Two potential grave sites (P3-3 and P3-4); one area of high significance (P3-1); two sites of low significance (P3-2 and P3-5) and two sites of medium to moderate significance (P3-6 and P3-7).

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:

POTENTIAL GRAVES

- **P3-3: The site consists of oval-shaped concentration of stones oriented along an east-west axis, located within the foot print of the proposed alignment. Although this falls within the identified Late Stone Age area and is characteristic of this era, the possibility of this structure being a grave cannot be excluded.**
- **P3-4: The site consists of five stone heaps of which two are circular and three are rectangular, located within the foot print of the proposed alignment. Although this falls within the identified Late Stone Age area and is characteristic of this era, the possibility of this structure being a grave cannot be excluded.**

HIGH SIGNIFICANCE

- **P3-1: A Late Stone Age site consisting of numerous circular stone enclosures, stone walls and heaps; typical features found on sites with cattle enclosures, homesteads, collapsed medicine huts or granary platforms was identified 100m south of Hans Strijdom drive. No cultural material was observed on the surface of the site. This site is found on either side of the proposed alignment.**

MEDIUM / MODERATE SIGNIFICANCE

- **P3-6: An old historic road which connects the farm house, Zwartkoppies Hall, to the Hatherly Distillery at Eerste Fabriek. It is believed that the road was constructed during the mid 1880's and is therefore over 100 years old. The proposed pipeline will cross the road at a right angle and therefore will have a minimal impact on the road.**
- **P3-7: The site consists of a long and straight historic wall. The wall appears to run along the western end of an old road. As it is associated with the Zwartkoppies Farmstead, it is believed to be older than 100 years. As the proposed pipeline will cross the wall at a right angle the impact is expected to be low.**

LOW SIGNIFICANCE

- **P3-2: A poorly preserved Late Iron Age settlement comprising of stone enclosures and walling. The site is situated to the west of the proposed alignment.**
- **P3-5: A poorly preserved Late Iron Age site comprising of small sections of walling associated with number of stone heaps and mounds. The site is situated on either side of the proposed alignment.**

A copy of the Heritage Impact Assessments conducted can be found in Addendum E of Appendix G.

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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

YES	NO
YES	NO

- **We have not received comment from SAHRA with regards to the issue mentioned above. However; the application for permits is a recommended mitigation measure made by the Heritage specialists, which has been included in the EMP.**

•

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

- 1(a) Fix a notice in a conspicuous place, on the property where it is intended to undertake the activity which states that an application will be submitted to the competent authority in terms of these regulations and which provides information on the proposed nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations on the application may be made.
- 1(b) inform landowners and occupiers of adjacent land of the applicant's intention to submit an application to the competent authority
- 1(c) inform landowners and occupiers of land within 100 metres of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of the applicant's intention to submit an application to the competent authority;
- 1(d) inform the ward councillor and any organisation that represents the community in the area of the applicant's intention to submit an application to the competent authority;
- 1(e) inform the municipality which has jurisdiction over the area in which the proposed activity will be undertaken of the applicant's intention to submit an application to the competent authority; and
- 1(f) inform any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and
- 1(g) place a notice in one local newspaper and any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these regulations.

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 30 (thirty) calendar days before the submission of the application.

Has any comment been received from the local authority?

YES	NO
-----	----

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

City of Tshwane Municipality Conservation and Resorts Environmental Division and Rietvlei Nature Reserve have continually emphasised the importance of vegetation, bird life and wildlife within the proclaimed Nature Reserve. There are still signs of the construction of the initial pipeline, 25 years ago, among the Bakenveld vegetation type. Minutes of meetings held with RNR and CoT Metropolitan Municipality are attached in Appendix 5 of Appendix E.

SAHRA indicated in a letter received on 22 May 2009 (Appendix F) that the HIA report was discussed at the Built Environment and Landscape Committee meeting held on 14 May 2009. The focus of the meeting was on sites P3-6: Historic Road and P3-7: Historic wall as well as the potential burial grounds. Although the committee accepted the outline recommendations for site P3-6, to make an informed decision SAHRA has requested the submission of the following information:

- **The historical background of both sites.**
- **The public participation report.**
- **With regards to site P3-7, a description must be give on how the wall will be repacked.**

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

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

YES	NO
-----	----

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

- Majority of the stakeholders requested to be informed as the process of the project proceeds.**
- During a focus group meeting held with Rietvlei Nature Reserve (RNR) and the City of Tshwane Environmental Division, a concern regarding environmental impact of the construction of the pipeline through the Nature Reserve was raised.
 - Corobrik and Nova Brick opposed one of the potential alternative alignments for the construction of the pipeline past Rietvlei Nature Reserve due to the potential financial loss which could be experienced due to the sterilisation of the clay mined.
 - Chieftain opposed one of the potential alternative for the construction of the pipeline past Rietvlei Nature Reserve, as approvals have already been received from the DFA for a residential scheme based on the layouts and existing servitudes provided.
 - Requests were made by the Shere Residents Association for the Ecological studies to be conducted on Bronberg as well as the development of a road management plan. Concerns were also raised as to the issue of safety and security during the construction phase.
 - Concerns were raised by the owners at Six Fountains with regards to the safety and security, particularly of children, during the construction phase. A proper safety plan and detailed work plan was requested.
 - Snowy Owl (Pty) Ltd who, will be affected by the construction of the pipeline, brought it to our attention that the proposed pipeline might affect a heritage site, known as the Manala Village Ruins.

Details of these comments and the responses given can be found in the Comments and Response Journal attached in Appendix 6 of Appendix E.

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

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

Appendix 2 – written notices issued to those persons detailed in 1(b) to 1(f) above

Appendix 3 – Proof of newspaper advertisements

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

Appendix 5 – minutes of any public and or stakeholder meetings

Appendix 6 - Comments and Responses Report

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

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

Appendix 9 – Copy of the register of I&APs

Appendix 10 – Comments from I&APs on the application

Appendix 11 – Other

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal

Instructions for completion of Section D for alternatives

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

Section D has been duplicated for alternatives 1 times
(complete only when appropriate)

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

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

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

YES	NO
5m ³	

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

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

Any solid construction waste produced will be stored in sealed waste bins in a demarcated area on site, as decided by the contractor and ECO, and removed once a month to a registered waste disposal site. Proof of this must be provided to the ECO. A registered waste site must be identified prior to the commencement of construction. Mitigation for waste management has been included in the EMP.

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

As mentioned above, the solid construction waste produced will be disposed of at a registered waste disposal site and proof of this will be provided to the ECO.

Will the activity produce solid waste during its operational phase?

YES	NO
m ³	

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

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

Not Applicable

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

YES	NO
-----	----

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

Not Applicable

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO
-----	----

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

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

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

Not Applicable

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
m ³	

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

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

YES	NO
-----	----

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

YES	NO
m ³	

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

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

Not Applicable

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
-----	----

If yes, provide the particulars of the facility:

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

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

Not Applicable

Liquid effluent (domestic sewage)

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

YES	NO
-----	----

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

	m ³
--	----------------

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

YES	NO
-----	----

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

YES	NO
-----	----

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

Not Applicable

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
-----	----

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

YES	NO
-----	----

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

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

Not Applicable

2. WATER USE

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

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

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

	liters
--	--------

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

Does the activity require a water use permit from the Department of Water Affairs and Forestry?

YES	NO
-----	----

If yes, list the permits required

- 21(c): Impeding or diverting the flow of water in a water course.
- 21 (i): Altering the bed, banks, course or characteristics of a water course.

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

YES	NO
-----	----

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

YES	NO
-----	----

Aurecon is in the process of compiling the relevant Water Use Licence Applications for submission to the Department of Water Affairs.

3. POWER SUPPLY

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

Any power required for the construction of the pipeline will be sourced from the municipal connections and generators.

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

Not Applicable

4. ENERGY EFFICIENCY

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

Not Applicable

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

Not Applicable

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

- During a focus group meeting held with Rietvlei Nature Reserve (RNR) and the City of Tshwane Environmental Division, a concern regarding environmental impact of the construction of the pipeline through the Nature Reserve was raised.
- Corobrik and Nova Brick opposed one of the potential alternative alignments for the construction of the pipeline past Rietvlei Nature Reserve due to the potential financial loss which could be experienced due to the sterilisation of the clay mined.
- Chieftain opposed one of the potential alternatives for the construction of the pipeline past Rietvlei Nature Reserve, as approvals have already been received from the DFA for a residential scheme based on the layouts and existing servitudes provided.
- Requests were made by the Shere Residents Association for the Ecological studies to be conducted on Bronberg as well as the development of a road management plan. Concerns were also raised as to the issue of safety and security during the construction phase.
- Concerns were raised by the owners at Six Fountains with regards to the safety and security, particularly of children, during the construction phase. A proper safety plan and detailed work plan was requested.
- Snowy Owl (Pty) Ltd who, will be affected by the construction of the pipeline, brought it to our attention that the proposed pipeline might affect a heritage site, known as the Manala Village Ruins.

Details of these comments can be found in the Comments and Response Journal attached in Appendix 6 of Appendix E.

Summary of response from the practitioner to the issues raised by the interested and affected parties
(A full response must be provided in the Comments and Response Report that must be attached to this report):

- Specialist studies have been conducted in the Rietvlei Nature Reserve (RNR) and meetings were also held with Rand Water as well as RNR, where alternatives for the proposed duplication was discussed. These alternatives have been thoroughly investigated as can be seen in the report.
- It was decided that the Corobrik and Nova Brick alternative was no longer feasible, due to the financial implications.
- It was decided that the Chieftain alternative was no longer feasible, due to the financial implications.
- The ecological studies at Bronberg have been conducted and a road management plan is in the process of being developed. A Draft Road Management Plan is attached in Addendum F of Appendix G. The residents have also been informed that the concern of safety and security during the construction phase will be dealt with in detail in the EMP.
- The residents at Six Fountains have been informed that the concern of safety and security during the construction phase will be dealt with in detail in the EMP and the ECO will be present to ensure that the specifications are adhered to. A copy of the EMP can be made available to the residents of Six Fountains on request.
- The possible Manala Village ruins have been reported to SAHRA, who requested that a Heritage Impact Assessment be conducted by an accredited company.

Detailed responses given can be found in the Comments and Response Journal attached in Appendix 6 of Appendix E.

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

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

The most appropriate and widely used method has been selected for the specific assessment requirements and primarily involves a variation of checklists. Checklists can be divided into simple, descriptive and scaling-weighting checklists. Checklists contain sets of environmental attributes and activities or actions to be undertaken. The impact for each action or activity on the specific environmental activity is then assessed based on the following attributes:-

- Probability of occurring (High, medium or low)
- Extent (Small, medium or large)
- Duration of the impact (short, medium or long term)
- Intensity (High, medium or low)

The significance of the impact is then derived as the sum of all the attributes.

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.

Alternative 1

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
<p>Soil contamination</p> <p>Soil contamination may occur as a result of accidental spills, leakages from poorly sealed containers, spillages during the handling of hazardous material, poorly maintained equipment as well as the incorrect disposal of hazardous waste on site.</p>	<p>Medium</p>	<ul style="list-style-type: none"> • Vehicles and equipment must be checked on a regular basis for fuel and oil leaks. • Vehicles and equipment which leak oil must be removed from site. • The refueling of vehicles must take place off site. • Generators may only be refueled on an impermeable surface. • All hazardous material such as; oil, lubricants, cleaning solvents and cement, must be stored in sealed, lockable containers when not in use. This area must be approved by the ECO. • No planned normal or regular maintenance will be conducted on site. Vehicles and equipment will be removed from site for routine maintenance. • In the event of emergency repairs, maintenance must be conducted over a drip tray or tarpaulin. • Vehicles stored on site must be stored over concrete slabs or drip trays. • Old hydrocarbons and other hazardous materials may not be on site for longer than seven days. • Waste water must be stored in sealable marked containers and discharged with other waste water to a registered waste water disposal site. • All chemical spills must be cleaned up immediately by removing the spills together with 	<p>Low</p>

		<p>the polluted soil and disposed of at a recognized hazardous waste facility.</p> <ul style="list-style-type: none"> • Cement batching must take place on an impermeable surface. 	
<p>Loss of soil fertility</p> <p>This may be as a result of the clearance of vegetation from site, excavation and stockpiling of topsoil, compaction caused by machinery onsite and an increase in erosion.</p>	Medium	<ul style="list-style-type: none"> • Contractors must only use existing tracks and roads. • Disturbance of the area for the installation of the servitude must not exceed the specifications. • A construction plan must be formulated to indicate when specified areas will be cleared. • Strip topsoil only when it becomes necessary. • All grass and other vegetation should be left on topsoil stockpiles so that they colonize the area after construction. • Topsoil and subsoil must be stored separately. • Stockpiles must not exceed 2 m in height. • Excavated soil must be stockpiled in designated areas and protected from the wind and rain. • Photographic records must be kept of topsoil's stockpiles. • The area must be rehabilitated once construction is complete. 	Low
<p>Air quality</p> <p>The upgrade of the pipeline will result in the clearing of vegetation from the site as well as bulk earth moving activities. These activities may result in an increase in the volume of dust generated in the area.</p>	Medium	<ul style="list-style-type: none"> • All material transported to and from the site must be transported using covered trucks. • All roads must be sprayed with either water or an environmentally friendly dust allaying agent at regular intervals. • Stockpiles should either be sprayed with water or covered with suitable cover as approved by the ECO. • No burning of waste is permitted on site. • Cooking fires must be restricted to a demarcated area. • Basic fire fighting equipment must be available on site. • Vehicle speeds on site should not exceed 20 km/hr. • Ensure that all vehicles and equipment are in good working order at all times. 	Low
<p>Surface water quality</p> <p>Removal of vegetation will lead to an increase in erosion. Any spilt hazardous materials will contribute to this form of pollution which may be transported to adjacent sites.</p>	Medium	<ul style="list-style-type: none"> • All cement present on the site must be sealed in bags and stored on an impermeable layer under cover. Cement bags should only be opened when needed. • Cement bags are not to be burnt on site but should be disposed of as hazardous waste. 	Low

		<ul style="list-style-type: none"> • Excavated soil must be protected from erosion. • Adequate forms of chemical sanitation must be provided. 1 toilet per 11 workers on site and should be placed within a 100 m of worker activities. • Ablution facilities must be serviced on a regular basis. • Grey water must be stored in sealable marked containers and disposed of with waste water at a registered waste water disposal site. • Hazardous waste must be stored in sealable containers and disposed of at a registered hazardous waste disposal site. • Time intervals for the removal of hazardous waste must be agreed upon by the Contractor and ECO before the commencement of construction. • Only areas specified on the construction plan may be cleared. • Additional mitigation measures can be found in the EMP attached in Appendix H. • Soil stockpiles must not be stored in wetland areas. 	
<p>Fauna</p> <p>Red data fauna species were identified on the alignment, particularly at the Rietvlei Nature Reserve and Bronberg conservancy.</p> <p><u>Birds</u> Habitat loss and disturbance particularly of the African Grass Owl will be experienced due to the digging of the trench and the movement of vehicles.</p> <p><u>Herpetofauna</u> Transformation and disturbance of natural habitat as well as the potential for any fauna found on site to be intentionally or unintentionally killed by workers.</p> <p><u>Mammals</u> Impacts that may be experienced include the following:</p> <ul style="list-style-type: none"> • Reduction of suitable habitat through habitat destruction. • Habitat fragmentation. • Noise pollution and ground vibrations. • Intentional killing or hunting of animals. • Death of a proportion of small mammals by direct physical damage, through earth moving equipment. 	High	<ul style="list-style-type: none"> • In terms of the alignment of the pipeline through Rietvlei Nature Reserve, it is the recommendation of the specialists that the alignment be placed along the eastern boundary of the Reserve in the fire break. • It is recommended that the pipeline be built above ground should it be constructed on the proposed route, crossing the drainage lines. • The construction footprint must be demarcated and kept to a minimum, approximately 20 m wide. • All personnel and activities must be restricted to within the perimeter fence. • Access to the work area should be controlled and a gate guard must be present at all times. • Construction to occur in winter so as to minimize the disturbance to the fauna. • All construction personnel must be educated with regards to the sensitivity of the area. • Litter on site must be prevented at all times. At least one person should be designated to permanent cleanup duty. • Illegal hunting and intentional killing of fauna is prohibited on 	Medium

<p><u>Golden Mole – Bronberg</u></p>		<p>must take place by means of hand labour.</p> <ul style="list-style-type: none"> • Free access to the site for the research team from the University of Pretoria. • Pegging of the route must be conducted as a priority and as soon as possible: <ul style="list-style-type: none"> ➢ Route pegging, centre line and trench width. ➢ Working area. • Detailed survey and GPS – mapping of the working route line and recording of all visible activity of Juliana's Golden Mole: <ul style="list-style-type: none"> ➢ Initial surveys to be conducted in summer months after good rains. ➢ Survey to be conducted directly before the site establishment and following activities to promote mitigation of the golden mole has been exercised. • Activities to promote migration of the golden mole away from the working area must be exercised and monitored in conjunction with the University of Pretoria research team as soon as possible and must be exercised for at least six months during the summer rainfall season. • ECO should have extensive knowledge on the Juliana Golden Mole, environmental management and auditing and must be appointed prior to site establishment. The proponent may also appoint a specialist in this field to assist the ECO for this specific section. <ul style="list-style-type: none"> ➢ Bi-weekly site audits must be conducted for this section of the project. ➢ Oversee the Contractors Environmental Representative (CER). • The CER should have extensive knowledge on the Juliana Golden Mole and must be appointed prior to site establishment. The contractor may also appoint a specialist in this field to assist the CER for this specific section. <ul style="list-style-type: none"> ➢ Daily site monitoring must be conducted for this section of the project. ➢ Weekly reporting to the ECO and relevant parties. • Site specific environmental training must be conducted prior to the commencement of the 	
--------------------------------------	--	--	--

		<p>construction phase.</p> <ul style="list-style-type: none"> • A phased approach must be followed in installing the pipeline. • All work must be conducted by manual labour as far as possible. • Heavy machinery may under no circumstances be allowed within areas where golden mole may still occur (i.e. pre-migration attempts). • Stock piling of the pipes to be installed must be limited and only be stored in predetermined areas. • Work must take place over the winter dry months. • Blasting must be avoided. • Should blasting be required the ECO must be consulted. • Only chemical blasting will be permitted. • Single ingress and egress points must be established. • Compacting of soil must be limited. • Noise and vibration levels must be kept below normal standards. • When labourers encounter golden moles, the CER or University of Pretoria Research Team must be summoned to remove the moles. • In the event of moles being killed, these must immediately be collected by the CER or research team members. • Topsoil must be stripped in layer format and stockpiled accordingly: <ul style="list-style-type: none"> ➢ Top 10cm – unit 1 ➢ Following 30cm – unit 2 ➢ Following 50cm – unit 3 ➢ Following 50cm – unit 4 ➢ Following 1m - unit 5 ➢ 1m layers to follow • The soil must be returned on a first out last in basis. • Uprooting of trees must be avoided at all costs. • Protection of the stockpiles must be ensured as moles may be using them. 	
<p>Flora</p> <p>The servitude will be cleared of all vegetation. Impacts that may be experienced include the following:</p> <ul style="list-style-type: none"> • Disturbance of highly sensitive landscape components. • Illegal harvesting of plant species. • Proliferation of invasive weed species. 	<p>High (RNR)</p> <p>Medium (Bronberg)</p> <p>Low (Other Areas)</p>	<ul style="list-style-type: none"> • Highly sensitive areas to be surveyed and indicated by markers prior to establishment of site. • No construction or heavy machinery permitted outside the demarcated area. • No harvesting of woody vegetation for cooking or heating purposes. Alternative cooking or heating fuel must be provided. • Cooking facilities must be provided at the construction camp. 	<p>Medium (RNR)</p> <p>Low (Bronberg)</p> <p>Very Low (Other Areas)</p>

		<ul style="list-style-type: none"> • An alien eradication programme must be implemented. • A maintenance schedule is to be provided after reinstatement is completed so that alien vegetation is prevented from using the disturbed line as a corridor. • Rand Water will be responsible for the implementation of the maintenance schedule. • Environmental Awareness training must be provided to all contractors or labourers. • Penalties should be imposed for transgressions of the EMP as agreed between Rand Water and the appointed Contractor before the commencement of construction. • Plant rescue should be followed as described in the specialist reports. 	
Cultural and Heritage Various sites of cultural or heritage significance were identified along the servitude.	High	<ul style="list-style-type: none"> • Any sites of cultural or heritage significance unearthed during construction must be cordoned off. • The Gauteng Provincial Heritage Resources Agency and South African Heritage Resource Agency must be contacted should any elements of cultural or heritage significance or bones be uncovered during construction on site. • Site specific mitigation measures can be found in the EMP attached in Appendix H. 	Medium
Traffic The upgrade of the pipeline will result in an increased movement of heavy machinery and trucks along the access road.	High	<ul style="list-style-type: none"> • Speed limits along access roads must be maintained at 20 km/h unless otherwise indicated. • Vehicular traffic should be restricted to ordinary operating hours along the access road. 	Medium
Surrounding environment There is the potential for pollution of the surrounding environment with regards to the incorrect disposal of waste (domestic, construction and hazardous).	Medium	<ul style="list-style-type: none"> • Sealable waste bins must be provided. • Waste must be regularly removed from site, frequency and amount as determined by the Contractor and ECO. • Waste should be minimized by sorting the waste into recyclables and non recyclables onsite. 	Low

Alternative 1

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
<p>Soil contamination</p> <p>Soil contamination may occur as a result of accidental spills, leakages from poorly sealed containers, spillages during the handling of hazardous material, poorly maintained equipment as well as the incorrect disposal of hazardous waste on site.</p>	Medium	<ul style="list-style-type: none"> • Vehicles and equipment must be checked on a regular basis for fuel and oil leaks. • Vehicles and equipment which leak oil must be removed from site. • The refueling of vehicles must take place off site. • Generators may only be refueled on an impermeable surface. • All hazardous material such as; oil, lubricants, cleaning solvents and cement, must be stored in sealed, lockable containers when not in use • This area must be approved by the ECO. • No planned normal or regular maintenance will be conducted on site. Vehicles and equipment will be removed from site for routine maintenance. • In the event of emergency repairs, maintenance must be conducted over a drip tray or tarpaulin. • Vehicles stored on site must be stored over concrete slabs or drip trays. • Old hydrocarbons and other hazardous materials may not be on site for longer than seven days. • Waste water must be stored in sealable marked containers and discharged with other waste water to a registered waste water disposal site. • All chemical spills must be cleaned up immediately by removing the spills together with the polluted soil and disposed of at a recognized hazardous waste facility. • Cement batching must take place on an impermeable surface. 	Low
<p>Loss of soil fertility</p> <p>This may be as a result of the clearance of vegetation from site, excavation and stockpiling of topsoil, compaction caused by machinery onsite and an increase in erosion.</p>	Medium	<ul style="list-style-type: none"> • Contractors must only use existing tracks and roads. • Disturbance of the area for the installation of the servitude must not exceed the specifications. • A construction plan must be formulated to indicate when specified areas will be cleared. • Strip topsoil only when it becomes necessary. • All grass and other vegetation should be left on topsoil 	Low

		<p>stockpiles so that they colonize the area after construction.</p> <ul style="list-style-type: none"> • Topsoil and subsoil must be stored separately. • Stockpiles must not exceed 2 m in height. • Excavated soil must be stockpiled in designated areas and protected from the wind and rain. • Photographic records must be kept of topsoil's stockpiles. • The area must be rehabilitated once construction is complete. 	
<p>Air quality</p> <p>The upgrade of the pipeline will result in the clearing of vegetation from the site as well as bulk earth moving activities. These activities may result in an increase in the volume of dust generated in the area.</p>	Medium	<ul style="list-style-type: none"> • All material transported to and from the site must be transported using covered trucks. • All roads must be sprayed with either water or an environmentally friendly dust allaying agent at regular intervals. • Stockpiles should either be sprayed with water or covered with suitable cover as approved by the ECO. • No burning of waste is permitted on site. • Cooking fires must be restricted to a demarcated area. • Basic fire fighting equipment must be available on site. • Vehicle speeds on site should not exceed 20 km/hr. • Ensure that all vehicles and equipment are in good working order at all times. 	Low
<p>Surface water quality</p> <p>Removal of vegetation will lead to an increase in erosion. Any spilt hazardous materials will contribute to this form of pollution which may be transported to adjacent sites.</p>	Medium	<ul style="list-style-type: none"> • All cement present on the site must be sealed in bags and stored on an impermeable layer under cover. Cement bags should only be opened when needed. • Cement bags are not to be burnt on site but should be disposed of as hazardous waste. • Excavated soil must be protected from erosion. • Adequate forms of chemical sanitation must be provided. 1 toilet per 11 workers on site and should be placed within a 100 m of worker activities. • Ablution facilities must be serviced on a regular basis. • Grey water must be stored in sealable marked containers and disposed of with waste water at a registered waste water disposal site. • Hazardous waste must be stored in sealable containers and disposed of at a registered hazardous waste disposal site. • Time intervals for the removal of 	Low

		<p>hazardous waste must be agreed upon by the Contractor and ECO before the commencement of construction.</p> <ul style="list-style-type: none"> • Only areas specified on the construction plan may be cleared. • Additional mitigation measures can be found in the EMP attached in Appendix H. • Soil stockpiles must not be stored in wetland areas. 	
<p>Fauna</p> <p><u>Birds</u> Habitat Loss and disturbance will be experienced due to the digging of the trench and the movement of vehicles.</p> <p><u>Herpetofauna</u> Transformation and disturbance of natural habitat as well as the potential for any fauna found on site to be intentionally or unintentionally killed by workers.</p> <p><u>Mammals</u> Impacts that may be experienced include the following:</p> <ul style="list-style-type: none"> • Reduction of suitable habitat through habitat destruction. • Habitat fragmentation. • Noise pollution and ground vibrations. • Intentional killing or hunting of animals. • Death of a proportion of small mammals by direct physical damage, through earth moving equipment. • Increase in runoff and pollution which may adversely affect the down-slope drainage line. • Illegal harvesting of plant or animal species. <p><u>Invertebrates</u> Habitat disturbance.</p>	Medium	<ul style="list-style-type: none"> • The construction footprint must be demarcated and kept to a minimum, approximately 20 m wide. • All personnel and activities must be restricted to within the perimeter fence. • Access to the work area should be controlled and a gate guard must be present at all times. • Construction to occur in winter so as to minimize the disturbance to the fauna. • All construction personnel must be educated with regards to the sensitivity of the area. • Litter on site must be prevented at all times. At least one person should be designated to permanent cleanup duty. • Illegal hunting and intentional killing of fauna is prohibited on site. • Labourers should be educated and made aware that animals should not be harmed. • Length of the access roads should be kept to a minimum. • A designated game ranger must accompany the construction crew at the RNR to ensure safety and prevent the harassment of the mammals. • A representative of reserve management must be available at all times. • Topsoil must be cleared from one end of the site towards the other. • Movements of animals trying to flee must not be disturbed. • Remove excess old materials and remaining soil stockpiles during and after construction. • Adequately manage storm water runoff, for example appropriately placed gabion structures and maintenance there of as well as carefully routed storm water channels and canals. • Installation must be carried out as rapidly as possible. Rehabilitation must commence as soon as pipe is covered with soil. 	Low

<p><u>Golden Mole – Bronberg</u></p>		<ul style="list-style-type: none"> • Issues which might lead to difficulties in complying with the EMP must be communicated to the ECO. • Adequate signage must be in place at all times. • All spillages of diesel, oil / other chemicals must be cleaned up immediately. • Vehicles entering site must be checked for leaks. • Vehicles left standing on site should have a drip tray or plastic sheet. <ul style="list-style-type: none"> • Free access to the site for the research team from the University of Pretoria. • Pegging of the route must be conducted as a priority and as soon as possible: <ul style="list-style-type: none"> ➢ Route pegging, centre line and trench width. ➢ Working area. • Detailed survey and GPS – mapping of the working route line and recording of all visible activity of Juliana's Golden Mole: <ul style="list-style-type: none"> ➢ Initial surveys to be conducted in summer months after good rains. ➢ Survey to be conducted directly before the site establishment and following activities to promote mitigation of the golden mole has been exercised. • Activities to promote migration of the golden mole away from the working area must be exercised and monitored in conjunction with the University of Pretoria research team as soon as possible and must be exercised for at least six months during the summer rainfall season. • ECO should have extensive knowledge on the Juliana Golden Mole, environmental management and auditing and must be appointed prior to site establishment. The proponent may also appoint a specialist in this field to assist the ECO for this specific section. <ul style="list-style-type: none"> ➢ Bi-weekly site audits 	
--------------------------------------	--	---	--

		<p>must be conducted for this section of the project.</p> <ul style="list-style-type: none"> ➤ Oversee the Contractors Environmental Representative (CER). • The CER should have extensive knowledge on the Juliana Golden Mole and must be appointed prior to site establishment. The contractor may also appoint a specialist in this field to assist the CER for this specific section. <ul style="list-style-type: none"> ➤ Daily site monitoring must be conducted for this section of the project. ➤ Weekly reporting to the ECO and relevant parties. • Site specific environmental training must be conducted prior to the commencement of the construction phase. • A phased approach must be followed in installing the pipeline. • All work must be conducted by manual labour as far as possible. • Heavy machinery may under no circumstances be allowed within areas where golden mole may still occur (i.e. pre-migration attempts). • Stock piling of the pipes to be installed must be limited and only be stored in predetermined areas. • Work must take place over the winter dry months. • Blasting must be avoided. • Should blasting be required the ECO must be consulted. • Only chemical blasting will be permitted. • Single ingress and egress points must be established. • Compacting of soil must be limited. • Noise and vibration levels must be kept below normal standards. • When labourers encounter golden moles, the CER or University of Pretoria Research Team must be summoned to remove the moles. • In the event of moles being killed, these must immediately be collected by the CER or research team members. • Topsoil must be stripped in layer format and stockpiled accordingly: <ul style="list-style-type: none"> ➤ Top 10cm – unit 1 ➤ Following 30cm – unit 2 ➤ Following 50cm – unit 3 ➤ Following 50cm – unit 4 ➤ Following 1m - unit 5 ➤ 1m layers to follow • The soil must be returned on a 	
--	--	---	--

		<p>first out last in basis.</p> <ul style="list-style-type: none"> • Uprooting of trees must be avoided at all costs. • Protection of the stockpiles must be ensured as moles may be using them. 	
<p>Flora</p> <p>The servitude will be cleared of all vegetation. Impacts that may be experienced include the following:</p> <ul style="list-style-type: none"> • Disturbance of highly sensitive landscape components. • Illegal harvesting of plant species. • Proliferation of invasive weed species. 	<p>Medium (RNR)</p> <p>Medium (Bronberg)</p> <p>Low (Other Areas)</p>	<ul style="list-style-type: none"> • Highly sensitive areas to be surveyed and indicated by markers prior to establishment of site. • No construction or heavy machinery permitted outside the demarcated area. • No harvesting of woody vegetation for cooking or heating purposes. Alternative cooking or heating fuel must be provided. • Cooking facilities must be provided at the construction camp. • An alien eradication programme must be implemented. • A maintenance schedule is to be provided after reinstatement is completed so that alien vegetation is prevented from using the disturbed line as a corridor. • Rand Water will be responsible for the implementation of the maintenance schedule. • Environmental Awareness training must be provided to all contractors or labourers. • Penalties should be imposed for transgressions of the EMP as agreed between Rand Water and the appointed Contractor before the commencement of construction. <p>Plant rescue should be followed as described in the specialist reports.</p>	<p>Low (RNR)</p> <p>Low (Bronberg)</p> <p>Very Low (Other Areas)</p>
<p>Cultural and Heritage</p> <p>Various sites of cultural or heritage significance were identified along the servitude.</p>	High	<ul style="list-style-type: none"> • Any sites of cultural or heritage significance unearthed during construction must be cordoned off. • The Gauteng Provincial Heritage Resources Agency and South African Heritage Resource Agency must be contacted should any elements of cultural or heritage significance or bones be uncovered during construction on site. • Site specific mitigation measures can be found in the EMP attached in Appendix H. 	Medium
<p>Traffic</p> <p>The upgrade of the pipeline will result in</p>	High	<ul style="list-style-type: none"> • Speed limits along access roads must be maintained at 20km/h unless otherwise indicated. 	Medium

an increased movement of heavy machinery and trucks along the access road.		<ul style="list-style-type: none"> • Vehicular traffic should be restricted to ordinary operating hours along the access road. 	
Surrounding environment There is the potential for pollution of the surrounding environment with regards to the incorrect disposal of waste (domestic, construction and hazardous).	Medium	<ul style="list-style-type: none"> • Sealable waste bins must be provided. • Waste must be regularly removed from site, frequency and amount as determined by the Contractor and ECO. • Waste should be minimized by sorting the waste into recyclables and non recyclables onsite. 	Low

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

Geotechnical Investigation done by Jeffares and Green. A copy of this report can be found in Addendum C of Appendix G.
Mammal Assessment done by Ute Schwaibold from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Biodiversity Survey and Wetland Delineation done by Africon. A copy of this report can be found in Addendum A of Appendix G.
Assessment of the Herpetofauna done by Graham Alexander from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Assessment of Impacts on Birds done by Andrew McKechnie from the University of the Witwatersrand. A copy of this report can be found in Addendum D of Appendix G.
Invertebrate study conducted by Peter Hawkes from Afribugs. A copy of this report can be found in Addendum D of Appendix G.
Heritage Impact Assessment by P. Birkholtz. A copy of this report can be found in Addendum E of Appendix G.
Surface Watercourse Assessment: Proposed R5 Rand Water Pipeline between Rietvlei Nature Reserve and Mamelodi. Addendum B of Appendix G.
Follow-up Specialist Assessment: Juliana's Golden Mole, Bronberg Ridge, Eastern Pretoria, Gauteng conducted by De Wet Botha from Prism Environmental Management Services and Sarita Maree from the University of Pretoria. A copy of this report can be found in Addendum D of Appendix G.

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

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

Alternative 1 (Proposal)

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Not Applicable			

Alternative 2

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Not Applicable			

BASIC ASSESSMENT REPORT [REGULATION 23(1)]

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

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:

No known cumulative impacts have been identified. The steel pipeline will be underground next to the existing pipeline, within the existing servitude. The top cover will be rehabilitated concurrent with the backfilling of the trenches.

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.

Proposed

Impact	Activity	Duration	Likelihood	Significance before mitigation	Significance after mitigation
Soil contamination	Spillage of hazardous materials	Construction period	Probable	Medium	Low
Loss of soil fertility	Compaction and excavation of soil.	Construction period	Definite	Medium	Low
Air Quality	Increase in dust generated in the area.	Construction period and initial operational phase	Probable	Medium	Low
Surface water quality	Increase in erosion. Spilt hazardous materials will contribute to this form of pollution which may be transported to adjacent sites.	Construction period and initial operational phase	Probable	Medium	Low
Fauna (RNR and Bronberg)	Transformation and disturbance of natural habitat as well as the potential for any fauna found on site to be intentionally or unintentionally killed by workers.	Construction period and initial operational phase	Definite	High	Medium
Flora (RNR)	The servitude will be cleared of all vegetation.	Construction period	Definite	High	Medium
Flora (Bronberg)	The servitude will be cleared of all vegetation.	Construction period	Definite	Medium	Low
Flora (Other Areas)	The servitude will be cleared of all vegetation.	Construction period	Definite	Low	Very Low
Alien Vegetation	The establishment of alien vegetation in areas disturbed by construction.	Construction period and initial operational phase	Probable	Medium	Low
Cultural and Heritage	Discovery of cultural and heritage sites of importance.	Construction period	Definite	High	Medium

Traffic	The upgrade of the pipeline will result in an increased movement of heavy machinery and trucks along the access road.	Construction period	Definite	High	Medium
Surrounding environment	There is the potential for pollution of the surrounding environment with regards to the incorrect disposal of waste (domestic, construction and hazardous).	Construction period	Probable	Medium	Low

Most of the impact on the environment will occur during the construction phase with the disturbance of the soil, fauna and flora. Due to the large number of red data fauna and flora species located on the proposed alignment, it is anticipated that the magnitude of the negative impacts resulting from the development are likely to be high and therefore the significance of the construction of the pipelines on the environment will be high to medium provided that all aspects of the EMP are adhered to.

Alternative 21:

Impact	Activity	Duration	Likelihood	Significance before mitigation	Significance after mitigation
Soil contamination	Spillage of hazardous materials	Construction period	Probable	Medium	Low
Loss of soil fertility	Compaction and excavation of soil.	Construction period	Definite	Medium	Low
Air Quality	Increase in dust generated in the area.	Construction period and initial operational phase	Probable	Medium	Low
Surface water quality	Increase in erosion. Spilt hazardous materials will contribute to this form of pollution which may be transported to adjacent sites.	Construction period and initial operational phase	Probable	Medium	Low
Fauna (RNR)	Transformation and disturbance of natural habitat as well as the potential for any fauna found on site to be intentionally or unintentionally killed by workers.	Construction period and initial operational phase	Probable	Medium	Low
Fauna (Bronberg)	Transformation and disturbance of natural habitat as well as the potential for any fauna found on site to be intentionally or unintentionally killed by workers.	Construction period and initial operational phase	Probable	High	Medium
Flora	The work area will be cleared of all vegetation.	Construction period	Probable	Medium	Low
Flora (RNR)	The work area will be cleared of all vegetation.	Construction period	Probable	High	Medium *The area of actual floral disturbance is kept to a minimum.

Alien Vegetation	The establishment of alien vegetation in areas disturbed by construction.	Construction period and initial operational phase	Probable	Medium	Low
Cultural and Heritage	Discovery of cultural and heritage sites of importance.	Construction period	Definite	High	Medium
Traffic	The upgrade of the pipeline will result in an increased movement of heavy machinery and trucks along the access road.	Construction period	Definite	High	Medium
Surrounding environment	There is the potential for pollution of the surrounding environment with regards to the incorrect disposal of waste (domestic, construction and hazardous).	Construction period	Probable	Medium	Low

Most of the impact on the environment will occur during the construction phase with the disturbance of the soil, fauna and flora. However, due to the disturbed condition of the site, it is anticipated that the magnitude of the negative impacts resulting from the development are likely to be small. The significance of the construction of the pipelines on the environment will be low provided all aspects of the EMP are adhered to.

*A short section of the pipeline alignment will, in this option, traverse the Sandveld region in the Rietvlei Nature Reserve.

6. IMPACT SUMMARY OF PREFERRED PROPOSAL

Identify preferred proposal

The proposed construction of a water supply pipeline with an internal diameter of 0.8 – 1.5 metres, routed adjacent to the existing Rynfield – Mamelodi R1 and H26 pipelines, within the existing Rand Water servitude, from the southern boundary of Rietvlei Nature Reserve to Mamelodi.

For alternative:

The proposed construction of a water supply pipeline with an internal diameter of 0.8 – 1.5 metres, routed adjacent to the existing Rynfield – Mamelodi R1 and H26 pipelines, within the existing Rand Water servitude, from the southern boundary of Rietvlei Nature Reserve to Mamelodi. Deviations from the existing servitude are proposed at the Rietvlei Nature Reserve and Woodhill Golf Estate due to the environmental and social sensitivities of these areas.

Having assessed the significance of impacts of the proposal and various alternatives, please provide an overall summary and reasons for selecting the preferred project proposal.

The increase in residential as well as commercial development in the east of Pretoria as well as Mamelodi has led to the increase in the demand of potable water. Rand Water therefore proposes the construction of a potable water supply pipeline in an effort to supply the peak water demands, whilst maintaining a positive pressure and flow velocity of less than 2.5m/s.

It is proposed that pipeline be placed in the existing Rand Water Servitude, adjacent to the Rynfield – Mamelodi R1 and H26 pipelines. This servitude currently traverses the following environmentally and socially sensitive areas:

- Rietvlei Nature Reserve
- Woodhill Golf Estate
- Bronberg Conservancy
- Sammy Marks Property
- Heritage Sites
- The Pienaars River as well as a wetlands
- Various residential estates

Due to the environmental and social sensitivity of the areas identified above the following specialist studies were conducted:

- Mammal Assessment
- Biodiversity Survey and Wetland Delineation
- Assessment of Herpetofauna
- Assessment of impacts on Avifauna
- Invertebrate study
- Follow-up Specialist Assessment: Juliana's Golden Mole, Bronberg Ridge, Eastern Pretoria, Gauteng
- Heritage Impact Assessment
- Surface Watercourse Assessment

From an *environmental* perspective the specialists identified numerous Red data fauna and flora species along the proposed alignment in the Rietvlei Nature Reserve and Bronberg Conservancy. From a *social* perspective the heritage specialists identified sites of archaeological interest along the proposed alignment mostly located in and adjacent to the Sammy Marks Museum Property near Mamelodi. Concerns were raised by the various I&AP's and stakeholders with regards to the findings of the specialists mentioned above as well as the location of the proposed alignment through the first green playing section of the Woodhill Golf Course.

Based on the findings of the specialists as well as the concerns raised by the I&AP's and stakeholders, the impacts identified for the proposed alignment would have a High to Medium significance. It was recommended that deviation from the proposed alignment be investigated for Rietvlei Nature Reserve, Woodhill Golf Estate and Bronberg Conservancy. The Heritage specialists did not recommend the investigation of a deviation alternative but instead proposed mitigating the negative impact on the site by appointing specialists to document the sites and then apply for the necessary destruction permits before construction in these areas commenced.

The feasibility of the various deviation alternatives for Rietvlei Nature Reserve, Woodhill Golf Estate and Bronberg Conservancy are discussed in the table below.

No	Deviations Alternative	Description	Feasible	Reason
A	Rietvlei Nature Reserve	The deviation will enter the Rietvlei Nature Reserve at the southern boundary of the reserve, turn 90° east and run parallel with the Eskom transmission power lines. Once at the eastern boundary of the reserve, the deviation will turn 90° north and will run within the firebreak of the reserve parallel to the Delmas road. The deviation will join up with the existing servitude and will exit the reserve at the same point as the proposed alignment.	No	The deviation will be placed in a high risk dolomitic area which already has sinkholes developing.
B	Rietvlei Nature Reserve	The deviation will run in the existing servitude up to the southern side of the Eskom transmission power lines. At this point the deviation will turn 90° and run parallel to the power lines, passing through Corobrik and Nova Brick properties. Once	No	This would pass through areas (Nova Brick) which have mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights.

		reaching the Delmas road it will turn 90° north, entering the reserve at the southern boundary, where it will run in the firebreak of the reserve parallel to the Delmas Road. The deviation will ultimately join up with the existing servitude at the boundary of the reserve.		
C	Rietvlei Nature Reserve	The deviation will run in the existing servitude up to the southern side of the Eskom transmission power lines. At this point the deviation will turn 90° and run parallel to the power lines, passing through Corobrik and Nova Brick properties towards the Delmas road which it will cross. Once across the Delmas road, the deviation will turn 90° north and run parallel to the road in the Corobrik, Nova Brick and Townsdev (Pty) Ltd property where it will be diverted between the Lion Camp and Quarry, behind the NIA until it joins up with the existing servitude.	No	The deviation would still pass through areas (Nova Brick) which have mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights. Townsdev (Pty) Ltd have also opposed the registering of servitude on their property as the property has already been subdivided into erf's which are registered. There is therefore no space for a 30 m servitude. The deviation would also pass to close to the NIA buildings.
D	Rietvlei Nature Reserve	The deviation is diverted to run behind the southern boundary of Corobrik, between the Corobrik and Chieftain development. The deviation will cross the Delmas road turn 90° north and run parallel to the road in Nova Brick property until it is diverted between the Lion Camp and Quarry, behind the NIA buildings.	No	The deviation would still pass through areas (Nova Brick) which have mining rights for the land required. It is not financially viable for Rand Water to acquire these mining rights. The deviation would also pass to close to the NIA buildings. There is also not enough space between the boundary of the Corobrik property and the Chieftain development for 30 m servitude due to the DFA approvals already granted to Chieftain.
1	Rietvlei Nature Reserve	The deviation will enter the Rietvlei Nature Reserve at the southern boundary of the reserve, turn 90° east and run parallel with the Eskom transmission power lines within Sandveld for approximately 1.3 km. Once at the eastern boundary of the reserve, the deviation will turn 90° north and will run within the firebreak of the reserve parallel to the Delmas road for approximately 1.3km, where it will cross the Delmas road. It will re-enter Rietvlei Nature Reserve on the western side of the Delmas Road where it will turn 90° and will once again run parallel to the Delmas road where it will eventually join up with the existing servitude.	Yes	This deviation will remain in the Rietvlei Nature Reserve. The impact of this deviation will be of medium to low significance as it will, except for passing through the Sandveld for approximately 1.3 km, either pass through the firebreaks of the reserve or areas which are highly disturbed.
E	Woodhill Golf Estate	The deviation will cross De Villebois street in the existing servitude. Once across the road it will run in the road reserve parallel to De Villebois street until it joins with the existing servitude. It will not enter the Estate.	No	The road reserve is too narrow for a 13 m servitude and the proposed Rand Water servitude will encroach on an existing Eskom servitude.

1	Woodhill Golf Estate	The second deviation would enter the Estate but would remain behind the greens.	Yes	The social impact of this deviation will be of low to very low significance as the deviation will pass behind the golf greens.
F	Bronberg	The deviation alternative will run on the southern side of the Bronberg extending from the existing servitude at Leander Road (Olympus) westwards along the edge of the crown of the ridge, heading north parallel to Hans Strijdom Drive. At Lynnwood road the alignment turns east towards Catherine road, to the northern side on Bronberg where it meets up to the original existing.	No	This deviation was ruled out by the specialists due to the number of constraints associated with the alternative as well as the reasoning that it would have a greater negative impact on the Juliana Golden Mole on a whole as a greater area would be disturbed in comparison to the proposed route.

Based on the outcomes of the investigation on the deviation alternatives, Alternative Alignment 1 was recommended where the proposed pipeline should follow the existing alignment deviating only at Rietvlei Nature Reserve and Woodhill Golf Estate. The impacts identified for the alternative alignment will have a Medium to Low significance as all existing and predicted impacts can be reduced to within acceptable levels through the implementation of specific mitigation measures which are in line with legislative and policy requirements and objectives. These mitigatory measures have been incorporated into a comprehensive Environmental Management Plan.

The only area along the alternative alignment which may experience a High to Medium significant impact is on the southern boundary of RNR where the alternative alignment will transverse a section of Sandveld for approximately 1.3 km.

Compared to the No – go option, the construction of the proposed water supply pipeline will have significant long term positive impact on the social context.

It is therefore recommended that the project continue and that the proposed pipeline follow the Alternative 1 alignment.

7. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner).

YES	NO
-----	----

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process 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 findings of this report must be accepted and approved by the Competent Authority.
• The pipeline must be constructed in a trench for the full length from the southern boundary of Rietvlei Nature Reserve to Mamelodi.
• Mitigation measures, in the form of the EMP, must be implemented during the construction and rehabilitation phase.
• The EMP must be implemented and complied with by the contractor
• Due care and responsibility must be applied by the contractor when conducting works in alignment with the EMP.
• An onsite ECO appointed by Rand Water must monitor the implementation of the EMP by the contractor.

• Proof of disposal at a permitted waste disposal site must be provided to the ECO.
• Environmental monitoring must be conducted as specified in the EMP.
• External environmental auditing must be conducted to ensure overall compliance with legislative requirements and the EMP.
• No construction may occur in river or wetland areas without the relevant Water Use Licences.
• Monitoring and compliance reports must be submitted to GDARD once approved by the ECO and/or external auditor on a quarterly basis.
• The manager of Rietvlei Nature Reserve must be contacted before any construction commences within the boundaries of the reserve.
• All conditions as listed in the servitude agreement between Rand Water and Rietvlei Nature Reserve should be adhered to.
• The specialists from the University of Pretoria must be contacted six months before construction is to commence at Bronberg. These specialists must be appointed to supervise the construction through the Bronberg area.
• Ecological specialists must be appointed for the construction through Rietvlei Nature Reserve.
• Operational EMP should be developed prior to the commissioning of the pipeline.
• Should old Borrow pits be reopened or new ones required the relevant permits must be applied for in terms of the Minerals and Petroleum Resources Development Act No 28 of 2002.
• Exemption from the 95 m building line restriction must be granted by Gautrans to Rand Water for the recommended alternative alignment to be feasible.
• An application must be submitted to Eskom to obtain permission to cross under as well as run parallel to all affected Eskom pylons for Phase 2. All requirements as stipulated by Eskom based on the application made must be adhered to.

8. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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

EMP attached

Appendix H

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

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

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

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

Appendix G: Specialist reports

Appendix H: EMP

Appendix I: Other information